

# Physiological Psychology [830:313:01]

Fall 2018 on Mon/Wed 1:40-3:00pm

William Levine Hall-Ernst Mario School of Pharmacy Bldg. Room 111 (PH-111)

Instructor:	Dr. Mimi Phan <i>Office:</i> Psychology Building Room 332 <i>Email:</i> <a href="mailto:mphan@scarletmail.rutgers.edu">mphan@scarletmail.rutgers.edu</a>
Office Hours:	Friday afternoons by appointment
TA:	Ms. Michelle Rosenthal <i>Office:</i> Psych building Room 319 <i>Email:</i> <a href="mailto:michelle.c.rosenthal@rutgers.edu">michelle.c.rosenthal@rutgers.edu</a>
Office hours:	Tuesdays 1:00 - 2:00pm
Grading:	You will receive a letter grade based upon in-class participation and online activities (e.g., pop-quizzes), three (non-cumulative) Midterm Exams throughout the semester, and one Final (cumulative) Exam.

## I. Rationale:

Psychology or Biology alone is insufficient to explain the incredible ways in which the body and brain control behavior. This course and textbook are designed to reveal a biological perspective on psychology, which will introduce you to a branch of science that is necessary to understand the complex functions of the brain that allow animals (like humans) to grow, interact with, learn from, remember about, and enjoy its life and environment.

The big message is: *The Brain dictates behavior.* The big question is: *How?*

## II. Course Aims and Outcomes:

Our goal is to use this class to establish a fundamental understanding of how the brain works from molecules, cells, to circuits, neural systems and all the way to animal (including human!) behavior. We will also explore the scientific methods used by psychologists, neuroscientists and neurobiologists to investigate the fascinating ways that link brain to behavior. You will learn to appreciate current research goals in brain science and to think critically about your own questions, hypotheses and ideas for methodologies that will take us into the future to discover how the brain (really) works—including what it means when it fails in neurological disease or cognitive dysfunction.

### ***Specific Learning Outcomes:***

By the end of this course, you will:

- Learn how psychology and biology have merged to establish the branch of science called “physiological psychology” or “psychobiology”
- Learn concepts and current understanding of brain organization and function
- Learn about methods and scientific strategies used to investigate the biological basis of behavior (i.e., physiology)
- Identify how basic science has translational potential for understanding, treating or even curing psychological disorders or dysfunction
- Develop an appreciation of the ebb and flow of ideas in the history of physiological psychology and behavioral neuroscience
- Develop independent learning strategies and study habits

### III. Format and Procedures:

#### Participation (150 pts):

You will each start off with 50 points in this category. Your Participation points can accumulate to the complete 150 over the course of the semester if you regularly complete online activities such as pop-quiz questions or in class activities/discussion.

**A word about pop quizzes:** A few questions may be assigned at the beginning of a lecture. Questions will be about information readily available in assigned readings (for *that day's* lecture) in the textbook or other assigned readings (papers, online publications, etc.). These pop-quizzes are EASY and meant to be a simple and freebie way to add up points for your grade over the semester. Do. Your. Independent. Reading. But please take note that it is impossible to receive any credit if you are late to class that day and did not know you had an assigned quiz to take.

#### Extra Credit (50 points):

All extra credit will be due the week of December 10. Extra credit can take many forms. Some suggestions might be: REVEL assignments, written review of an agreed on topic; written journal article review and criticism; oral presentation of a journal article or a recent scientific discovery as it relates to our class topics; mini class lecture on an agreed upon class topic (5-10 minutes); oral or written or illustrative work detailing the contribution of a leading figure in psychobiology (see XI. List of (Some) Historical Figures in Psychobiology). **However, if the work is subpar (plagiarism, late, ½ effort), -50 points will be added to your final accumulated class points.**

#### Mid-Term Exams (3 x 150 points for each Exam = 450 points):

This will test your critical thinking skills – not just the retention of facts, ideas, and controversies discussed in class until this point. Focus will be to test how you think, more than how much information you can regurgitate on an exam. However you will be expected to support statements with evidence from literature and your research. The format will be multiple choice and several short-answer essay questions.

#### Final Exam (400 points):

Yes, the exam will be cumulative. Yes, you are expected to have a mastery of the material from my lectures and our classroom discussions. Yes, the exam may include material from your independent readings in the textbook (i.e., even if I do not explicitly cover everything in the chapter in class!).

*Some other important things to know:*

Late assignments: Submitting your work any time after the said deadline time (e.g., 5pm) on the same day will result in a 10% penalty. Each day after will result in a further 20% penalty. Late work is to be submitted to my office door (Psych 332) with your name and the date & time.

Academic Dishonesty: Please don't even try it. You are welcome to discuss ideas and concepts with your peers but each report must be written individually. If there is reason to believe that any part of your work is not your own, you will receive a ZERO for that assignment. Any cheating and plagiarism will not be taken lightly and could even result in automatic failure of the course. Please consult with me directly concerning any questions or concerns.

***Be sure to check Sakai regularly.*** Any class emails will also be archived there – so no excuses for not getting instruction or information from emails due to inbox load errors or internet issues.

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#### **IV. My Assumptions:**

You are encouraged to ask questions and discuss concepts, experiments, ideas your peers, classmates, and professor. We are all here for you and for each other – so be inquisitive! It will only make the class that much better.

The point of this class is to **ASK “WHY?”** I will also mention here that this class centers on the idea of the biology of psychology (i.e., psycho-biology). So a core idea is that the processes of the mind are based in the biology of the body.

Please do email your TA or me if something didn't make sense in lecture and/or discussion. Set up an Office Hours appointment with me or with your TA. When coming to office hours, have questions ready for us! It will produce the most efficient use of our time together. If at all possible, email your questions before hand so we can be better prepared to help out. The more you ask and we discuss, the more the benefit for everyone.

#### **V. Course Requirements:**

The lectures and online activities you are required to complete to earn your grade in this class are aligned with the learning outcomes in skills, knowledge, attitudes and values I hope you will leave our course with.

1. **Class attendance and participation:** **Please be on time to class** – We will always jump right in with pop-quiz assignment and/or classroom activities and then lecture. If you do have to miss a class meeting, you will still be responsible for material covered in class, but you will miss that day's participation points and any points awarded for pop-quizzes. There will be discussion in class.

#### **2. Course readings:**

**(a) Required text:**

*Physiology of Behavior*

12th Edition

by Neil R. Carlson (Author), Melissa A. Birkett (Author)

ISBN-13: 978-0134080918

ISBN-10: 0134080912

*REVEL for Physiology of Behavior*

Carlson & Birkett

ISBN10-0134320824 | ISBN-9780134320823

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\*\*Note that you may use prior editions of this textbook, however all references to the text (e.g., page numbers, etc.) will be to the 12<sup>th</sup> edition, so make sure you're reading the right material before and after class by looking at our detailed course schedule below.

- (b) Additional background readings; links to more (text)books of interest, and relevant papers in neuroscience will be made available on our Sakai website or announced in class.

## VI. Grading Procedures:

Grades will be based on:

(a) Participation (i.e., quizzes, online activities)	[15% or 150 points]
(b) Mid-term Exam (3 @ 15% or 150 points)	[45% or 450 points]
(c) Final Exam	[40% or 400 points]
TOTAL:	100% or 1000 points

## VII. Academic Integrity:

Each student in this course is expected to abide by the Rutgers University Code of Student Conduct and Academic Integrity Policy. Any work submitted by a student in this course for academic credit will be the student's own work. For this course, collaboration is allowed in the following instances: *research strategies, peer-review of assignments or other instances based upon special requests and my approval.*

Of course, you are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students, even to give ideas of which historical figures to select for your term paper. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e-mail, an e-mail attachment file, online forums, a diskette, or a hard paper copy.

*Please ask me if you are writing something and would like assistance in appropriate ways to cite previously published work. That's one great reason to schedule an office hour appointment!*

For info and useful links, visit: [academicintegrity.rutgers.edu](http://academicintegrity.rutgers.edu)

Should copying occur, both the student who copied work from another student and the student who gave material to be copied could both automatically receive a zero for the assignment. Penalty for violation of the University Code of Student Conduct can also be extended to include failure of the course and University disciplinary action. The risk really isn't worth it.

During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examination will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

## VIII. Accommodations for students with disabilities:

In compliance with the Rutgers University policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first two weeks of the semester, except for unusual circumstances, so arrangements can be made. Students are encouraged to register with the RU Office of Disability Services to verify their eligibility for appropriate accommodations and provide me with appropriate documentation.

<https://ods.rutgers.edu/>

<http://health.rutgers.edu/>

## **IX. Inclusivity Statement:**

We understand that our members represent a rich variety of backgrounds and perspectives. The Psychology Department is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value each other's opinions and communicate in a respectful manner
- use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the Rutgers U. community

***Note: This syllabus is our contract, student-to-teacher and teacher-to-student, that you and I will commit to this course with integrity, honesty, enthusiasm and an open mind to new ideas and various points of view. We will treat each other and our classmates with respect and patience and remember to listen as much as we speak.***

***Signed, mlp 9/5/2018 \_\_\_\_\_ Signed, \_\_\_\_\_***

## X. Tentative Course Schedule

*Schedule is subject to change.*

Topics	Readings	Ask yourself...	Assignment
<b>September 5 – WEDNESDAY</b> Intro, Overview	Our class syllabus & <i>Physiology of Behavior</i> by N. Carlson Chapter 1.	How do we study the biology of behavior? Why is it important?	
<b>September 10 – MONDAY</b> Neuronal Structure & Function.	Chapter 2.	What is the brain made of? How is it wired up?	
<b>September 12– WEDNESDAY</b> Neuronal Structure & Function	“		
<b>September 17 – MONDAY</b> Central & Peripheral NS.	Chapter 3.	How does the brain communicate with the body and environment?	
<b>September 19 – WEDNESDAY</b> Olfaction	<i>Chapter 7.</i>		
<b>September 24 – MONDAY</b> Psychopharmacology.	Chapter 4.	How is the brain different from a computer or a machine?	
<b>September 26 – WEDNESDAY</b> Psychopharmacology.	“		
<b>October 1 – MONDAY</b> REVIEW	Chapters 1, 2, 3, 4.		
<b>October 3 – WEDNESDAY</b>	Exam 1		
<b>October 8 – MONDAY</b> Vision.	Chapter 6.	How does the brain provide and internal representation of the external world?	
<b>October 10 – WEDNESDAY</b> Vision.	“	How do we define a sensory receptive field?	
<b>October 15 – MONDAY</b> Somatosensation.	Chapter 7.	What is a “Homunculus”?	
<b>October 17 – WEDNESDAY</b> Audition.	“	How are retino-topy, somato-topy, tono-topy, etc. related?	
<b>October 22 – MONDAY</b> Control of Movement.	Chapter 8.	What are mirror neurons?	
<b>October 24 – WEDNESDAY</b> Mechanisms of neuroplasticity.	“	Can what you do—even as an adult—change your brain?	
<b>October 29 – MONDAY</b> REVIEW	Chapters 6, 7, 8 & Readings.		
<b>October 31 – WEDNESDAY</b>	Exam 2		
<b>November 5 – MONDAY</b> Emotion.	Chapter 11.	Why do we feel happy, sad, scared, angry, etc. etc. etc.?	
<b>November 7 – WEDNESDAY</b> Learning & Memory.	Chapter 13.	How can we know <u>that</u> an animal has “learned”?	
<b>November 12 – MONDAY</b> Learning & Memory.	“	How can we know <u>when</u> an animal has “learned”?	
<b>November 19 – WEDNESDAY</b> Human Communication.	Chapter 14.	What is involved in effective communication?	
<b>November 21– WEDNESDAY</b> Thanksgiving Week Break.	NO CLASS TODAY. (Friday class is today.)		
<b>November 26 – MONDAY</b> Review.	Chapters 11,13,14.		
<b>November 28– WEDNESDAY</b>	Exam 3		

<b>December 3 – MONDAY</b> Schizophrenia & Affective Disorders	Chapter 16.	Can neurobiology explain psychology and psychological disorders?	
<b>December 5 – WEDNESDAY</b> Stress, Anxiety, & Neurodevelopmental Disorders	Chapter 17 & Readings.	Can neurobiology explain perceptual and/or learning disabilities?	
<b>December 10 – MONDAY</b> REVIEW/Extra credit	All assigned Chapters & Readings.		
<b>December 12 – WEDNESDAY</b> REVIEW/Extra credit	All assigned Chapters & Readings.		
<b>December 14-18</b> <b>Final Exam Week</b>	<b>FINAL EXAM (Cumulative!)</b>		
	<b>13578 01</b>	<b>C</b>	<b>Dec 19, 2018: 8:00 AM - 11:00 AM</b>

## XI. List of (Some) Historical Figures in Psychobiology

Alcmaeon	Hermann	Leeuwenhoek	Magendie	Loewi & Dale
Hippocrates	Bernstein	Ruysch	Ferrier	Levi-Montalcini
Plato	Overton	Ehrenberg	Bolk	Charles K. Mills
Aristotle	Lucas	Valentin	Larsell	Charles H. Fraizer
Herophilus	Forbes	Gennari	Lowenthal & Horsley	Ruysch
Erastriatus	Adrian	Baillarger	Adrian	Pick's
Rufus of Ephesus	Erlanger & Gasser	Remak	Magoun & Snider	Alzheimer's
Galen	Hodgkin	Meynert	Aranzi	Parkinson's
Avicenna	Bernard	Betz	Massa	Kluver-Bucy
Mondino	Elliott	Lewis	Haller	Creutzfeld-Jacobs
Leeuwenhoek	Dale	Ramon y Cajal	Cotugno	Tourette
Fontana	Loewi	Campbell	Luschika	Leipmann
Ehrenberg	Dale	Brodman	Key & Retzius	Gerstmann
Valentin	Pourfour du Petit	The Vogts	Goldmann	Scoville
Remak	Huber	Nemesius	Weed	Brenda Milner
Purkyne (Purkinje)	Vicq D'Azyr	Avicenna	Berengario	McLean
Schwann	Stilling	Prochaska	Da Capri	Brown-Sequard
Hannover	Koelliker	Rolando	Wepfer	Schiff
Koellinker	Flehsig	Flourens	Beevor	Henning
Deiters	Araetus	Hitzig/Fritsch	Pfeifer	Gregg Recanzone
Waller	Misticelli	Bartholow	Monro	Swedenborg
Kuhne	Turck	Ferrier	Kellie	James & Lange
Ranvier	Legallois	Grunbaum & Leyton	Donders	Bichat
Nissl	Bell	Krause	Roy & Sherrington	Papez
Virchow	Magendie	Panizza	Hill	Henry Head
Gerlach	Muller	Munk	Cushing	O. Foerster
Golgi	Brown-Sequard	Henschen	Jensen	Ebbinghaus
Ehrlich	Eckhard	Minkowski	Forbes & Cobb	Donald Hebb
His	Turck	Holmes	Schmidt & Kety	W. Penfield
Forel	Sherrington	Schafer & Brown	Steno	Fulton
Ramon y Chal	Whytt	Bianchi	Varolio	Jean Baptiste-Bouillard
Waldeyer	Unzer	Fieschig	Gall & Spurzheim	William James
Held	Prochaska	Brodman	Tiedmann	Bliss & Lomo
Barker	Hall	Goltz	Reil	Roger Sperry
Harrison	Weber Brothers	Monakow	Hannover	Larry Squire
Michael Merzenich	Erb	Lashley	Stilling	Hubel & Wiesel
Vesalius	Westphal	Gudden	Blum	Ralph Gerard
Descartes	Babinski	Dusser de Barenne &	Gerlach	Donald Lindsley
Willis	Sechenov	McCulloch	Golgi	Norman Weinberger
Borelli	Pavlov	Varolio	Weigert	?
Glisson	Piccolomini	Vieussens	Marchi	
Haller	Tiedemann	Malacarne	Nissl	
Monro II	Owen	Reil	Turck	
Galvani	Leuret	Luciani	Gudden	
Aldini	Gratiolet	Auburtin	Fleschsig	
Matteucci	Huschike	Broca	Galvani	
Du Bois-Reymond	Turner	Spencer	Volta	
Muller	Ecker	Hugh Jackson	Marc Dax	
Helmholtz	Malpighi	Magnus	Charcot	

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It's time to access Revel Physiology of Behavior, 12e, the course materials for 830:313 - Fall 2018

Here's how:

1. Go to: <https://console.pearson.com/enrollment/loj8vd>
2. Sign in to your Pearson Account or create one.
3. Redeem your access code or purchase instant access online. (Temporary access option for financial aid is also available.)

Here's more information for your course section: Course start date: Sept 10, 2018 Course end date: Jan 1, 2019 Meeting times: Mon 1:40 PM-3:00 PM Wed 1:40 PM-3:00 PM