

# Physiological Psychology [830:313:01]

Spring 2019 on Monday/Thursday 12:00 PM- 1:20 PM

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

Instructor: Dr. Mimi Phan  
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Office Hours: Friday afternoons by appointment

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., physiological psychology)
- 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 April 29th . 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. The exams will be on-line; posted during our regular class meeting times. You will have 80 minutes to complete the midterm.

#### 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!). The final exam will be on-line; posted during our common exam time. You will have 3 hours to complete the final.

*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.

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***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:**

*Revel for Biopsychology -- Access Card*

*John P. J. Pinel*

*Steven Barnes*

ISBN: 9780134567730

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**It's time to access Revel Biopsychology, 10e, the course materials for Pinel Biopsychology 10e Spring 19**

**Here's how:**

**1. Go to: <https://console.pearson.com/enrollment/hnowdn>**

**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.)**

**(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:

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

Letter Grade	Percentage
A =	89.5-100
B+ =	84.5-89.49
B =	79.5-84.49
C+ =	74.5-79.49
C =	69.5-74.49
D =	59.5-69.49
F =	0-59.49

## **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 1/15/2019 \_\_\_\_\_ Signed, \_\_\_\_\_***

## X. Tentative Course Schedule

*Schedule is subject to change.*

Topics	Readings	Ask yourself...	Assignment
<b>January 24 – THURSDAY</b> Intro, Overview; Biopsychology as a Neuroscience; The Research Methods of Biopsychology	Chapter 1, 5.	How do we study the biology of behavior? Why is it important?	
<b>January 28 – MONDAY</b> Evolution, Genetics, and Experience	Chapter 5/2.	What is the brain made of? How is it wired up?	
<b>January 31 – THURSDAY</b> Evolution, Genetics, and Experience	Chapter 2.		
<b>February 4 – MONDAY</b> Anatomy of the Nervous System	Chapter 3.	How is the brain different from a computer or a machine?	
<b>February 7 – THURSDAY</b> Anatomy of the Nervous System	Chapter 3.		
<b>February 11 – MONDAY</b> Neural Conduction and Synaptic Transmission	Chapter 4.	How does the brain communicate with the body and environment?	
<b>February 14 – THURSDAY</b> Neural Conduction and Synaptic Transmission	Chapter 4.		
<b>February 18 – MONDAY</b>	Exam 1: Ch 2, 3, 4, 5		
<b>February 21 – THURSDAY</b> The Visual System	Chapter 6.	How does the brain provide and internal representation of the external world?	
<b>February 25 – MONDAY</b> The Visual System	Chapter 6.	How do we define a sensory receptive field?	
<b>February 28 – THURSDAY</b> Mechanisms of Perception: Hearing, Touch, Smell, Taste, and Attention	Chapter 7.	How are retino-topo, somato-topo, tono- topo, etc. related?	
<b>March 4 – MONDAY</b> Mechanisms of Perception: Hearing, Touch, Smell, Taste, and Attention	Chapter 7.		
<b>March 7 – THURSDAY</b> The Sensorimotor System	Chapter 8.	What is a homunculus?	

<b>March 11 - MONDAY</b> The Sensorimotor System	Chapter 8.		
<b>March 14 - THURSDAY</b> Development of the Nervous System	Chapter 9.	How is the brain different from a computer or a machine?	
<b>Spring Break Week : March 16-March 24</b>	<b>Spring Break Week : March 16-March 24</b>	<b>Spring Break Week : March 16-March 24</b>	
<b>March 25 - MONDAY</b> Development of the Nervous System	Chapter 9.		
<b>March 28- THURSDAY</b>	<b>Exam2: CH 6, 7, 8</b>		
<b>April 1 - MONDAY</b> Brain Damage and Neuroplasticity	Chapter 10.	Can what you do—even as an adult—change your brain?	
<b>April 4 - THURSDAY</b> Brain Damage and Neuroplasticity	Chapter 10.		
<b>April 8 - MONDAY</b> Learning, Memory, and Amnesia	Chapter 11.	How can we know <u>when</u> an animal has “learned”?	
<b>April 11 - THURSDAY</b> Learning, Memory, and Amnesia	Chapter 11.		
<b>April 15 - MONDAY</b> Lateralization, Language, and the Split Brain	Chapter 16.	Can neurobiology explain perceptual and/or learning disabilities?	
<b>April 18- THURSDAY</b>	<b>Exam 3: 9, 10, 11</b>		
<b>April 22 - MONDAY</b> Drug Use, Drug Addiction, and the Brain’s Reward Circuits	Chapters 15.	Can neurobiology explain psychology and psychological disorders?	
<b>April 25 - THURSDAY</b> Biopsychology of Emotion, Stress, and Health	Chapter 15/17.		
<b>April 29 - MONDAY</b> Biopsychology of Psychiatric Disorders	Chapter 17/18.		
<b>May 2 - THURSDAY</b> Biopsychology of Psychiatric Disorders	Chapter 18.		
<b>May 6 - Monday</b> REVIEW/Extra credit	All assigned Chapters & Readings.		
<b>May 9-May 15</b> <b>Final Exam Week</b>	<b>FINAL EXAM (Cumulative!)</b>		
	<b>0208801</b>	<b>C</b>	<b>May 09, 2019: 8:00 AM - 11:00 AM</b>

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

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

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