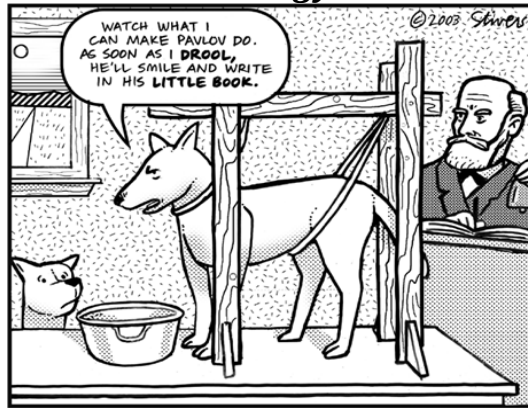


Physiological Psychology [830:313:02]

a.k.a Neurobiology & Behavior



A parody of the famous experiments by Dr. Ivan Pavlov that are now called “classical conditioning”. These set the stage for biology-based experiments in psychology that discovered links from brain to behavior.

Spring 2021

Online Learning using **CANVAS** – Asynchronous Remote (AR*) Course

*This means that you can self-pace your learning; all lectures are pre-recorded and activities posted online.

Recommended Self-paced Learning Times: Tues/Thurs 3:20-4:40pm

Instructor:	Dr. Kasia Bieszczad (you can call me Dr. B!) <u>Office:</u> Psychology Building Room 327 <u>Email:</u> kasia.bie@rutgers.edu <u>Class content and delivery:</u> CANVAS
Office Hours:	Zoom Drop-in on Fridays at 1pm-2pm (or at another time, by appointment)
TA:	Mr. Alper Bakir <u>Email:</u> ab1988@scarletmail.rutgers.edu
Office Hours:	Tuesdays from 10:30am-11:30am, by appointment to receive meeting link
Grading:	You will receive a letter grade (worth your 3 credits) based upon CANVAS participation and online activities (e.g., pop-quizzes and weekly blogs), three (non-cumulative) Midterm Exams throughout the semester, and one Final (cumulative!) Exam.
Textbook:	<i>Physiology of Behavior. 13th Edition (2021) By Carlson & Birkett,</i> *Note that this is a new “eText” version, available also with REVEL media. See the <u>last page of this Syllabus</u> for your options and associated costs (\$).

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, perpetuate and enjoy its life and environment.

The big message is: *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 (think Obama's BRAIN Initiative) 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 (my personal favorite term) “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 (100 pts):

You will each start off with 50 points in this category (yes, you already have points by simply logging in to Canvas and reading this Syllabus!). Your Participation points can accumulate to the complete 100 over the course of the semester if you regularly complete online activities (like watching the lecture videos!), which will be helpful also to correctly answer pop-quiz questions.

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 (from the *prior* 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 do not watch the recorded lectures and (therefore) did not know you had an assigned quiz to take. Pop quizzes are on the *prior* lectures and readings.

Weekly Discussion Blog (150 points):

You will be required to record your ideas, research plans, and impressions of the class discussion(s), questions, etc. etc. etc., in the form of an online journal (a.k.a. blog) entry every other week. Keep it simple, but rich with content (3-4 sentences can be enough). *What's the point?* Your success in the class will depend on how often and frequently you think about the issues covered in class, how much reading and thinking you do about what you have read, and thinking about what it means. Develop your ideas, make progress in your own thinking (and maybe even your own independent research?), and ultimately use all of this information to aid you in familiarizing yourself with the basics of neurobiology and behavior (aka physiological psychology). You will not be graded on content—just on completion.

The Blog is also a venue for you to communicate questions that you have about the content covered in class and how the discussions make you feel. Your TA and I will be spot-checking your entries weekly on Monday mornings, so **make sure to have an entry in by Sunday at 11:59pm***. We can adjust our class discussions during the following week to accommodate the questions or discussion points brought up in your Blog. So I invite you to let me know what you are thinking and feeling! **Blogs must be entered on the Canvas "Discussion" tab, under the appropriate dated heading.**
*You may enter a new blog post OR respond to a classmate's blog post to complete this assignment.

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 assigned readings, our classroom lectures, discussions, and your own (independent) research. The format will be a mix of multiple choice, several short-answer essay questions, and some open-ended fill-in-the-blank, types of questions. The exam may include material from your assigned readings in the textbook, though I will emphasize what you should *definitely* know for the exam in my lectures and slides.

Final Exam (300 points):

Yes, the exam will be cumulative. This means that it will include material covered throughout the whole course. Yes, you are expected to have a mastery of the material from my lectures and our "online" classroom discussions. Again, yes, the exam may include material from your assigned readings in the textbook, though, again, I will emphasize what you should know for the exam in my lectures and slides. If it is on a slide, it is "fair game" for the exam. If it is not on a slide, but part of the topic discussed in the lecture and elaborated in a relevant assigned reading Chapter section, then—yes—it is fair game for the exam. **Unlike the Midterms, the final exam format is only MULTIPLE CHOICE.**

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 CANVAS, which will automatically indicate 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 Canvas regularly. Any class emails will also appear there under the "Announcements" tab – so no excuses for not getting instruction or information from emails due to inbox load errors or whatever. This is also where lectures, exams, and your Blog Discussion boards will be available, so make a habit to keep up to date on Canvas. And read your peer blogs too! It is easy and interesting! **I recommend adopting a self-paced learning schedule that matches closely with what would have been our "in-person" class meeting times, on Tues/Thurs 3:20-4:40pm.** See the Class Schedule below for details.

IV. My Assumptions:

You are encouraged to ask questions and discuss concepts, experiments, ideas and your independent online learning activities openly among 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. I have essentially one general assumption: that the most important thing we need to do as researchers is IDENTIFY ASSUMPTIONS. We all have deeply engrained ideas about how the world, including the brain, works. Why?

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:

Lectures and online activities are required to complete to earn your grade in this class and are aligned with the learning outcomes. But most of all, I hope you will leave our course with skills, knowledge, attitudes and values to prepare you for a future of thinking deeply about behavior & its biological origins.

1. Class attendance and participation: **Please keep up with viewing the lectures after reading the assigned course material** – We will always jump right in with pop-quiz assignment and/or classroom activities and then follow with a lecture. And take the opportunity to interact with me, your TA, and your classmates on Canvas! The Blog Discussion board will serve as a “virtual” version of the discussions we would have had in class, which means that it will be most enjoyable and rewarding if we all engage to chat about the topics and issues covered over the course of the semester.

2. Course readings:

- (a) Required text: *Physiology of Behavior. 13th Edition*
By Neil Carlson & Melissa Birkett (Pearson 2021)**

The textbook is available as an eText OR with additional digital content called REVEL. Scroll down to the last page of this Syllabus for more info on your options and cost (\$).

****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 brand-new 13th edition, so make sure you're reading the right material before and after class by looking at our detailed course schedule below. This text is available in eText format.**

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

- (c) Pearson Online Learning Environment, called REVEL, which includes access to the eText: **Click here for REVEL access:** <https://console.pearson.com/enrollment/7t02zz>
— Completing the activities and exploring the digital content beyond the eTextbook itself using this site is not required. However, this is a fantastic opportunity for extra**

studying opportunities to hone your skills, test your memory and challenge your assumptions about material covered in class. Feel free to check it out free for 14-days.

VI. Grading Procedures:

Grades will be based on:

(a) Participation & Blog (i.e., quizzes, online activity)	[25% or 250 points]
(b) Mid-term Exam (3 @ 15% or 150 points)	[45% or 450 points]
(c) Final Exam	[30% or 300 points]
TOTAL:	100% or 1000 pts.

Rutgers Letter Grade Scheme will be as follows: A 100 % to 89.5%, B+ < 89.5 % to 84.5%, B < 84.5% to 79.5%, C+ < 79.5 % to 74.5%, C < 74.5 % to 69.5%, D < 69.5 % to 59.5%, F < 59.5 % to 0%

VII. Extra Credit Opportunities:

Yes, there will be opportunities for extra credit. Check out CANVAS throughout the semester for more details. Extra credit will involve a bit of independent research ☺

VIII. 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 with us!

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 to peers (virtually or not), web browsing, or any form of 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.

Overall, **students are expected to maintain the highest level of academic integrity.** You should be familiar with the university [policy on academic integrity](#) (←Click the link). Violations will be reported and enforced according to this policy. **Please take special note of academic integrity in the online environment** (<https://nbprovost.rutgers.edu/academic-integrity-students>).

Yours and Mine, Intellectual Property: Almost all original work is the intellectual property of its authors. These works may include syllabi, lecture slides, recorded lectures, homework problems, exams, and other materials, in either printed or electronic form. The authors may hold copyrights in these works, which are protected by U.S. statutes. Copying this work or posting it online without the permission of the author may violate the author's rights. More importantly, these works are the product of the author's efforts; respect for these efforts and for the author's intellectual property rights is an important value that members of the university community take seriously.

For more on copyright protections at Rutgers U., please refer to [Rutgers Libraries](#) (←Click).

IX. 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—especially in this online environment. 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. We will be able to make arrangements for you, no problem!

X. 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, Dr. B 1/15/2021 _____ Signed, _____

X. Tentative Course Schedule

[Note that you will be keeping a weekly CANVAS blog using “Discussions” throughout.]

Schedule is subject to change to accommodate guest presenters & student needs.

Topics	Readings	Ask yourself...	Assignment
January 19 – Tuesday Intro, Overview & Meet-n-greet.	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?	
January 21 – Thursday Neuronal Structure & Function.	Chapter 2.	What is the brain made of? How is it wired up?	Blog entry #1. Blogs are due Sunday night, 11:59pm
January 26 – Tuesday Neuronal Structure & Function	“		
January 28 – Thursday Central & Peripheral NS.	Chapter 3.	How does the brain communicate with the body and environment?	Blog entry #2. Blogs are due Sunday night, 11:59pm
February 2 – Tuesday Central & Peripheral NS.	“		
February 4 – Thursday Psychopharmacology.	Chapter 4.	How is the brain different from a computer or a machine?	Blog entry #3. Blogs are due Sunday night, 11:59pm
February 9 – Tuesday Psychopharm. (...and Hormones!)	“ (with some Chapter 10)		
February 11 – Thursday REVIEW	Chapters 1, 2, 3, 4.		Blog entry #4. Blogs are due Sunday night, 11:59pm
February 16 – TUESDAY	MIDTERM EXAM #1 is available for 48 hrs in CANVAS.		
February 18 – Thursday Vision.	Chapter 6.	How does the brain provide and internal representation of the external world?	Blog entry #5. Blogs are due Sunday night, 11:59pm
February 23 – Tuesday Vision.	“	How do we define a sensory receptive field?	
February 25 – Thursday Somatosensation & Neuroplasticity.	Chapter 7. & <i>Assigned readings online.</i>	What is a “Homunculus”? How does the brain learn about the world?	Blog entry #6. Blogs are due Sunday night, 11:59pm
March 2 – Tuesday Audition & Olfaction & Neuroplasticity.	“	How are retino-topo, somato- topo, tono-topo, etc. related? Can they change?	
March 4 – Thursday Mechanisms of neuroplasticity.	<i>Assigned readings online.</i>	Can what you do—even as a young or old adult—to change your brain?	Blog entry #7. Blogs are due Sunday night, 11:59pm
March 9 – Tuesday REVIEW.	Chapters 6, 7, and <i>assigned readings.</i>		
March 11 – THURSDAY	MIDTERM EXAM #2 is available for 48 hrs in CANVAS. *no blog due this week		
March 23 – Tuesday Emotion.	Chapter 11.	Why do we feel happy, sad, scared, angry, etc. etc. etc.?	
March 25 – Thursday Mechanisms of emotion.	“	What makes emotion? Is the brain enough?	Blog entry #8. Blogs are due Sunday night, 11:59pm
March 30 – Tuesday Learning & Memory.	Chapter 13.	How can we know <u>that</u> an animal has “learned”?	
April 1st – Thursday Learning & Memory. (...and Sleep!)	“ (with some Chapter 9)	How can we know <u>when</u> an animal has “learned”? What does time have to do with it?	Blog entry #9. Blogs are due Sunday night, 11:59pm
April 6 – Tuesday Human Communication	Chapter 14	What are the puzzle pieces of our language abilities?	
April 8 – Thursday REVIEW	Chapters 11 & 13 & 14		Blog entry #10. Blogs are due Sunday night, 11:59pm
April 13 – Tuesday	MIDTERM EXAM #3 is available for 48 hrs in CANVAS.		

April 15 – Thursday Developing Your Nervous System	Chapter 15	How does it all link up from conception to adulthood? What if something goes wrong?	Blog entry #11. Blogs are due Sunday night, 11:59pm
April 20 – Tuesday Schizophrenia & Affective Disorders	Chapter 17	Can neurobiology explain how we perceive what we feel?	Blog entry #12. TWO blogs (12 & 13) are due Sunday night, 11:59pm
April 22 – Thursday Stress & Anxiety	Chapter 18 (with some Chapter 12)	What is stress and anxiety good for? What do we do about it?	Blog entry #13. TWO blogs (12 & 13) are due Sunday night, 11:59pm
April 27 – Tuesday Addiction in the Brain	Chapter 19	How does substance abuse impact the brain, and then how does that brain impact substance abuse?	Blog entry #14. TWO blogs (14 & 15) are due Sunday night, 11:59pm
April 29 – Thursday REVIEW	Chapters* 15, 17, 18, 19	*note that we will only cover parts of each of these Chapters	Blog entry #15. TWO Blogs (14 & 15) are due Sunday night, 11:59pm THIS FINAL BLOG WILL BE A REFLECTION BLOG FOR YOUR OVERALL IMPRESSION OF THE COURSE, WHAT STRUCK YOU AS MOST MEMORABLE, AND YOUR FAVORITE TOPICS
May 4th & May 5th	Reading Days		
May 6-12 Final Exam Week	FINAL EXAM (Cumulative!) is available for 72 hrs in CANVAS, beginning on May 10th and ending on May 12th 11:59pm.		

XI. Additional Resources for Readings and Research

In addition to our class textbook, you may want to check out the following texts and resources to *find* and *find out about* neuroscience persons and research of interest:

<http://www.sfn.org/about/history-of-neuroscience/autobiographical-chapters>

<https://www.sfn.org/about/history-of-neuroscience/autobiographical-videos>

<http://www.sfn.org/about/history-of-neuroscience/classic-papers>

<http://www.nasonline.org/publications/biographical-memoirs/online-collection.html>

<https://www.fens.org/Outreach/History/Links-to-history-pages/>

<http://www.neurotree.org>

XII. List of (Some) Historical Figures in Psychobiology (Check out my 400-level “History of Brain Science” course if you are interested in pursuing neuroscience topics further!)

Alcmaeon	Remak	His	Galvani	Hodgkin
Hippocrates	Purkyne	Forel	Aldini	Bernard
Plato	(Purkinje)	Ramon y Chal	Matteucci	Elliott
Aristotle	Schwann	Waldeyer	Du Bois-	Dale
Herophilus	Hannover	Held	Reymond	Loewi
Erasistratus	Koellinker	Barker	Muller	Dale
Rufus of	Deiters	Harrison	Helmholtz	Pourfour du
Ephesus	Waller	Praxagoras	Hermann	Petit
Galen	Kuhne	Vesalius	Bernstein	Huber
Avicenna	Ranvier	Descartes	Overton	Vicq D’Azyr
Mondino	Nissl	Willis	Lucas	Stilling
Leeuwenhoek	Virchow	Borelli	Forbes	Koelliker
Fontana	Gerlach	Glisson	Adrian	Flechsig
Ehrenberg	Golgi	Haller	Erlanger &	Araetus
Valentin	Ehrlich	Monro II	Gasser	Mistichelli

Legallois	Betz	Malacarne	Roy &	Parkinson's
Bell	Lewis	Reil	Sherrington	Kluver-Bucy
Magendie	Ramon y Cajal	Luciani	Hill	Creutzfeld-
Muller	Campbell	Auburtin	Cushing	Jacobs
Brown-Sequard	Brodman	Broca	Jensen	Tourette
Eckhard	The Vogts	Spencer	Forbes & Cobb	Leipmann
Turck	Nemesius	Hugh Jackson	Schmidt & Kety	Gerstmann
Sherrington	Avicenna	Magnus	Steno	Scoville
Whytt	Prochaska	Magendie	Varolio	Brenda Milner
Unzer	Rolando	Ferrier	Gall &	McLean
Prochaska	Flourens	Bolk	Spurzheim	Brown-Sequard
Hall	Hitzig/Fritsch	Larsell	Tiedmann	Schiff
Weber Brothers	Bartholow	Lowenthal &	Reil	Henning
Erb	Ferrier	Horsley	Hannover	Zwaardemaker
Westphal	Grunbaum &	Adrian	Stilling	Swedenborg
Babinski	Leyton	Magoun &	Blum	James & Lange
Sechenov	Krause	Snider	Gerlach	Bichat
Pavlov	Panizza	Aranzi	Golgi	Papez
Piccolomini	Munk	Massa	Weigert	Henry Head
Tiedemann	Henschen	Haller	Marchi	O. Foerster
Owen	Minkowski	Cotugno	Nissl	Ebbinghaus
Leuret	Holmes	Luschika	Gudden	Donald Hebb
Gratiolet	Schafer & Brown	Key & Retzius	Fleschsig	W. Penfield
Huschike	Bianchi	Dandy	Galvani	Fulton
Turner	Fleschig	Goldmann	Volta	Jean Baptiste-
Ecker	Brodman	Weed	Marc Dax	Bouillard
Malpighi	Goltz	Berengario	Charcot	William James
Leeuwenhoek	Monakow	Da Capri	Loewi & Dale	Bliss & Lomo
Ruysch	Lashley	Wepfer	Levi-Montalcini	Roger Sperry
Ehrenberg	Gudden	Beevor	Charles K. Mills	Larry Squire
Valentin	Dusser de	Pfeifer	Charles H.	Hubel & Wiesel
Gennari	Barenne &	Monro	Fraizer	Ralph Gerard
Baillarger	McCulloch	Kellie	Ruysch	Donald Lindsley
Remak	Varolio	Donders	Pick's	
Meynert	Viessens		Alzheimer's	

**For further information or to discuss specific questions, please post to your blog,
or check our class CANVAS website.**

**Email your Professor or your TA to schedule an Office Hours appointment if you cannot
make the times listed in this Syllabus.**

**Last note instructions for access to the textbook
(either option is *great* for our course, but note difference in \$\$):**

(1) You have the option to purchase access to the eText AND REVEL digital media at:

Access Revel Physiology of Behavior, 13e, the course materials for
Physio Psych 830:313:02 (Rutgers SP21).

<https://console.pearson.com/enrollment/7t02zz>

\$93.30*

If you need help, check out these Revel student resources:
<https://www.pearsonhighered.com/revel/students/support/>

(2) You also have the option to subscribe for access to ONLY the eText at:

<https://www.pearson.com/store/p/physiology-of-behavior/P100002380659/9780135455562>

\$49.99*

*at the time that this Syllabus was created