



Graduate School of Applied and Professional Psychology (GSAPP)
Rutgers University
New Brunswick, New Jersey
Summer 2023

Biological Bases of Behavior
18:820:622
Credits: 3
Level: Graduate
Mondays 1:00 to 3:30pm in SEC-210
Wednesdays 2:00 to 5:30 pm SEC-207

Instructor: Robert H. LaRue, Ph.D.

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Office Hours: By appointment

The instructor will make every reasonable effort to meet with students whenever necessary.

Rutgers University Mission: As the premier comprehensive public research university in the state's system of higher education, Rutgers, The State University of New Jersey, has the threefold mission of

- providing for the instructional needs of New Jersey's citizens through its undergraduate, graduate, and continuing education programs;
- conducting the cutting-edge research that contributes to the medical, environmental, social, and cultural well-being of the state, as well as aiding the economy and the state's businesses and industries; and
- performing public service in support of the needs of the citizens of the state and its local, county, and state governments.

Each component of the university's mission reinforces and supports the other two.

As the University of New Jersey®, Rutgers is dedicated to teaching that meets the highest standards of excellence, to conducting research that breaks new ground, and to providing services, solutions, and clinical care that help individuals and the local, national, and global communities where they live.

GSAPP Mission: The mission of GSAPP is threefold: education, research/scholarship, and public service. Its goal is to prepare well-educated, qualified, and competent direct-service psychologists who have a special commitment to direct community involvement and to underserved populations--professionals who can integrate scientific knowledge with innovation in the delivery of psychological services to individuals, families, groups, and organizations. Professionals receiving a doctoral degree in psychology should be capable of

extending psychological knowledge and exhibiting the high level of analytic skills and theoretical understanding needed to use existing and emerging psychological knowledge. Core Values. We are guided by four core values that are apparent in our learning environment, centers, and clinics:

1. **Academic excellence** in preparing students for careers in clinical and school psychology.
2. Commitment to **social justice** and helping **underserved populations**.
3. **Diversity** of students trained, approaches used, theoretical orientations followed, and populations served.
4. **Knowledge generation and dissemination** using contemporary research approaches.

Course Description/Overview:

In today's healthcare climate, psychologists and behavior analysts are often required to serve beside medical personnel in integrated healthcare teams for assessment and treatment of complex cases. This course will prepare students for these interactions by providing them with a comprehensive overview of key aspects of biology that explain or otherwise interface with normal and/or dysfunctional behavior.

Scientific constructs, techniques, and theories will be examined in depth. Biological topics include the peripheral and central nervous system, the neurobiological systems that underlie sensation, motor behavior, emotion, cognition, self-other representation, and social behavior. We will also integrate understanding of altered behavioral processes of brain-damaged and psychiatric patients with knowledge of basic neuronal and neurobiological processes.

OBJECTIVES FOR THE COURSE:

After this course, you should be able to:

- Demonstrate an understanding of the neuron, brain organization, and functional neuroanatomy.
- Understand the biological processes that underlie sensation, perception, memory, emotion, motor behaviors, language, sleep/dreaming, and psychopathology.
- Integrate basic biological processes with single case studies in neurology and clinical psychology.
- Integrate understanding of neurobiological processes into understanding normal and abnormal mental and behavioral functioning.
- Demonstrate verbal and written comprehension of basic biological concepts across all domains listed within the course content/schedule.

Assignments and Evaluation Method:

Midterm Exam	35%
Final Exam (cumulative)	40%
Weekly Reflections	15%
Attendance	5%
Homework	5%

Homework:

Rather than submitting a homework question each week prior to class, you will complete homework questions assigned by the instructor. These questions are based on the readings assigned for the upcoming class. Students can bring hard copies of their questions to class or email them to me.

Grades and Grading Policy

Grade	Description	Numerical Equivalent
A	Outstanding	90-100 (4.0)
B+	Intermediate Grade	87-89 (3.5)
B	Good	80-86 (3.0)
C	Average	70-79 (2.0) Grades of C do not count toward graduation
F	Failure	69 or below (0.0)
INC	Incomplete	
S	Satisfactory	
U	Unsatisfactory	
PA	Pass	
NC	No credit given	

Required Texts:

- Carlson, N.R., & Birkett, M.A. (2017). *Physiology of Behavior*. Boston, MA: Pearson.
- Quock (2022). *Drugs and Behavior*. 2nd Edition
 - <https://opentext.wsu.edu/biopsychological-effects-alcohol-drugs/front-matter/introduction/>

Supplemental Readings

- Doidge, N. (2007, paperback). *The Brain that Changes Itself*. New York: Viking.
- Sacks, O. (1985/1998, paperback). *The Man Who Mistook His Wife for a Hat*. New York: Touchstone.

Course Outline:

- Class 1 (5/15): Overview of course, assignments, & texts
- Class 2 (5/17): Structure and Function of Cells of the Nervous System
- Readings
 - Carlson & Birkett Ch. 2 (Structure and Function of Cells)
- Class 3 (5/22) Structure of the Nervous System
- Readings:
 - Carlson & Birkett Ch. 3 (Structure of Nervous System)
- Class 4 (5/24): Neurotransmitters and Psychopharmacology/Psychotropic Drugs
- Readings
 - Carlson & Birkett (2017) Ch. 4 Psychopharmacology
 - Quock Chapters 16-19
 - LaRue, R. H., Northup, J., Baumeister, A. A., Hawkins, M. F., Williams, T., & Seale, L. (2008). An evaluation of the effects of stimulant medication on the reinforcing efficacy of play. *Journal of Applied Behavior Analysis, 41*, 143-147.
<https://doi.org/10.1901/jaba.2008.41-143>
- *******(5/29) MEMORIAL DAY: NO CLASS*******
- Class 5 (5/31) Emotion
- Readings
 - Carlson & Birkett (2017). Ch.11. (Emotion)
- Class 6 (6/5) Neurological Disorders and Midterm Review
- Readings
 - Carlson & Birkett (2017) Ch. 15 Neurological Disorders, (pp. 500-515)
- Class 7 (6/7) **Midterm Examination**
- Class 8 (6/12): Language and Aphasias
- Readings
 - Carlson & Birkett (2017). Ch. 14. Human Communication
 - Sacks, O. The Man Who Mistook His Wife for A Hat. Chapter 9 (The President's Speech)
 - Doidge, N. The Brain that Changes Itself. Chapter 2

- Class 9 (6/14): **Biology of Stress and Anxiety/Neurodevelopmental Disorders**
- Readings
 - Carlson & Birkett (2017). Ch.17. Stress, Anxiety, and Neurodevelopmental Disorders
 - Arnsten, A. F. (1998). The biology of being frazzled. *Science*, 280(5370), 1711-1712.
 - Nigg, J. T., Sibley, M. H., Thapar, A., & Karalunas, S. L. (2020). Development of ADHD: Etiology, heterogeneity, and early life course. *Annual Review of Developmental Psychology*, 2, 559-583.
 - Hodges, H., Fealko, C., & Soares, N. (2020). Autism spectrum disorder: definition, epidemiology, causes, and clinical evaluation. *Translational Pediatrics*, 9(Suppl 1), S55.
- Class 10 (6/19): **Schizophrenia and Affective Disorders**
- Readings
 - Carlson & Birkett Ch. 16 (Schizophrenia and Affective Disorders)
 - Stone, J. M., Morrison, P. D., & Pilowsky, L. S. (2007). Glutamate and dopamine dysregulation in schizophrenia—a synthesis and selective review. *Journal of Psychopharmacology*, 21(4), 440-452.
 - Holtzheimer, P. E., & Mayberg, H. S. (2011). Stuck in a rut: rethinking depression and its treatment. *Trends in Neurosciences*, 34(1), 1-9.
- Class 11 (6/21): **Substance Abuse and Final Review**
- Readings
 - Carlson & Birkett Ch. 18 (Substance Abuse)
 - **Final Review**
- Class 12 (6/26) **Final Examination**

Weekly Reflection

Each week, students will be responsible for completing a 1-2 page weekly reflection about the content covered that week. The content of the reflection is open and may include something they found interesting about the readings/lectures, something that was confusing, or just an observation regarding the content for that week.

Reflections are due by Friday at 5:00 pm. These reflections will be graded based on completion, not accuracy. The weekly reflection will constitute 15% of your grade.

Attendance and Participation:

Attendance and class participation are a major part of this class. You are expected to attend all classes and arrive on time. *Only two (2) excused/unexcused absences are permitted. Missing more than 2 classes will result in a 5% point deduction for each additional day of absence from your final grade point.* If you are forced to miss an excessive amount of classes, you will be encouraged to withdraw from the class. Students who arrive to class more than 10 minutes after the class has started are considered tardy, and will be marked absent if they arrive more than 30 minutes after class has started. After 3 late arrivals, an unexcused absence will be marked in your record. The only excused absences are those are serious or required (e.g., personal medical emergencies or serious illness/injury; death or serious illness in the family; military duties; jury duty). They will always require some form of documentation: Examples include a doctor's note (on letterhead and signed by the doctor); obituary or funeral program; court order/notice; etc.). You must always supply me with the original or a copy of your documentation, which I will keep on file. Only students with approved documentation can be given an excused absence.

Computer/Cell Phone Use in Class

If students are expected to send or receive urgent e-mails, texts, or calls during class, their unanticipated and urgent needs should be communicated to and approved by the instructor prior to class. All cell phones should be turned off or in silent mode. All computing devices should be used only for the purpose of class-related activities.

Academic Integrity

All Rutgers students should review and adhere to the University principles of academic integrity, available at: <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers/>
APA Citation Style. All papers MUST be written using the APA style (6 ed.).

Student Resources

For more information visit: <https://gsapp.rutgers.edu/current-students/important-links>

Accommodations due to Disability

If you seek accommodations due to a documented disability, you may arrange for these through the Office of Disability Services, Kreeger Learning Center, 151 College Avenue; dfoffice@rci.rutgers.edu or you can visit:

<https://ods.rutgers.edu/students/documentation-guidelines>.

Title IX: <http://compliance.rutgers.edu/resources/resources-for-facultystaff/>

Counseling services. Students often experience personal problems or difficulties during the term that may interfere with learning and their daily activities. If you or someone you know needs to talk to someone regarding such personal issues, the University provides free counseling services through the Counseling and Psychological Services (CAPS) and their information can be found at: <http://psychologicalservices.rutgers.edu>. They also offer a number of useful workshops for general stress management and techniques for promoting mental health. If you have any questions about CAPS or other services, I am happy to speak with you privately.