
Behavioral Neuroscience
Psychology 262 (CRN 35659)
Tue/Thu 9:30am – 10:45am
Lecture Center D1

Instructor: Eric W. Gobel, Ph.D.
Email: egobel@uic.edu
Office: BSB 2056C

Office Hours: Tue 11am-12pm
Wed 4pm – 5pm
or by appointment

Please include “262” in the subject line of any course-related emails

Teaching Assistants

Leslie Horn-Amodeo
Email: lhorn3@uic.edu
Office Hours: by appointment in BSB 1051

Joe Arthurs
Email: jarthu2@uic.edu
Office Hours: by appointment in BSB 1051

Course Description

“Research and theories concerning the physiological bases of behavior. Understanding of basic brain organization with emphasis on neural substrates of learning, motivation, and perception.” 3 credit hours [UIC Course Catalog]. Students will take an online quiz and four exams covering the content of the course, write two short blog entries and comment on the entries of other students, and actively participate during lecture (using iClicker2 technology).

Prerequisite: PSCH 100. It is also highly recommended that students have some background in biology.

Course Objectives

Students will be able to:

Content Learning Objectives

- define common terms and explain the general approaches to relating brain and behavior
- describe and explain the significance of the historical foundations of research in brain and behavior
- identify the structures and regions of the nervous system, especially the brain, and characterize their function (functional neuroanatomy)
- describe the cellular anatomy of the nervous system, and explain the basics of neuronal structure and how communication takes place within and between neurons
- differentiate among the various families of neurotransmitters, describe common neurotransmitter systems, and explain how various drugs that act upon specific systems
- describe the methods and major techniques of cognitive and behavioral neuroscience research
- describe the processes that occur during neural development and how disruption of these processes can lead to developmental disorders

- describe principles of sensation and perception, especially transduction, neural pathways, processing (information coding), development, and neuropsychology of the visual system
- briefly explain how cortical and subcortical regions of the brain and spinal cord control movement and how movement disorders arise from dysfunction in specific regions
- compare and contrast the characteristics of different types of memory and how different brain structures and regions support them (e.g., illustrate the taxonomy of learning and memory)
- describe commonly studied molecular mechanisms of information storage as specific brain regions demonstrate synaptic plasticity during different types of learning
- describe the changes in learning and memory function and underlying neural development during healthy aging and disease
- describe the role of reinforcement learning and its neural substrates in addiction
- explain the numerous effects of emotion and stress on cognition and behavior, especially emotional learning and memory
- describe the biological basis of various neurological and psychiatric disorders and mental illnesses

Skill Learning Objectives

- determine the location and cause of brain damage or neuropathology, given the impaired and preserved abilities of a neurological patient, and vice versa
- understand, summarize, critically evaluate, and relate to society and everyday life the findings from research in the neuroscience of behavior, as reported in both the popular press and academic journals
- relate an article in the popular media to an understanding of the neuroscience of behavior
- discuss the contribution of various brain processes to everyday behavior

Materials

Required Textbook

Watson, N. V., & Breedlove, S. M. (2012). *The mind's machine: Foundations of brain and behavior*. Sunderland, MA: Sinauer Associates. ISBN: 978-0-87893-933-6 (paperback), 978-0-87893-904-6 (looseleaf), 978-0-87893-877-3 (e-book)

Note: The first chapter is viewable online: <http://www.coursesmart.com/9780878939336/chap01>
The entire e-textbook can be purchased using this link:

http://www.coursesmart.com/IR/4690877/9780878939336?_hdv=6.8

Textbook Website

Your textbook has a companion website at <http://www.mindsmachine.com>, which includes many helpful and interesting resources. You are encouraged to explore this site.

iClicker2

An **iClicker2 remote (ISBN: 1429280476)** is required for in-class participation in this course. If you do not already have one from a previous course, you may purchase the remote through the bookstore or online at <http://iclicker.com/purchase/>. Instructions for using the iClicker2 are on

the back of the remote. The iClicker2 technology is a response system that allows you to respond to questions posed during class, and you will be graded on that feedback and/or your in-class participation. *Note: the original iClicker and iClicker+ remotes will work for multiple-choice responses, but an iClicker2 remote is highly recommended.*

In order to receive this credit, you will need to **register your iClicker2 remote on Blackboard within the first two weeks of class (by Friday, September 6th)**. To do this, simply find the iClicker Registration Module on the course Blackboard home page, type your remote ID in the text box, and click the Register button (alternatively, you can go to Tools > iClicker Remote Registration, which also includes instructions for finding your remote ID). The remote ID is the series of numbers / letters found on the bottom of the back of your iClicker2 remote. While you can register at any time, you must have come to class at least once and voted on at least one question in order to complete the registration process.

To ensure that you earn your participation points, be sure to bring your working iClicker2 remote with you to every class session. It will be used every day in class, and you are responsible for bringing your remote daily. If you need technical support for iClicker or iClicker2, please contact (866) 209-5698 or support@iclicker.com from 9AM-11PM EST, M-F. The iClicker website (www.iclicker.com) also has support documentation, video tutorials, and FAQs for students.

Course Website

The Blackboard course website found at <http://blackboard.uic.edu/> contains important course information and documents (including lecture slides in pdf format, additional required readings, and helpful resources) and will be used for electronic submission of assignments.

Microsoft Office Software

This course may require you to complete assignments using software in the Microsoft Office suite, such as Word, Excel, and/or PowerPoint. The on-campus computer labs will have this software, but UIC students can obtain a personal copy of Microsoft Office from the ACCC at no cost.

- Windows: <https://webstore.illinois.edu/Shop/product.aspx?zpid=1532>
- Mac: <https://webstore.illinois.edu/Shop/product.aspx?zpid=1533>

Assessment

Course Requirements

You will be required to take an online quiz and four exams covering the content of the course, write two short blog entries and comment on the entries of other students, and actively participate during lecture (using iClicker2 technology):

1. The **four exams** will consist of a mixture of multiple-choice, short answer, and short essay (requiring answers of several sentences in length) questions. The exams are not formally cumulative, but you must master concepts from earlier in the course in order to understand later material. The exam dates are **September 17, October 10, November 5** (all during class time), and **December 11 at 10:30am**.

2. The **online quiz** will focus on neuroanatomy (both cellular and gross neuroanatomy), which you must master in order to understand the material in the remainder of the course. In addition, this will help to prepare you for the first exam. You will complete this quiz online (via Blackboard) with a time limit. It is due on **September 11 at 11:59pm**.
3. The **two blog entries** are informal writing assignments that you will share, via the blogging tool on Blackboard, with the other students in the course (note that you must also upload your blog entries to Blackboard via SafeAssign as a Microsoft Word document). You will then be required to read the posts of your peers and comment on at least five other blog entries for each assignment. More information about each blogging assignment will be distributed at a later date and available on Blackboard.
 - a. The **Brain and Behavior in the Online Media (BBOM) blog entry assignment** requires you to find an online article in the popular press that describes research relating brain structure or function and behavior, which you will then summarize, critically evaluate, and relate to course material and society.
 - b. The **Brain and Behavior Article Critique (BBAC) blog entry assignment** requires you to find an empirical article in a peer-reviewed journal that describes research relating brain structure or function and behavior. You will then summarize and critically evaluate the article, discuss the implications of its findings, and relate the article to concepts from class, in a writing style appropriate for an educated non-scientist.
4. Finally, we will be using iClicker2 technology for active class participation in lecture. **Therefore, be sure to bring your iClicker2 with you to every class session.** Using the iClicker2 to participate in class will earn you **participation points**. To maximize your **performance points**, you should do the assigned reading *before* the corresponding lecture and *pay active attention* during class.
 - a. For each graded iClicker class session, you will receive up to 10 points from answering 2-5 questions. For each question that you answer correctly, you will earn one performance point, and the remainder of the 10 points will come from active participation.
 - b. Of a total of 20 graded iClicker class sessions, your top 15 will count toward your grade; the remaining 5 lowest scores will be dropped. Note that these drops are primarily intended for days that you don't do as well on your performance points (thus maximizing your grade), but can be applied to days on which you absolutely must miss class or if you forgot your iClicker2 remote for that day.

Point Allocation

Four Exams (4 x 15%)	60%
Online Quiz	5%
BBOM Blog Entry & Comments	10%
BBAC Blog Entry & Comments	10%
Class Participation (iClicker2)	15%

Grading Scale

The grading scale shown below will be used; however, a curve *may* be implemented that decreases the lower threshold for achieving the corresponding letter grade. In other words, if a curve is applied it would only improve the letter grade you receive. However, do not assume a curve as it is not obligatory and cannot be determined until the end of the semester.

Letter Grade	A	B	C	D	F
Minimum Percentage	90	80	70	60	0

Course Policies

Expectations

- You will show up on time to every class session with your iClicker2 remote and participate in class
- You will be respectful of your classmates, the instructor, and the TAs
- You will complete reading assignments prior to the corresponding class session
- You will submit all assignments on time
- You will read all course emails thoroughly
- You will not have side conversations during lecture
- You will not use your phone or computer for non-course-related activities during class
- All writing which you submit will be written clearly, be grammatically correct, and follow APA format and style (when applicable)

Appropriate Classroom Behavior

College students are adults and I will grant you the respect that comes with that. Therefore, please behave like adults (at least during class) and follow these guidelines about appropriate classroom behavior. Appropriate classroom behavior is simply a matter of ***respecting the rights of others*** in class (instructors, TAs, and other students) and ***maximizing your own learning***.

Please refrain from using your cell phone during class except in extraordinary circumstances. The use of laptops or tablets for course-related purposes is perfectly fine, but please refrain from non-course-related activities during class. Minimize talking with other students in the course during class, except when directed to discuss as part of the course. Research has shown that distracting yourself by multitasking during class impairs your performance, and it may be disruptive or distracting to other students and is disrespectful to the instructor and TAs. Disruptive behavior may result in you being asked to leave the room so that you are not interfering with the learning of other students. It likely goes without saying, but during discussion, please respect others and their opinions, and refrain from discriminatory or hateful speech.

Attendance Policy

It is the student's responsibility to attend ALL class sessions ON TIME, out of respect to your classmates, your instructor, and yourself. We will begin class promptly at the course start time. ***Participation points will be earned during class sessions, so attendance (and participation) will***

have a direct effect on your course grade. In addition, your learning and performance in the course will also be maximized through your regular attendance.

Policy on Late Assignments

It is expected that all assignments will be fully completed and turned in on time. Late assignments will not be accepted.

Disability Services

“Concerning disabled students, the University of Illinois at Chicago is committed to maintaining a barrier-free environment so that individuals with disabilities can fully access programs, courses, services, and activities at UIC. Students with disabilities who require accommodations for full access and participation in UIC Programs must be registered with the Disability Resource Center (DRC). Please contact DRC at (312) 413-2183 (voice) or (312) 413- 0123 (TDD).”

If you require accommodations due to a documented disability, please bring a letter from the DRC documenting the necessary accommodations as soon as possible, preferably by the end of the second week (Friday, September 6th).

Religious Holidays

I have tried to assure that no major assignment due dates or exams fall on major religious holidays. However, if there is a conflict with a religious holiday that you observe, please let me know by Friday, September 6th and an appropriate accommodation will be made (note that you can always submit an assignment early).

Additional Information and Resources

APA Style

Papers in psychology must be written in APA (American Psychological Association) format. ***You are responsible for following APA style and citation format in all your writing assignments for this course, when applicable.*** The most complete resource for APA style is the Publication Manual of the APA, but Purdue’s Online Writing Lab (OWL) is an excellent, concise, and free online reference documenting APA style:

<http://owl.english.purdue.edu/owl/section/2/10/>

Writing Center

Tutors at the writing center can help you to organize and edit your writing. All students are welcome and encouraged to make an appointment to improve their writing. The optimum use is to visit the Writing Center while preparing your draft of a writing assignment and to make several visits. More information can be found at <http://www.uic.edu/depts/engl/writing/about/>

Psi Chi Tutoring

Students in UIC’s Psi Chi chapter with expertise in various psychology courses hold office hours throughout the week. The tutoring schedule is usually established a few weeks into the semester, and the relevant information will be posted on Blackboard as it becomes available.

Important Course Registration Deadlines

The deadline to add or drop a course without a W is the end of the 2nd week (Friday, September 6th). The deadline to withdraw from the course is the end of the 10th week (Friday, November 1st).

Academic Honesty and Plagiarism

All work should be your own. You are allowed, and even encouraged, to seek feedback from others, but all the writing you submit should be your own. Plagiarism is representing the words or ideas of others as your own, without crediting the source, and thus also includes copying or paraphrasing from your classmates or papers on the Internet. Writing assignments will be submitted electronically via SafeAssign to automatically screen for potentially plagiarized material and ensure academic honesty.

Familiarize yourself with violations of academic honesty and the student disciplinary policy at <http://www.uic.edu/depts/dos/studentconduct.html>. Some FAQ's about crediting others and avoiding plagiarism are available at http://tigger.uic.edu/~edelberg/crediting_others/index.htm.

Guidelines Regarding Academic Integrity

from the UIC Undergraduate Catalog (<http://www.uic.edu/ucatalog/GR.shtml>):

As an academic community, the University of Illinois at Chicago is committed to providing an environment in which research, learning, and scholarship can flourish and in which all endeavors are guided by academic and professional integrity. All members of the campus community—students, staff, faculty, administrators—share the responsibility of insuring that these standards are upheld so that such an environment exists. Instances of academic misconduct by students, and as defined herein, shall be handled pursuant to the *Student Disciplinary Policy*.

Academic dishonesty includes, but is not limited to:

- **Cheating:** Either intentionally using or attempting to use unauthorized materials, information, people, or study aids in any academic exercise, or extending to or receiving any kind of unauthorized assistance on any examination or assignment to or from another person.
- **Fabrication:** Knowing or unauthorized falsification, reproduction, lack of attribution, or invention of any information or citation in an academic exercise.
- **Facilitating Academic Dishonesty/Plagiarism:** Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.
- **Bribes, Favors, Threats:** Bribing or attempting to bribe, promising favors to or making threats against, any person, with the intention of affecting a record of a grade, grade, or evaluation of academic performance. Any conspiracy with another person who then takes or attempts to take action on behalf or at the direction of the student.
- **Examination by Proxy:** Taking or attempting to take an exam for someone else other than the student is a violation by both the student enrolled in the course and the proxy or substitute.
- **Grade Tampering:** Any unauthorized attempt to change, actual change of, or alteration of grades or any tampering with grades.
- **Nonoriginal Works:** Submission or attempt to submit any written work authored, in whole or part, by someone other than the student.

Tentative Course Schedule

Note that you should complete each reading assignment *prior* to the corresponding class session. *This schedule is subject to revision; any revisions will be announced and posted on Blackboard.*

Week	Day	Date	Topic Num	Topic	Reading or Assignment due
1	Tue	27-Aug	1	Course Introduction	
	Thu	29-Aug	2	Biological Psychology: Brain and Behavior	WB Ch. 1
	Tue	3-Sep	3	Gross Neuroanatomy	WB Ch. 2 (p. 29-42)
2	Thu	5-Sep	4	Cellular Neuroanatomy	WB Ch. 2 (p. 20-25, 27-29)
	Tue	10-Sep	5	Electrophysiology of the Neuron	WB Ch. 3 (p. 48-64)
3	Wed	11-Sep	-	Online Quiz due Wed 11:59pm	
	Thu	12-Sep	6	Synaptic Neurophysiology	WB Ch. 3 (p. 64-69)
	Tue	17-Sep	-	EXAM I (Topics 1-6)	
4	Thu	19-Sep	7	Neurotransmitters	WB Ch. 4 (p. 76-85)
	Tue	24-Sep	8	Neuropharmacology / Drugs	WB Ch. 4 (p. 85-99)
5	Thu	26-Sep	9	Research Methods of Biological Psychology	WB Ch. 2, 3 (p. 26, 42-47, 69-74), Appendix
	Mon	30-Sep	-	BBOM Blog Entry due Mon 11:59pm	
6	Tue	1-Oct	10	Neural Development and Disorders	WB Ch. 13 (p. 380-387)
	Thu	3-Oct	11	Principles of Sensory Processing and Plasticity	WB Ch. 5 (p. 106-117)
	Tue	8-Oct	12	The Eye and Retina	WB Ch. 7 (p. 168-180)
7	Thu	10-Oct	-	EXAM II (Topics 7-12)	
	Tue	15-Oct	13	Visual Pathways and Neuropsychology	WB Ch. 7 (p. 196-201)
8	Thu	17-Oct	14	Information Coding in the Visual System	WB Ch. 7 (p. 180-196)
	Mon	21-Oct	-	BBOM Blog Comments due Mon 11:59pm	
	Tue	22-Oct	15	Postnatal Visual Development	WB Ch. 13 (p. 387-390), Supp Reading 1
	Thu	24-Oct	16	Motor Control	WB Ch. 5 (p. 122-139)
10	Tue	29-Oct	17	Movement Disorders	Supp Reading 2
	Thu	31-Oct	18	Memory Systems: The Hunt for the Engram	WB Ch. 13 (p. 354-369)
11	Tue	5-Nov	-	EXAM III (Topics 13-18)	
	Thu	7-Nov	19	TA Guest Lectures	T.B.D.
	Tue	12-Nov	-	NO CLASS - SOCIETY FOR NEUROSCIENCE	
12	Thu	14-Nov	-	NO CLASS - SOCIETY FOR NEUROSCIENCE	
	Mon	18-Nov	-	BBAC Blog Entry due Mon 11:59pm	
13	Tue	19-Nov	20	Neural and Molecular Mechanisms of Memory	WB Ch. 13 (p. 370-379)
	Thu	21-Nov	21	Memory in Aging and Disease	WB Ch. 13 (p. 390-393)
	Tue	26-Nov	22	Reinforcement Learning and Addiction	WB Ch. 4 (p. 100-105), Supp Reading 3
	Thu	28-Nov	-	NO CLASS - THANKSGIVING	
	Tue	3-Dec	23	Emotion and Stress	WB Ch. 11 (p. 300-306, 311-316, 319-325)
15	Thu	5-Dec	24	Emotional Learning and Memory	WB Ch. 11, 12, 13 (p. 312-314, 347-348, 367)
	Fri	6-Dec	-	BBAC Blog Comments due Fri 11:59pm	
FIN	Wed	11-Dec	10:30am	EXAM IV (Topics 19-24)	