**NS101: Fall 2023 (4 credits)**

**Introduction to Neuroscience: Mind and Behavior**

**Instructor**

Name: Christopher G. Vecsey

Office: Bolton 252 (in Gannett Atrium) + virtual office in Zoom (will provide meeting ID#)

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***Office hours:*** Mondays, 9:30-10:30am + Wednesdays, 2:30-3:30pm + By Appointment. See announcement on our course website at [thespring.skidmore.edu](http://thespring.skidmore.edu/) for more information about office hours.

**Class Meetings**

***Lecture/Discussion:*** Tuesday/Thursday – 9:40-11:00 AM, Emerson Auditorium in Palamountain

***Lab:*** Thursday – 12:40-2:40 PM, Tisch 100

I am expecting that all lecture/lab meetings will be **in-person**, but if we do need to meet over Zoom for a particular class meeting, please see the announcements for our course website at [thespring.skidmore.edu](http://thespring.skidmore.edu/) for information about the Zoom meeting ID to use. Please make sure that you are able to access meetings in Zoom prior to the first day of class – if your computer is having difficulty with this, please reach out to Information Technology (IT) at Skidmore at this e-mail address: [helpdesk@skidmore.edu](mailto:helpdesk@skidmore.edu) and please also let me know.

**Prerequisites**

None! But note that we will be covering topics that build off of basic cell and molecular biology, genetics, chemistry, and physics. If you haven’t thought about these topics in a while, it may be helpful to review.

**Course Summary**

If you’ve ever wondered what’s happening in that head of yours, this is the course for you! We will provide an introduction to neuroscience, which is the study of the nervous system and its role in mental processing and behavior, from a biological perspective. Because the human brain is (to our knowledge) the most complex structure in existence, we won’t be covering every aspect of how it works! Instead, we will start with some key fundamentals: the structure and organization of the nervous system, the structure of individual neurons, how they communicate with each other and with the rest of the body, and the methods that can be used to study brain function.

Then we will apply that basic information to big questions about the roles of the nervous system, such as: How do we sense the world around us? How do we learn and remember new information? What’s happening in the brain when we’re asleep? How do different neurological disorders affect the function of the nervous system? Although we have learned a lot about how the nervous system works, you will gain an appreciation of how many different disciplines and methods need to be applied to any one of these questions in order to study it comprehensively, and how much there is still to be discovered. This is truly an exciting time to study neuroscience!

**Course Components**

This course includes both “lecture” and “lab” components. The content of the lecture/discussion and lab components of the class will be different, but will also overlap substantially and will complement each other for a more complete understanding of nervous system function. Participation is going to be a key part of the course, and the first step to participating is attending class and lab meetings.

In some cases, lectures may be pre-recorded and posted on our course website on *theSpring*. In these cases, it is expected that you will watch that lecture prior to the class when that assignment is due. Pre-viewing these lectures will be critical so that you can engage in discussion and activities during class.

Based on the belief that with effective communication comes greater understanding, this course will incorporate several forms of scientific communication. In general, assignments will be aimed to challenge you to think more deeply about the course material, and extend your understanding beyond what was covered directly in class.

**Required Textbook:** Breedlove, S. M., & Watson, N. V. (2023). *Behavioral Neuroscience* (Tenth Edition). Sinauer Assoc., Inc.: Sunderland, MA.

**Lab Manuals:** Will be available on *theSpring*. Printed manual copies will be available during lab times.

**Supplementary Readings:** Will be available on *theSpring*. Some assignments may change, as new readings of interest may be published during the semester.

NOTE: It is expected that readings and viewing of pre-recorded lectures will be done **BEFORE** the corresponding day of lecture. See the learning guidelines posted on *theSpring* for more info about how to engage with the readings most effectively.

**Course Goals**

1. **Students should learn about…**
   1. How the brain is organized
   2. How neurons work, alone and in brain circuits, to guide behavior
   3. What determines the functions that a given neuron will have
   4. Methods that can be used to answer questions about the nervous system
2. **Improve your ability to…**
   1. Extract major concepts from complex material
   2. Read graphs/charts and interpret data, integrating various forms of information
   3. Communicate about scientific concepts verbally and through writing
   4. Interact productively with classmates, teaching assistants, and instructors virtually
3. **Challenge yourself…**
   1. To engage with the material and enjoy the learning process!
   2. To tackle tough issues and ask questions you had never imagined before
   3. To be willing to change the way you view the roles of the nervous system
   4. To apply info from the course to other contexts or disciplines, including developing an

appreciation for how neuroscience is relevant in modern society and in your life

**Assessments**

**Reading Responses:** These written responses to readings for the lecture portion of the course will follow a particular format, which will be laid out in guide documents uploaded to *theSpring*. The goals of the reading responses are to help keep you up-to-date on the readings and to help you extract key information from them that will then be at your disposal during class to make you feel more prepared to take part in discussion. These will be graded out of a 0-3 point scale, where 3 is excellent, 2 is average, 1 is poor, and 0 is incomplete or not turned in at all.

NOTE 1: Although graded out of a max of 3 points each, the reading responses as a whole are an important part of your overall grade, together counting for 10%, the same as one in-class exam!

NOTE 2: The lowest grade for **1** of the normal reading response assignments will be dropped.

**Other Small Assignments:** There will be multiple short in-class writing assignments. The purposes of these will be: (1) to find out what you already know about some of the topics we will be covering in the course, (2) to get you thinking about how to put your knowledge about neuroscience into words, and (3) to serve as a baseline to which you will be able to compare your understanding of the same concepts by the end of the course. These will be graded as 1 or 0, based on completion, not based on your actual understanding of the concepts. Due to their nature, minimal feedback will be given on these writing assignments. If you are not in class due to an unexcused absence, you will not be able to make up these writing assignments. Lastly, you will be completing a sleep journal over a 2-week period prior to our in-class discussion of sleep. This will be graded from 0-3 as for the reading responses, based on effort, on-time completion, and on how well you followed guidelines for formatting your entries.

**Exams:** There will be two 50-minute exams, and a cumulative final exam during finals week (see schedule). These will be closed-book, closed-notes. They will consist of some combination of the following: short answer, identification, essay questions, and multiple-choice questions. Questions will be drawn from the assigned readings and videos, lectures, and class discussions. The second of those exams will technically be non-cumulative, but will draw from concepts from throughout the previous material. The final exam will include a section focused on the last third of the course, and will also include a section on big-picture concepts from throughout the course. You will have 2 hours to complete the final exam. If you struggle with certain material on the first test, make sure to figure out what went wrong before the next test.

**Grading**

|  |  |
| --- | --- |
| Two in-Class Exams (10% for each) | 20% |
| Final Exam | 17% |
| Reading Responses | 10% |
| Assorted Small Assignments | 3% |
| Participation in lecture and lab | 10% |
| Laboratory Work (see lab syllabus for breakdown) | 40% |

***“If the human brain were simple enough for us to understand,***

***we would be too simple to understand it”***

-Attributed to a pharmaceutical scientist in Peter D. Kramer’s book *Listening to Prozac* (1994)

**Course Learning Policies**

***Classroom Inclusiveness*:**

I am committed to creating an inclusive and accessible classroom for all students. I welcome you all as individuals and am excited for you to share your diverse perspectives with the rest of the class. Please see your instructor as soon as possible if there is anything you would like to discuss about your personal experience as it relates to your work in this course.

***Academic Integrity*:**

You are expected to fully abide by **Skidmore’s Honor Code** as described in the Academic Integrity Handbook. Carefully review the information presented at the following links:

<https://www.skidmore.edu/student_handbook/honor-code.php>

<https://www.skidmore.edu/advising/integrity/index.php>

I take academic integrity very seriously. If there is evidence of cheating on any assignment or examination, or of plagiarism in your writing, you will be subject to an appropriate consequence, which could range from having to repeat the assignment to failing the course. The Skidmore Guide to Writing defines plagiarism as:

*“Presenting as one's own the work of another person (for example, the words, ideas, information, data, evidence, organizing principles, or style of presentation of someone else). Plagiarism includes paraphrasing or summarizing without acknowledgment, submission of another student's work as one's own, the purchase of prepared research or completed papers or projects, and the unacknowledged use of research or completed papers or projects, and the unacknowledged use of research sources gathered by someone else. Failure to indicate accurately the extent and precise nature of one's reliance on other sources is also a form of plagiarism. The student is responsible for understanding the legitimate use of sources, the appropriate ways of acknowledging his or her academic, scholarly, or creative indebtedness, and the consequences for violating the Skidmore Honor Code. The Academic Integrity Board and the Board of Review will not regard claims of ignorance, of unintentional error, and of academic or personal pressures as an adequate defense for violations of the Honor Code (Skidmore Guide to Writing/Documentation and Plagiarism).”*

To be as clear as possible, any written work that is handed in should be entirely in your own words. Assume that all assignments are to be completed individually unless I explicitly instruct you to turn in an assignment as a group. All sources of information should be cited appropriately. We will talk about how to do this during the course, but if you have ANY questions about acknowledging sources, consult the Skidmore College Honor Code, and if that doesn’t help, ask me BEFORE turning in your assignment.

* Make-up exams will only be given in EXCEPTIONAL cases (serious illness, emergency, etc.). Be aware that make-ups are typically more difficult and may be in the form of an all-essay exam. If a conflict arises that prevents the timely submission of an assignment, it is your responsibility to inform me of this immediately. I am not a heartless troll and will try to be flexible in reasonable situations, but do not wait until the last minute to tell me that you need an extension! If you notice a potential schedule conflict (exams in 3 different courses on the same day, e.g.) now, please inform me immediately so we can plan ahead.
* If you should miss class for any reason it is *your* responsibility to obtain notes, assignments, and/or announcements from one of your classmates. Missed in-class writing assignments cannot be made up.

***For a thorough guide on how to take responsibility for your learning, please see the Learning Guidelines document posted on theSpring!***

***Accommodating Students with Disabilities and Providing Accessibility:***

Skidmore College is committed to supporting the learning needs of all students in our diverse community. If you have a documented barrier to learning or think you may have a disability, please consult with Meg Hegener, Associate Director of SAS and Coordinator of Student Access Services ([mhegener@skidmore.edu](mailto:mhegener@skidmore.edu)). Accommodations are approved by the coordinator following a review of students’ documentation. If you are approved for academic accommodations, please provide your letter of accommodations to me early in the semester or as soon as you are approved so that we can proactively coordinate implementation. Academic accommodations based on disability cannot be granted by individual faculty. For further information, please call (518) 580-8150 to contact Student Academic Services in Starbuck Center.

***Title IX Statement and Reporting Responsibilities*:**

Skidmore College considers sexual and gender-based misconduct to be one of the most serious violations of the values and standards of the College. Unwelcome sexual contact of any form is a violation of students’ personal integrity and their right to a safe environment and therefore violates Skidmore’s values. Sexual and gender-based misconduct is also prohibited by federal and state regulations. Skidmore College faculty are committed to supporting our students and upholding gender equity laws as outlined by Title IX. If a student chooses to confide in a member of Skidmore’s faculty or staff regarding an issue of sexual or gender-based misconduct, that faculty or staff member is obligated to tell Skidmore’s Title IX Coordinator or Title IX Deputy Coordinator. The Title IX Coordinator or Deputy Coordinator will assist the student in connecting with all possible resources for support and options for reporting both on and off campus. Identities and details will be shared only with those who need to know to support the student and to address the situation through the college’s processes. If the student wishes to confide in a confidential resource, the Counseling Center Staff, Health Services, and Victim Advocates (anonymous) are all options available.

More information can be found at the Sexual and Gender-Based Misconduct [website](https://www.skidmore.edu/sgbm/) or by contacting the Title IX Coordinator, Joel Aure ([jaure@skidmore.edu](mailto:jaure@skidmore.edu)), 580-5708.

***Conscientious Religious Observance Policy*:**

Skidmore College acknowledges that our community is one of many faiths with a diverse range of practices and observances important to each tradition. In order to fulfill our mission to educate a diverse population of talented students and our commitment to inclusion regardless of religious and spiritual tradition, we seek to practice an equitable and consistent approach in providing religious accommodations. If religious observance requires absence from class or you anticipate a conflict with assignments or due dates, please notify your instructor **prior** to the absence or conflict so that accommodations can be arranged. Although not required, please provide notification about a pending religious holiday at the start of the semester or at least one week before the holiday. As an option, you may use the form available at [www.skidmore.edu/religious-life/calendar.php](http://www.skidmore.edu/religious-life/calendar.php) [or [here](https://www.skidmore.edu/religious-life/CROformSummer2020.pdf)].

Accommodations for your absence should not reduce the overall expectations of a course nor unduly burden you for requesting accommodation. Students shall not suffer academic, athletic, or employment penalties because of the conscientious observance of any religious day or days. Faculty must permit students to take a makeup examination without any penalty if they have to miss an examination due to religious observances. Similarly, faculty must permit students to submit missed assignments by an agreed upon due date, without penalty.

If a student, supervisor, coach, or faculty member feels the policy is being violated, they should contact the Dean of Faculty Office at 518-580-5705 (Palamountain 416), the Dean of Students Office at 518-580-5760 (Case Center 313), or Human Resources at 518-580-5800 (Barrett Center first floor). The full policy can be found at <https://www.skidmore.edu/religious-life/calendar.php>.

***COVID-19 Policies*:**

Skidmore College is committed to the health and safety of all members of our community and has implemented protocols based on recommendations from the Center for Disease Control (CDC), New York State Department of Health, and Saratoga County Department of Health. The College expects all members of the community to adhere to the College’s COVID-19 health and safety guidelines at all times. Please be aware of the guidelines posted on the College’s website and note the differences between Yellow Alert Status (substantial/high transmission levels), and Green Alert Status (low-to-moderate transmission levels): <https://www.skidmore.edu/campus-planning/status-levels.php>.

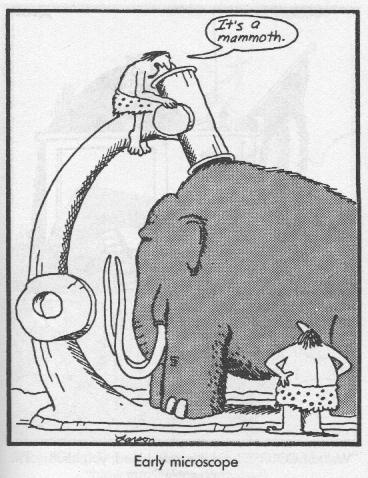
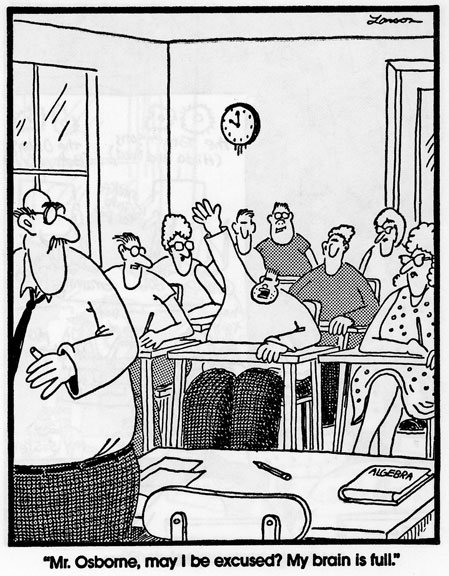
Masking:

To start this semester, due to Green Alert Status, masking will be supported but optional in class. Regardless of campus-wide policy, the instructor reserves the right to request masking, so please make sure you have a mask with you at all times. If you are asked to wear a mask, you are responsible for wearing it appropriately, and failure to do so may result in being asked to leave the classroom. Behavior that is inconsistent with these requirements may be reported and adjudicated through the student conduct process as alleged violations of the Failure to Comply policy, the Health and Safety policy, or other relevant items in the [Code of Social Conduct](https://www.skidmore.edu/student_handbook/index.php).

**Schedule as of 8/26/2023**

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| **Week of…** | **Topics** | **Assignments (items are due on the date listed)** |
| Sept 5  Sept 7 | **Tues –** No class!  **Thurs -** Introductory Class – Syllabus Walkthrough + What IS neuroscience? | ***Tues -*** *No Assignments*  ***Thurs -*** *Explore course site on* theSpring |
| Sept 12  Sept 14 | **Tues** **-** A little history and the many flavors of modern neuroscience  **Thurs -** What’s IN a brain?  Cell biology review + Discussion of Supplemental Reading | ***Tues -*** *Procure Breedlove textbook, 9th ed. + read Breedlove, Ch. 1 [Reading Response due]*  ***Thurs -*** *Breedlove, Ch. 2 + read Kandel & Squire – Breaking Down Barriers [Reading Response due]* |
| Sept 19  Sept 21 | **Tues -** How do neurons work?  Part I: Ions & channels & pumps, oh my!  **Thurs -** How do neurons work?  Part II: The Action Potential | ***Tues -*** *Breedlove, Ch. 3, pp. 67-74*  ***Thurs -*** *Breedlove, Ch. 3, pp. 74-81 + Ch. 8, p. 260-263. + read article + watch video about Ashlyn Blocker [1 single Reading Response due]* |
| Sept 26  Sept 28 | **Tues -** How do neurons work?  Part III: Synaptic Transmission  **Thurs -** Neurotransmitter Systems | ***Tues –*** *Breedlove, Ch. 3, pp. 81-95*  ***Thurs -*** *Breedlove, Ch. 4, pp. 103-111* |
| Oct 3  Oct 5 | **Tues - Review for EXAM 1**  **Thurs - EXAM 1 in class** – Chris away at conference… Prof. Schnieder will proctor | ***Tues -*** *Class will be open for informal review – we will discuss this in more detail as the date approaches*  ***Thurs -*** *Study for exam!* |
| Oct 10  Oct 12 | **Tues -** Neuropharmacology – how do drugs (legal and illegal) affect neural signaling?  **Thurs -** Hormone Systems: Part I | ***Tues -*** *Breedlove, Ch. 4, pp. 112-144*  ***Thurs -*** *Breedlove, Ch. 5, pp. 145-172* |
| Oct 17  Oct 19 | **Tues -** Hormone Systems: Part II  **Thurs -** Sensation: General Themes | ***Tues –*** *read Breedlove, Ch. 7, p. 232-234 + read Behavioral Epigenetics Article [Reading Response due]*  ***Thurs -*** *Breedlove, Ch. 8, pp. 243-259 + read Disembodied Lady Case Study [Reading Response Due]* |
| Oct 24  Oct 26 | **Tues -** Sensation: A “Focus” on Vision, Part I – the retina  **Thurs –** Sensation: A “Focus” on Vision, Part II – from the retina to the cortex | ***Tues -*** *Breedlove, Ch. 10, pp. 315-324*  ***Thurs –*** *Breedlove, Ch. 10, pp. 324-343*  *Will hand out Sleep Journal here – due Nov 9!* |
| Oct 31  Nov 2 | **Tues –** Sensation: A “Focus” on Vision, Part III – face perception  **Thurs –** Wrap-Up and Review for EXAM 2 | ***Tues –*** *Breedlove, Ch. 10, pp. 343-345 + Ch. 19, pp. 646-648 + read A Face to Remember Article [Reading Response due]*  ***Thurs –*** *Class will be open for informal review – we will discuss this in more detail as the date approaches* |
| Nov 7  Nov 9 | **Tues – EXAM 2 in class**  **Thurs –** Learning & Memory: Part I | ***Tues –*** *Study for exam!*  ***Thurs –*** *Breedlove, Ch. 17, pp. 565-583 + [Sleep Journal Due via E-mail]* |
| Nov 14  Nov 16 | **Tues –** Learning & Memory: Part II  **Thurs –** Sleep: Part I | ***Tues –*** *Breedlove, Ch. 17, pp. 584-600 + read Lost Mariner Case Study + watch Clive Wearing Video. [1 single Reading Response due]*  ***Thurs –*** *Breedlove, Ch. 14* |
| Nov 21  Nov 23 | **Tues –** Sleep: Part II  **Thurs –** Thanksgiving – No Class! | ***Tues –*** *Read Ortega article about social bias in poor sleep [Reading Response due]*  ***Thurs –*** *No Assignments* |
| Nov 28  Nov 30 | **Tues –** Traumatic Brain Injury(TBI)  **Thurs –** Neurodegenerative Disorders | ***Tues –*** *Breedlove, Ch. 19, p.673-674 + supp. readings about concussions and TBI*  ***Thurs -*** *Breedlove, Ch. 11, pp. 378-382, Ch. 7, 236-239 + Frozen Addicts Video [Reading Response due]* |
| Dec 5  Dec 7 | **Tues –** Mental Illness Grab Bag  **Thurs –** Last class – wrap-up and student evaluations of lecture portion of course | ***Tues –*** *Breedlove, Ch. 16 & watch Thomas Insel TEDx Talk [Reading Response due]*  ***Thurs –*** *Supplemental Readings: TBA*  *Wrap-up Assignment Due* |
| Dec 12-15  Finals Week | **Final Exam – 12/12, 9am-12pm, Bolton 280** | *You will need to be available to complete final assignments for both lecture and lab. Don’t schedule winter travel until after all assignment due dates!* |

**NOTE: This schedule is tentative and subject to change**. **Please be flexible!**

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