CORNELL UNIVERSITY
BIONB 1220: Big Brain Moments : A Logical History of Neuroscience
(*An introduction to logical writing and socio-political history of neuroscience)*

COURSE SYLLABUS, FALL 2026

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I. Course Basics & Welcome

How to approach this syllabus
I aim to make this course as a community of learners. Treat this syllabus as mutually agreed upon community contract between the students and the instructor. As such, this contract can be changed to best accommodate the needs of the community. Be aware that any changes will be made only after proper discussion and feedback in the classroom, and all changes will always be in the favor of the students.

Contact Information

Instructor	Naman Agrawal, Department of Neurobiology & Behavior
Office	W249 Corson Mudd Hall
Office Hours	Mondays 12:05-1:05PM
Class Timings	Monday, Wednesday, Friday 11:15AM-12:05PM
Contact	na488@cornell.edu

Course Description and Rationale
In this course, we will journey through the history of human intrigue - about the soul, the senses, the brain and ourselves. We will survey how societal and political developments affect how we do science. Throughout this journey, we will critically examine the claims and arguments made by pivotal figures in neuroscience, aiming to understand argument structure, logic and the need for experimentation. We will also learn how to compare and summarize arguments in a jargon free manner. The ultimate learning goal of the course is to understand and explain human arguments, both with respect to their content and their context.

The primary goal of this course is to mature your skills **as a writer** through exposure to socio-political history of neuroscience and through practice in writing on these developments. Understanding how scientists have historically examined brain, and how society, politics and economics affected these observations is critical in understanding the intertwining roads of science and society. Further, understanding how scientists and philosophers have argued about the function of the brain will help us understand human arguments - their structure, their validity and their pitfalls.

Credits and Prerequisites

This is a 3-Credit Freshman Writing Course. As per the Knight Institute policies, the course can only be taken for letter grades towards fulfillment of the writing credits for Cornell's undergraduate curriculum. There are no prerequisites for taking this course.

II. Learning Goals & Materials

Learning Objectives
By completing this course, students will demonstrate **proficiency in their writing** through:

- Identification of observations/premise in an argument.
- Identification of conclusions in an argument.
- Checking the validity of an argument.
- Bolstering arguments through experimentation and results.
- Comparing and summarizing arguments in a jargon free manner.

Materials Needed for the Course
You can access the syllabus, course calendar, grades, PowerPoint files, and required readings through the course Canvas site. There is **no required textbook** for this class.

Course Content and Schedule
Please note that course material and content may be subject to change as the course progresses.

1	Aug 24, 2026	Mon	Unit 1 – The Head or the Heart	Course Introduction	Essay 1 assigned
2	Aug 26, 2026	Wed		Egyptian Thought	
3	Aug 28, 2026	Fri		Greek Society – Aristotle and Cardiocentrism	
4	Aug 31, 2026	Mon		Hippocrates and Encephalocentrism	Essay 1 first submission
5	Sep 2, 2026	Wed		Galen	
6	Sep 4, 2026	Fri		Essay 1 Peer Review	
Labor Day – No Class					
7	Sep 9, 2026	Wed	Special Unit – Experiencing the Brain	Sheep Brain Dissection	Essay 1 feedback given
8	Sep 11, 2026	Fri		Sheep Brain Dissection	
9	Sep 14, 2026	Mon		Galen's Physiology	Essay 1 final submission + Essay 2 assigned
10	Sep 16, 2026	Wed		Science and Society in 200 AD	
11	Sep 18, 2026	Fri		Peer Review	

12	Sep 21, 2026	Mon	Unit 2 - The Dark(?) Ages	Ventricular Theory of Brain function- From Avicenna to Da Vinci	Essay 2 first submission
13	Sep 23, 2026	Wed		Vesalius Questions Galen	
14	Sep 25, 2026	Fri		Peer Review	
	Sep 28, 2026	Mon		No Class	Essay 2 feedback given
15	Sep 30, 2026	Wed		Vesalius's Arguments and Introduction to Descartes	
16	Oct 2, 2026	Fri		Descartes on Free Will + Essay 2 Peer review	
17	Oct 5, 2026	Mon		Argumentative Logic	
18	Oct 7, 2026	Wed		Discussion on Optogenetics and Free Will	
Fall Break – No Class					
21	Oct 14, 2026	Wed		Willis - Cerebrum replaces the ventricles	Essay 3 assigned
22	Oct 16, 2026	Fri		Willis - Cerebrum replaces the ventricles	
23	Oct 19, 2026	Mon	Unit 3 - Cerebral Localization	Gall – Phrenological arguments	
24	Oct 21, 2026	Wed		Flourens – Correlation vs causation	Essay 3 first submission
25	Oct 23, 2026	Fri		Peer Review + Ethics of Science showmanship	
26	Oct 26, 2026	Mon		Paul Broca	
27	Oct 28, 2026	Wed		Fritsch and Hitzig – Birth of Modern Experimental Neuroscience	Essay 3 Feedback given

28	Oct 30, 2026	Fri		Fritsch and Hitzig – Animal Models in Neuroscience	
29	Nov 2, 2026	Mon	Unit 4 - Information Processing	Discovery of the Microscope - Single Neurons , Cajal and Golgi	
30	Nov 4, 2026	Wed		Evolution of the Brain - Basis for Animal models of the brain	Essay 3 Final Submission + Essay 4 assigned
31	Nov 6, 2026	Fri		Sherrington - Integrative Action of the Nervous system	
32	Nov 9, 2026	Mon		Coding in the Nervous system - Adrian	
33	Nov 11, 2026	Wed		Coding in the Nervous system - Rate Coding Lab	Essay 4 first submission
34	Nov 13, 2026	Fri		Peer Review	
35	Nov 16, 2026	Mon	SfN	Colleague teaching – Reducing Jargon in writing	
36	Nov 18, 2026	Wed	SfN	Colleague teaching – Reducing Jargon in writing	
37	Nov 20, 2026	Fri	Unit 5- Modern Neuroscience	Modern Neuroscience Action Potential of Hodgkin and Huxley	
38	Nov 23, 2026	Mon		Modern Neuroscience - Neurotransmitters	Essay 4 instructor feedback + Peer Feedback
	Nov 25, 2026	Wed		Thanksgiving Break – No Class	
	Nov 27, 2026	Fri		Thanksgiving Break – No Class	
39	Nov 30, 2026	Mon		Modern Neuroscience – Memory and Learning	
40	Dec 2, 2026	Wed		Modern Neuroscience – Large Scale Recordings	
41	Dec 4, 2026	Fri		Modern Neuroscience – Tackling the problem of Consciousness	
42	Dec 7, 2026	Mon		Modern Neuroscience – Looking Ahead : Neuroscience and Society	Essay 4 final submission

III. Assignments & Grading

Grading Rubric
The course grade will be based on the outcome of attendance, in-class participation, readings, and 5 essay assignments with the following breakdown:

Essay #1+ Resubmission	**50 points**
Essay #2 + Resubmission	**50 + 100 points**
Essay #3 + Resubmission	**50 + 100 points**
Essay #4 + Resubmission	**50 + 100 points**
Readings, Peer Reviews, Exit Tickets	**150 points**
Attendance & Participation	**50 Points**

Your final grade will be determined based on the percentage of the total points you earn according to the standard scale: A+ = 97-100%, A = 93-97%, A- = 90-93%, etc.

Writing Essays
The **4** essays you will produce in this class are the most important aspect of the course by far. As this is a writing class, the clarity of writing and the demonstration of mastery of a *particular writing style* will be as important as the actual content of the essay. A significant amount of time in and outside of class will be spent brainstorming, drafting, writing, and receiving and incorporating peer feedback into the writing you produce. The **first** essay is designed to allow you to showcase your writing abilities so far and will be graded merely on completeness. Rest you will produce will go through a review and resubmission phase. Essay specific instructions and grading details are provided with the respective Essay Assignment handout that will be distributed over the course of the semester.

In-Class Work & Homework Assignments
In order to help you prepare for your writing assignment submissions, in-class work and homework are designed to get you to think about the upcoming writing assignment prompt and to produce content that could be used in the upcoming assignment. **In-class work and homework are only graded on completeness**.

Individual Conferences
Every FWS student **is required** to schedule **two** individual conferences with their instructor during the semester. These 20-minute meetings are designed to allow the student and instructor to discuss student progress, expectations, needs, or ambitions for the class. I will maintain a record of our meeting, but **it is your responsibility** to schedule the meeting and satisfy this FWS requirement**. I will release sign-up slots to meet me.**

IV. Course Expectations & Policies

Absence and Tardiness Policy
Every class will begin promptly at 11:15AM. If you need to miss or be late for a class, you must let me know **at least two hours** before class starts with a **valid justification**. If you arrive more than 10 minutes late without providing a valid reason in advance, you will be marked absent for the day. If you miss a class, it is your responsibility to find out what material you missed from other students in the class**. *If you have more than three unexcused absences, you will be deducted half a letter grade from your final grade for each subsequent unexcused absence.***

Usage of Generative AI
This is a writing course. It would be a shame if you went through a writing course without improving your writing. However, we cannot ignore the ubiquitous presence of AI tools in an academic setting and their need in the workforce after college. Therefore, we must be strategic in our usage of AI. Here are the different uses of AI that are permitted and not permitted in this course. Keep in mind these policies apply to this course only.

1. For resource searching and collection: Allowed. But you need to verify the sources yourself.
2. For summarizing: Highly Discouraged. AI summaries tend to miss nuances and little details. Often those are important for the students to generate novel insights. You can generate summaries to help you get a grasp of the text better, but you will need to read the text yourself.
3. For idea generation: NOT ALLOWED. AI tools, by design, are trained in already available information, and as such cannot generate new ideas. This is a core skill you will learn in this and other courses in your time in Cornell, and only this skill will you give you an edge over your competitors in the job market.
4. For writing the first draft or an outline: NOT ALLOWED. All the text that goes into the page must be typed by you.
5. For revisions: Allowed*. Revision is a very important part of the writing process. You will get extensive feedback from the instructor as well as your peers. You can use GenAI to act as a sounding board for revisions, but everything you write in the essay must be typed by you. We will also do a revision reflection, in which you will highlight and defend the revision choices you made.
6. For checking grammar: Allowed, with documentation.

Technology and Electronic Devices
Much of the class will be dedicated to in-class writing and reading of peers' work; thus, laptops and/or tablets will be valuable so you can quickly and efficiently share and edit each other's work. Please feel free to bring your laptops and tablets to the class, but I will occasionally ask you to turn them off or keep them aside to engage in discussions.

Public Domain and Peer Review
All written material you submit may be shared with and read by all members of the class.

Academic Integrity
As a Cornell University student, you are held to the highest standards of academic integrity. Any deviation from this standard will not be tolerated. Academic dishonesty, plagiarism, cheating, or submitting work that is not your own will automatically result in a failing grade for the assignment and an issued report to the Cornell Academic Affairs Office. Every student should familiarize themselves with Cornell's Code of Academic Integrity (http://theuniversityfaculty.cornell.edu/academic-integrity/code-of-academic-integrity/). Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work.

V. Student Resources & Support

Mental Health Support

If you are feeling overwhelmed or are worried about a friend, please reach out. Your instructors and academic adviser are here to help, as are other resources described on the Mental Health at Cornell website. These resources include non-clinical consultation through "Let's Talk" and Student Support and Advocacy Services and professional mental health services through Counseling and Psychological Services. You can access help anytime through these 24/7 Talk & Text Resources.

Academic Concern
At Cornell, we use an academic support practice called "Academic Concern" that's designed for all students, across every college in the university. It serves as a communication bridge among you, your instructors, and your college academic advising office that prompts outreach to support you when, for example, an exam didn't go as planned or if you've missed several classes (especially when those absences can affect your grade).
Here's how it works: If one of your instructors notices you might need academic support, they let your college advising office know. The office will then invite you to schedule a meeting with an advisor so you can be proactive in making a plan to keep your academics on track. They'll also point you to some valuable campus resources that can help you improve your learning.
Keep in mind, if we submit an Academic Concern, it's not because you're in trouble or have done something wrong. It's simply a way for us to make sure you're getting the support you need, when you need it, to be successful in this course.

Cornell Writing Centers
The Cornell Writing Centers (WC) provide support for individuals at any stage of the writing process. It is a free resource available to everyone on campus—faculty, staff, graduate and undergraduate students—for nearly any kind of writing project: applications, presentations, lab reports, essays, papers, and more. Tutors (trained undergraduate and graduate students) serve as responsive listeners and readers who can address questions about the writing process or about particular pieces of writing. They can consider questions of confidence, critical reading, analytic thought, and imagination. Writing tutors

also have experience working with non-native English speakers. During the academic year, the WC are open Mondays-Thursdays, 3:30 – 5:30pm (Mann Library & Rockefeller Hall 178) and Sundays-Thursdays, 7:00 – 10:00pm (Olin library Room 403; Uris Library Room 108; Tatkon Center Room 3343; 121 Flora Rose). Writers can schedule appointments or drop-in at a convenient time. For more information or to schedule an appointment, go to our online scheduling system.

Students with Disabilities
I will do my best to make accommodations for any student with a documented disability (i.e., physical, learning, psychiatric, vision, or hearing). Please contact me as soon as possible so that we can discuss what adjustments might be necessary. You may also consult with Cornell's Student Disability Services if you have other questions or concerns: 607-254-4545.

University Policies, Holidays, and Regulations
This course upholds all University policies and regulations pertaining to the observation of religious holidays; plagiarism; sexual harassment; and racial or ethnic discrimination. Please refer to the University regulations and bring any questions or concerns to my attention.