

# PSY 426: Neuroanatomy

Skeleton Syllabus, Dr. Eevin Jennings

## Topics

This course is primarily about MEMORIZATION. You will learn everything from cellular distribution to entire sensory and motor systems. Exam are primarily *diagram labeling*. Labs are primarily applications of lecture material and eye/sheep brain dissections.

- Overview of the Nervous System
- Different types of nervous systems and neurons
- Cranial Nerves
- Spinal cord anatomy
- Brain stem anatomy
- Diencephalon anatomy
- Telencephalon anatomy
- Anatomy of the auditory system
- Anatomy of the vestibular system
- Anatomy of the peripheral and central components of the visual system
- Anatomy of somatosensation
- Anatomy of the olfactory system
- Anatomy of the gustatory system
- The motor system: neuromuscular junction, cranial nerves, basal ganglia, cerebellum, and cortical levels
- Anatomy of cortical integration: fasciculi in the cortex
- Anatomy of the limbic system
- Anatomical similarities/differences in various types of dementia/neurodegenerative diseases
- Neuroimaging techniques
- Anatomy of the cerebrovascular system, meninges, and ventricles
- Anatomy of speech and language areas

## Course Information

This course will provide an in-depth exploration of nervous system functional anatomy. We will examine the anatomy of the brain, spinal cord, and peripheral nervous system, as well as major structures and circuits involved in sensation, movement, and cognition. The neuroanatomical and neurochemical bases of various neurological diseases will also be discussed, as well as an overview of neurological imaging and neuroanatomical research methods. The primary emphasis will be on the human nervous system, but attention will also be given to nervous systems of other species such as the sheep, bird, and rodent.

**Credits:** 4

**Prerequisites:** PSY 325 with C or better; Credit is allowed for only PSY 426 or 526

## PEOPLE

**Professor:** contact for content-related questions/clarifications, grad school applications

**Name:** Dr. Eevin Jennings

**Email:** [eevin.jennings@asu.edu](mailto:eevin.jennings@asu.edu)

**Graduate Teaching Assistant:** contact for lab questions, general course questions, course policy questions, due dates, grade book clarifications, university-sanctioned absences, study/learning/research tips.

**Undergraduate Teaching Assistants:** study/learning tips, one-on-one tutoring, and entrance quiz questions.

## Textbooks

You do not need to buy a textbook for this course. I supply you with all of the reading material.

## Computer Requirements

This course requires a computer with internet access and the following technologies:

- Web browsers ([Chrome \(Links to an external site.\)](#), [Mozilla Firefox \(Links to an external site.\)](#), or [Safari \(Links to an external site.\)](#))
- [Adobe Acrobat Reader \(Links to an external site.\)](#) (free)
- [Adobe Flash Player \(Links to an external site.\)](#) (free)
- Microsoft Office ([Microsoft 365 is free \(Links to an external site.\)](#) for all currently-enrolled ASU students)

*Note:* A smartphone, iPad, Chromebook, etc. will not be sufficient for completing your work in ASU courses. While you will be able to access course content with mobile devices, you must use a computer for all assignments.

## Student Success

To be successful:

- **come to class and study on a daily basis**
- check the course and read announcements daily
- read and respond to course email messages as needed
- complete assignments by the due dates specified
- communicate regularly with your instructor, lab TA, and peers
- create a study and/or assignment schedule to stay on track

**Student Success Center:** The Psychology Department's Student Success Center (SSC) is open 40 hours a week (including evening and weekend hours) to help you succeed *on your writing and statistics assignments* in this course. The SSC is staffed entirely by Psychology students who understand this material and how to help! To learn more or to schedule an appointment,

email [ASUPsychologySuccessCenter@gmail.com](mailto:ASUPsychologySuccessCenter@gmail.com) or stop by the SSC, located in the Psychology Advising Office, PSY Room 202E.

**PowerPoints:** If I use PowerPoint slides, student versions will be available on Canvas at some point before the lecture. You are encouraged to bring them to class or use as reference points during studying. *I will lecture with the impression that you are taking notes strategically and not robotically copying down content that is available on the provided PPT.* Completed PowerPoints will never be sent. If you need to access information that you may have missed, consult a class peer. I do not allow any TAs to send completed PPTs.

**Laptops and Tablets:** You *may* use computers or other electronic devices in this course, but you **MAY NOT** take photos, videos, or audio recordings of *any* portion of the class (if you have accommodations, please speak with me!). Such instances will be treated in accordance with violations of academic integrity.

**Note:** All course material (lectures, PowerPoints, study guides, etc.) is the intellectual property of ASU. Posting of these materials by students on file sharing sites (CourseHero, StudyBlue, StudyRoom, Quizlet, etc.), course shells, or discussion boards, and/or sharing, uploading, selling, or distributing the content or notes taken during the conduct of the course is therefore considered by the university to be **copyright infringement**. See ACD 304-19 #13 for more information.

## GRADING

Grades reflect your performance on assignments and adherence to deadlines. Exams, assignments, and discussions are meant to A) help you meet the course's learning objectives and B) provide me with an assessment of how well you meet those objectives. Exams, assignments, and service-learning activities are structured so that you will develop multi-level skill sets; in other words, A+ students will demonstrate surface-level information (i.e., vocabulary) all the way up to high-level inferential thinking (i.e., coming up with a solution to a novel problem).

### Final Grade Calculation

Exams	<b>60%</b>
Assignments	<b>20%</b>
Lab	<b>20%</b>

<b>A+</b>	<b>A</b>	<b>A-</b>
100.0% - 97.00%	96.99% - 94.00%	93.99% - 90.00%
<b>B+</b>	<b>B</b>	<b>B-</b>
89.99% - 87.00%	86.99% - 83.00%	82.99% - 80.00%
<b>C+</b>	<b>C</b>	<b>D</b>
79.99% - 77.00%	76.99% - 70.00%	69.99% - 60.00%
<b>E</b>		

< 59.99%

The grade you earn in this course is based on several assignments, exams, and attendance. It is your responsibility to know when assignments are due and what is expected for you to **earn** the grade you want. If you are unsure, please ask me prior to the due date. **I will not, under any circumstances, provide special extra credit or “bump” any student’s grade at the end of the semester.**

## Late or Missed Work

What types of excuses *are* allowed (with evidence)?

1. [University-sanctioned activities \(Links to an external site.\)](#)
2. [Religious practices \(Links to an external site.\)](#)
3. Graduate school interviews
4. Conference attendance/presentation

To arrange an exam or have your in-class activity points restored for these events, please contact the graduate TA ahead of the scheduled date.

No other excuses are observed. Be absent/fail to submit assignments at your own discretion! **DO NOT send doctor's notes, funeral proceedings, etc. They will be ignored.**

All assignments must be submitted to the designated area of Canvas by 11:59 pm on their respective due dates. Do not submit an assignment via email. It will **not** be accepted.

Type	Homework & Online Assignments	In-Class Activities	Exams	Labs
Late Work Accepted?	Yes	No	No	Yes/No
Policy	<ul style="list-style-type: none"><li>• 15% penalty per day late</li><li>• After 7 days = 0%.</li><li>• Lowest chapter quiz is <i>conditionally</i> dropped at end of semester (see #1 below)</li></ul>	<b>You miss class, you don't get the points.</b>	<b>You miss the exam, you get a zero.</b>	<ul style="list-style-type: none"><li>• <b>You miss the lab, you get a zero.</b></li><li>• If you attend lab, you <b>may</b> submit an assignment late, but it is deducted 15% per day it is late.</li><li>• The lowest lab at end of semester</li></ul>

				is auto-dropped, <i>free</i> .
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1. Late **assignments and service-learning** components **are accepted** for up to 7 days after their initial due date at a **15% penalty per day** (including holidays and weekends). Assignments 7 days late will automatically receive a 0%. Because the quizzes are online and can be accessed and completed at any time up to the deadline, there is no such thing as an “excused” late quiz. Watch the schedule and complete your quizzes BEFORE the deadline. Do not wait until the last minute. In essence, you will *not* have penalties removed *even with an excuse*. Do not email me asking if you can have your penalty removed (unless you have a university-sanctioned excuse), and do not send the TAs or me any “evidence.”
  - If you have 3 or fewer absences by the end of the semester **and** average at least an 80% on entrance quizzes, *I will automatically drop your lowest homework quiz at the end of the semester.*
2. **In-class assignments** (such as writing activities, responses, additional readings, group work, surveys, quizzes, etc.) **cannot** be “made up” if you miss class that day. None of these assignments will be dropped. DO NOT send doctor's notes, funeral proceedings, etc.
3. There are **no opportunities** to make up missed **exams** unless you have a university-sanctioned excuse (see above). Please **do not** email the TAs or me with doctor's notes, funeral proceedings, or any evidence- we do not need it. If you have to miss an exam, we assume that you have an important and valid reason! Therefore, I have a built-in policy to help out:
  - You can replace your lowest exam grade by taking the cumulative final. More information on this can be found in the Exams section below.

If you cannot attend class, do not email the TAs or me asking what we covered, whether you “missed” anything, or if the TA can send you “the notes” or completed PowerPoint. I do not allow them to do this. Instead, *please get the phone number or e-mail address of at least one other person in the class so you may exchange notes if either of you is absent.* If you are having any troubles regularly impeding your attendance, please please email [deanofstudents@asu.edu](mailto:deanofstudents@asu.edu) check out [Help for Personal and Academic Situations](#).

## Technological Issues

It is important that you do not wait until the last minute to start or complete the assignments, as the internet can be unpredictable. Homework will *always* be due on the assigned due dates, *no matter what your computer/the website says*. **If you need assistance on a technical matter (i.e., the quiz isn’t opening for you, it says the due date is incorrect, you can’t see the quiz questions, you get “locked out,” etc.), please contact the [Canvas support](#) or ASU Tech Support at 1-855-278-5080.**

I cannot help you with technical, website, or browser problems. If you email me saying that you can’t log into Canvas or you are having issues with a quiz, all I will be able to give you is the email/phone number to the site support and suggest you use the computers in the library. Make sure your browser is compatible with Canvas and that the computer you use is updated to prevent maximum issues. If there is

a genuine issue with Canvas across the entire class, I will take this into account and re-arrange the homework/due date.

If all else fails, there are always many computers **in the library!**

## 1. Exams (Varying points each; 60% of final grade)

Exams will consist of primarily multiple-choice, short answer, and diagrams, and **will cover material from the assigned readings, homework, and lecture/class activities**. There are five semester exams throughout the semester, all of which are mandatory. Exams will cover approximately 2-3 chapters, consist of 20 multiple choice/true-false questions, have several short answer and diagrams questions, and usually offer a small amount of extra credit. In general, exams will emphasize new material covered since the previous exam (i.e., they are not "cumulative"). However, some topics build on older topics, and as such, these older topics may come up again on later exams (e.g., to answer an exam question about the limbic system, you may need to be able to understand the kinds of pathways/structures/behaviors involved from earlier chapters). You are expected to engage with the material as prescribed, check your understanding frequently, and adopt effective study strategies. You will NOT need a scantron- I will supply them.

### The Final Exam

- The final exam is **optional**. This means that if you are fine with your grade by the end of the semester, you do not have to show up for the final. You don't have to let me know or anything. *You're free to go!*
- The final exam is **cumulative**. It is approximately **150 questions and 30 pages long**. Any material we covered during the semester (book chapters, articles, lecture topics, discussions) will be fair game for the final. A review sheet will be available. The final exam is designed to encourage you to prioritize studying throughout the semester *so that you don't have to take it*.
- The final exam can be used to replace your lowest "semester" exam grade. The score on your final exam will replace your lowest semester exam score, as long it is *higher* than your lowest semester exam score. In other words, the final cannot hurt you, it can only help you.
- The final exam will be held on the scheduled final date in our regular classroom: *Tuesday, December 10th, 2:30 - 4:20 PM*. Please note that according to ASU's ACD clause 304-01, you may **not** take the final exam on a different day than designated by the university.

## 2. Assignments (20 points each; 20% of final grade)

The **purpose** of assignments is to reinforce the material we have already discussed, provide you with opportunities to learn material we did *not* cover in class, and help **you** check whether you truly understood the material. Assignments count as any activity I assign to you in or outside of class, event participation, homework, online discussion participation, etc. that is worth a sum of points (I will notify you of each instance). Unless otherwise noted, assignments can only be completed once and do not have a time limit.

### 3. Lab (varying points each; 20% of grade)

Lab serves a separate, but complementary, function to the lecture. Many of the concepts we discuss in lecture will be reiterated, expounded upon, and further investigated in labs, but some of the time we will discuss and experiment with concepts/procedures not addressed in class. This separation helps you become a well-rounded neuroscientist. Lab assignments will vary according to our progress in the lecture.

*Your lowest lab grade will be automatically dropped at the end of the semester.*

### Attendance Policy

Attendance is not formally required for this course. However, you are encouraged to attend. Information from class will be on exams, and students learn better when they are present.

### Entrance Quizzes (extra credit)

There will be an optional *entrance* quiz (roughly 3-4 fill-in-the-blank, MC, or diagram-labeling questions) at the beginning of every class period over important information from the *previous* class. The purpose of these quizzes is to motivate you to study throughout the week instead of cram for exams, which also helps familiarize you with the material and facilitates class discussion. Each question is worth .25 exam points, and the accumulated points will be applied toward the next exam.

- You will have roughly 2 minutes to complete the quiz.
- If you arrive after the quiz is finished or leave before class officially ends, you will forfeit your quiz opportunity for the day.
- Laptops, notes, phones, and tablets must be **closed** during the ENTIRE quiz, and no notes/books will be allowed. You must wait until I give you the “ok” to get out your materials for the lecture. You may not speak or work together.

## COMMUNICATION

### Email

ASU email is an [official means of communication \(Links to an external site.\)](#) among students, faculty, and staff. You are expected to be professional in your e-mail communication. Therefore, each e-mail message should include a *professional* greeting and signature, and use appropriate language as outlined below.

- Begin your email addressing your audience appropriately: “Hello Dr. Jennings,”
  - Start with “I am in your <class name>.”
  - State your specific question.
  - End with, “Thank you, <your name and ASU ID number>”
- No “text messaging” language, such as “v/r”.
- Note that emails sent after 4 pm on weekdays are much less likely to be addressed until the following day. Emails sent after 4 pm on Fridays are unlikely to be addressed until Monday.

I will make every effort to respond to e-mails within 24 hours, but I will not respond to e-mails that include questions that can be answered by looking at the Community Forum or the syllabus, nor those that fail to follow the guidelines above. You should make a habit of checking Canvas and your ASU e-mail at least once per day. Some information will be relayed to you through e-mail and occasionally that information will be time sensitive. Not checking your e-mail or Canvas is not a valid excuse for missing assignments (etc.).

## **POLICIES**

### Video Lectures

Some of the information will be covered in video lecture format, which you may view at any time at your convenience. If you are uncomfortable with video lectures or have accommodations, you must let me know within the first week of the semester so that I can provide you with additional materials.

### Classroom Behavior

Behavior that is deemed by the instructor to be disruptive, threatening or potentially violent will result in a request to leave the classroom followed by reporting of the incident to ASU PD and the Office of the Dean of Students. Violations of the Student Code of Conduct may result in instructor-initiated withdrawal of the student from the class and/or other appropriate disciplinary action. I encourage you to actively participate in class discussions/activities and to share your relevant comments, questions, and ideas. It is my expectation that you will behave like an adult and that your behavior always will be respectful of your classmates, yourself, and me. Language that is disrespectful based on race/ethnicity, sexual orientation, age, gender, religion, ability, class, or size will not be tolerated.

### Policy Against Threatening Behavior

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

### Accessibility Statements

If you have accommodations, please discuss them with me and the DRC at the start of class. To secure accommodations, visit [Help for Personal and Academic Situations](#).

### Academic Dishonesty

Academic dishonesty is taken very seriously at ASU and in my classroom. Online courses are no different and are often scrutinized to a larger degree than in-person courses. It is inappropriate for you to use the words or thoughts of another person without citing the source. This is true for both discussions and short answer responses. If you copy & paste something from Wikipedia (or any other source), we will find out, and you will receive 0 points for that assignment. If it continues to be a problem, your behavior will be reported to the Dean of College of Liberal Arts and Sciences. I don't expect this to be too much of a problem since discussions and short answer are relatively informal, but nonetheless, copying/pasting and/or changing a few words from someone else's text is considered plagiarism.



Plagiarism is not the only issue that arises in online courses. Any attempt to copy or disseminate the materials provided in this course (which includes powerpoints, exams, quizzes, and other materials) is a violation of Dr. Jennings's copyright on this material. Furthermore, if your behavior cannot be confirmed via Respondus Monitor recordings, you can expect a punishment ranging from receiving a 0 for the test/assignment all the way to receiving an XE in the course. Please familiarize yourself with ASU's policy, which will be strictly enforced: <http://provost.asu.edu/academicintegrity> (Links to an external site.)

**Note: All course material (lectures, study guides, homework, etc.) posted on Canvas is the intellectual property of ASU. Posting of these materials by students on file sharing sites (CourseHero, Quizlet, StudyBlue, StudyRoom, etc.) is therefore considered by the university to be copyright infringement.**

### Grade Disputes

It is possible that you may receive a grade that you do not believe is justified. This grade may be from an assignment, an exam, or discussion. For example, one of your answers may have been scored "wrong" and you disagree, or you may not realize you forgot to complete an assignment and received a zero in the grade book. While I do want to attend to your concerns, I employ a "24/7" rule for grade disputes. What this means is:

- You must wait 24 hours after discovering your grade before addressing it with me.
- You will have UP TO 7 days to address your unsatisfactory grade with me.

Disputes regarding grades that have been available for over 7 days will not be addressed since you have been given advance warning of this rule. This means that if you find out that you have a C in the class because you missed the first three homework assignments of the semester, you will not be able to argue for those grades since they were posted longer than 7 days ago. Be sure to keep track of your grades over the course of the semester!

### Syllabus Disclaimer

The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Remember to check your ASU email and the course site often.

### Career Discovery

What can you do with a degree in Psychology? A lot! From traditional careers in psychology (e.g., mental health and social services, research, education) to those in law, health, business—and many more—ASU Psychology alumni tell you about their career pathways and provide advice on how to follow in their footsteps... or create your own! To explore a wide range of career possibilities, check out <https://psychology.asu.edu/psychforlife/careers> (Links to an external site.).

## **Course Learning Outcomes**

- **APA Goal 1: Knowledge Base in Psychology**
  - *Assessment method(s): Exams, labs, in-class work, and assignments*

- Describe key concepts, principles, and overarching themes in psychology (APA 1.1)
- Develop a working knowledge of psychology's content domains (APA 1.2)
- Describe applications of psychology (APA 1.3)
- *Knowledge Base in Neuroanatomy*
  - Gain a fundamental understanding of the locations and functions of numerous structures of the nervous system and how they are integrated into brain circuits and systems; become proficient in the terminology and doctrine of neuroanatomy; understand how neuroanatomy is applied to human behavior and understanding various diseases and disorders of the nervous system; be able to identify specific nervous system structures in whole-brain specimens and brain sections; and be knowledgeable of various common and newer procedures in neurological assessment and neuroanatomical research.
- **APA Goal 2: Scientific Inquiry & Critical Thinking**
  - *Assessment method(s): Exams, labs, in-class work, and assignments*
    - Use scientific reasoning to interpret psychological phenomena (APA 2.1)
    - Demonstrate psychology information literacy (APA 2.2)
    - Engage in innovative and integrative thinking and problem-solving (APA 2.3)
    - Incorporate sociocultural factors in scientific inquiry (APA 2.5)
  - *Critical Thinking in Neuroanatomy*
    - Synthesize the diverse components of neuroanatomy; Apply learned material to scenarios in your own life; Apply the information to hypothetical scenarios; Organize educated predictions grounded neuroanatomy.
- **APA Goal 3: Ethical & Social Responsibility in a Diverse World**
  - *Assessment method(s): Lab,*
    - Apply ethical standards to evaluate psychological science and practice (APA 3.1)
    - Build and enhance interpersonal relationships (APA 3.2)
    - Adopt values that build community at local, national, and global levels (APA 3.3)
  - *Ethics & Social Responsibility in Neuroanatomy*
    - Intelligently evaluate scientific practices based on principles you have learned in this course.
- **APA Goal 4: Communication**
  - *Assessment method(s): Exams, labs*

- Demonstrate effective writing for different purposes (*APA 4.1*)
- Exhibit effective presentation skills for different purposes (*APA 4.2*)
- Interact effectively with others (*APA 4.3*)
- ***APA Goal 5: Professional Development***
  - *Assessment method(s): Exams, labs, assignments*
    - Apply psychological content and skills to career goals (*APA 5.1*)
    - Exhibit self-efficacy and self-regulation (*APA 5.2*)
    - Refine project-management skills (*APA 5.3*)
    - Develop meaningful professional direction for life after graduation (*APA 5.5*)
  - *Professional Development in Neuroanatomy*
    - Exhibit self-efficacy, self-regulation, time management, and interpersonal relationship skills; Use the learned material to apply ethical, appropriate, and innovative thinking and methodology to your own interests.