Course description and goals

This introductory course concerns the biological basis of the mind and how mechanisms in the brain shape human thought and behavior. For example, how does your brain enable you to vividly remember (or forget) your first date, recognize a face, or take notes during class? By the end of the course you will have a working vocabulary of the terms, concepts, and theories of cognitive neuroscience. You will have increased appreciation for how our brains relate to everyday experience, and the skills to begin to evaluate primary research as a foundation for further study.

In order to learn about cognitive neuroscience, you will have to intellectually engage with the material. This involves learning basic vocabulary and principles, and also using critical thinking skills to evaluate what you are reading and hearing. To be engaged you need to spend time reading and thinking outside of class, be physically and mentally present in class, and interact with other class members. I have structured the course to encourage these behaviors, and expect you to do your part by preparing and engaging.
Evaluation and grading

- 4 exams (60%)
- Quizzes (20%)
- Class participation (20%)

Exams

There are four exams (including the final): I will drop your lowest exam grade. Each of the three kept exams is worth 20% of your final grade. Exams will be a combination of multiple choice, short answer (including diagram labeling), and long answer questions. I will provide you with concept lists and long answer lists ahead of time: exam questions will be based on concepts and terms from these lists, so there will be no surprises. However, the material might be assessed in a number of ways: you will need to have a thorough understanding of each concept, and not just a short, memorized definition. My goal is for you to engage with the main ideas in the course, which requires understanding some of the details, too.

The final exam is not strictly cumulative: it will focus on material from the final 1/4 of the course. However, it will probably have neuroanatomy questions (one of the first things we cover), and questions that relate to big-picture and integrative ideas that come up throughout the semester, so you will need to rely on some knowledge and thinking from the entire semester.

Quizzes

Research shows that (a) having many short study sessions (distributed learning) leads to better memory than few long study sessions (massed learning), and (b) that testing material actually enhances long-term retention. To help you learn and remember the course material, there will be 10–15 short, unannounced quizzes throughout the semester. These may be at the beginning, middle, or end of class. They may cover basic questions from an assigned reading or slightly more detailed questions that draw on information from both the reading and lecture. The goal is to encourage you to understand each topic as we go through a combination of reading, lectures, and extra help (if necessary). The quizzes will also give you an idea of the types of questions to expect on the exams.

(Many of you will notice I have used the word “unannounced” to describe the quizzes; if you didn’t, take a minute to go find it now. This should suggest to you that emailing me to ask whether there will be a quiz on a specific date will not be a useful strategy.)

Class participation

The advantage of a class is that it provides a space to interact with each other and with me, to talk through ideas together. Your participation is what makes this experience effective (and hopefully enjoyable). Class participation grades are based on:

- Online participation (5%)
- In-class engagement (5%)
- Perusall contributions (7%)
- Research participation (3%).
Online participation includes asking questions that encourage others to think more deeply about the material, answering questions posed by other students, and responding to questions posted by instructors. **Five meaningful comments** are considered sufficient for full online participation credit. (“Meaningful” is not simply writing “yes, I agree” but a thoughtful answer, probably including links to a website or pages from the readings, as described on the first day of class.) For credit, contributions must be posted to Canvas—some questions will be locked after time passes, after which it is not possible to contribute. **Online contributions will be accepted until the beginning of our final class** as indicated by the system time when you post. Comments are not eligible for regrading (it’s not practical in a large class). To make sure you get credit for your posts, complete them early and make sure they are clearly credit-worthy. When in doubt, make another post that you are sure is credit-worthy.

In-class participation grades will be based on your engagement in small-group activities and poll responses (where appropriate). If you miss some here or there it’s nothing to worry about. If you routinely fail to participate, it may lower your grade.

Research participation is tracked through Sona ([http://wupsych.sona-systems.com](http://wupsych.sona-systems.com)). You will need 6 hours of participation for full credit. If you do not wish to participate in an experiment, you can attend a talk listed on the Sona website, or read a research article. Each research talk or article is worth 1 hour of research participation. If you choose the research article option, you will need to complete a form (ResearchArticleForm.docx) available on Canvas. **Research or talk participation is accepted until the beginning of our final class (no exceptions).** Sona participation is accepted up until the start of the final exam, although there is no guarantee experiments will be available that time of the semester. To ensure you can find a suitable experiment please complete experiment participation before the end of the semester.

Perusall is a platform for commenting on documents which we will use for research articles. Perusall automatically scores your contributions, including the number and quality of your comments and interactions with other students. For the most part if you put some effort in you will get full credit. I will drop the lowest 1/3 of your Perusall scores to give you some flexibility in your participation (and allow for some glitches in the scoring). There is no re-scoring for Perusall, the website has the final say. Perusall comments must be made by the end of the assignment—**late contributions do not count.** Access Perusall by clicking the “Perusall” link in Canvas.

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**Grading**

Letter grades will be assigned as shown in the table below based on rounding to the nearest integer (i.e., a 92.499 rounds down to a 92 and thus an A-; a 92.500 or 92.501 would round up to a 93).

<table>
<thead>
<tr>
<th>A+</th>
<th>A</th>
<th>A-</th>
<th>B+</th>
<th>B</th>
<th>B-</th>
<th>C+</th>
<th>C</th>
<th>C-</th>
<th>D+</th>
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<tr>
<td>97</td>
<td>93</td>
<td>90</td>
<td>87</td>
<td>83</td>
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<td>73</td>
<td>70</td>
<td>67</td>
<td>63</td>
<td>60</td>
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If you are taking the course Pass/Fail, you will pass if you earn at least a C- (70%). Grades of Incomplete are reserved for extremely rare extenuating circumstances, typically in consultation with your academic advisors, and are not given simply because you are not happy with your earned grade.
# Tentative course schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Read after class</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 27</td>
<td>Introduction</td>
<td>Syllabus, PCN1</td>
<td>Quiz 1 due by class 8/29</td>
</tr>
<tr>
<td>Aug 29</td>
<td>Neuroanatomy</td>
<td></td>
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<tr>
<td>Sep 3</td>
<td>Neurons</td>
<td>Biopsychology chapter</td>
<td></td>
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<tr>
<td>Sep 5</td>
<td>Methods</td>
<td>Brett et al. (2002)</td>
<td>Extra credit due</td>
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<tr>
<td>Sep 10</td>
<td>Methods, continued</td>
<td>Gazzaniga et al. (1965)</td>
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<tr>
<td>Sep 12</td>
<td>Hemispheric specialization</td>
<td>Kelley et al. (1998)</td>
<td>(Maybrier)</td>
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<tr>
<td>Sep 17</td>
<td>Review session for Exam 1</td>
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<tr>
<td>Sep 19</td>
<td><strong>EXAM 1</strong></td>
<td></td>
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<tr>
<td>Sep 24</td>
<td>Vision</td>
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<tr>
<td>Sep 26</td>
<td>Vision</td>
<td>Gauthier et al. (2000)</td>
<td></td>
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<tr>
<td>Oct 1</td>
<td>Hearing</td>
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<td>Oct 3</td>
<td>Attention and perception</td>
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<td>Oct 8</td>
<td>Spatial navigation</td>
<td>Maguire et al. (2000)</td>
<td>(Maybrier)</td>
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<td>Oct 10</td>
<td>Mental imagery</td>
<td>Porro et al. (1996)</td>
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<td>Oct 15</td>
<td>NO CLASS - Fall Break</td>
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<tr>
<td>Oct 17</td>
<td><strong>EXAM 2</strong></td>
<td></td>
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<tr>
<td>Oct 22</td>
<td>Memory</td>
<td></td>
<td>(McDermott)</td>
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<tr>
<td>Oct 24</td>
<td>Memory</td>
<td></td>
<td></td>
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<tr>
<td>Oct 29</td>
<td>Language</td>
<td></td>
<td></td>
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<tr>
<td>Oct 31</td>
<td>Language</td>
<td></td>
<td></td>
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<tr>
<td>Nov 5</td>
<td>Genetics</td>
<td></td>
<td>(Bogdan)</td>
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<tr>
<td>Nov 7</td>
<td>Semantic memory</td>
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<td>Nov 12</td>
<td>TBD</td>
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<tr>
<td>Nov 14</td>
<td><strong>Exam 3</strong></td>
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<td>Nov 19</td>
<td>Consciousness</td>
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<td>Nov 21</td>
<td>Neuroscience of Music</td>
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<td>Nov 26</td>
<td>TBD</td>
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<tr>
<td>Nov 28</td>
<td>NO CLASS - Thanksgiving</td>
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<td></td>
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<tr>
<td>Dec 3</td>
<td>Sleep</td>
<td></td>
<td>(Maybrier)</td>
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<tr>
<td>Dec 5</td>
<td>TBD</td>
<td></td>
<td>Discussion posts due!</td>
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<tr>
<td>Dec 13</td>
<td><strong>FINAL EXAM (1 pm–3 pm)</strong></td>
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Course policies

Reading
The readings are all required and I expect you to do them. Many of the most important topics will be covered in both readings and in class—this is to give you two chances to absorb it, and to ask questions about what you have read. Other material will be covered only in the readings, or only in class. Even if sections of the papers aren’t tested directly, the readings will give you a context and vocabulary that will help you understand the topics (and the things that appear on exams).

Classroom etiquette
Please avoid interfering with other students’ ability to participate in class. Disruptive behavior includes: cell phone use, talking, eating (drinks are fine), arriving late, and leaving early. Infractions may result in lowered participation grades or dismissal from class. Also, research suggests that chronic media multitaskers have lower working memory performance and less attentional focus—so limiting your electronic multitasking is to your benefit, as well as your peers’.

Inclusive environment
In this class we treat everyone with respect and consideration in what they say and the manner in which they say it in order to foster a productive and inclusive learning environment. Please come see me if you ever feel this is not the case.

Supplies
Please bring a pen to each class to use for quizzes (hopefully you would figure this out on your own…). I strongly encourage you to take paper (non-electronic) notes, as research suggests this encourages deeper processing (and thus better understanding and memory).

Canvas
We will use Canvas (http://canvas.wustl.edu) for announcements, discussions about course content, and turning in assignments. You are responsible for content on Canvas, so check it regularly and/or set up notifications so you receive emails about it. If a discussion topic is closed, you will not be able to post to it (and thus not get credit)—this will happen sometimes with old topics.

Any assignments turned in online are graded based on the time in Canvas, and you are responsible for making sure assignments get submitted properly. Please leave yourself enough time before the deadline to check that your assignment was submitted.

Academic integrity
We will follow the university policy on academic integrity (http://wustl.edu/policies/undergraduate-academic-integrity.html). By enrolling in this course you are making a personal commitment to me to honestly represent your own work, which I expect you to honor without exception. Use of any electronic device or notes during a quiz or exam is strictly prohibited and may result in a grade of 0 regardless of what you were using it for.
Missed classes and exams

Attendance *per se* does not affect your grade; however, if you miss a class, you may miss a quiz, an opportunity to contribute to class discussion, or a chance to use your clicker, which will affect your grade. You may also miss important announcements which may affect your grade and/or happiness.

There are no makeups for missed quizzes, for any reason (including adding the class late...), but I will drop the lowest 1/3 of your quiz grades (to account for illnesses, oversleeping, travel, quizzes that everyone hates, etc.).

If you need to miss one of the first three exams for a religious observance or university event (including athletics), **and you inform me about it via email the first week of class**, I will arrange a makeup exam.

I will drop the lowest of your four exam grades, which is intended to cover unanticipated circumstances (for example, being sick, grad school interviews, travel) and give you some flexibility in your schedule.

The last exam will be held during our scheduled time during finals week. **No alternate times or makeups will be offered for any reason.** Please check your course schedule now, and consider changing your class schedule if you have conflicts or feel your final schedule is not manageable. Taking the final is not required (for example, if you are happy to keep your first three exam grades). But I strongly suggest you plan on taking it and arrange your schedule accordingly.

If you need to be away for an extended period due to illness, family emergency, or other reason, please let me know as soon as possible. Please speak with me in person, and also email me so that we have a record.

Re-grading

You have the right to request regrading of anything if you feel a mistake has been made. During regrading, the entire work will be regraded, which may result in either a higher or a lower total grade. If you feel an error has been made in grading, send me a detailed email explaining the error within 1 week of when the work was turned back to you. Your email should explain in detail why your answer should be given credit with specific references to the lecture slides and readings to support your case. After one week, no regrading requests will be considered. Note that regrading is intended to correct grading errors, not to negotiate a higher grade. Grades on long answer questions seldom improve. Regrades are final (I am always happy to discuss your exams with you!).

Old exams

I may share exams from prior semesters. These can be helpful because it gives you a sense of the types of questions that might be asked, and there are questions that repeat across semester. There are also some errors on old exams, and the exact terms on the concept list have probably changed. So use the old exams with care! I do not provide an answer key but am happy to discuss questions with you.

Adjustments to grades

Some of you will be unhappy with a grade. For example, you may have a final average of 89.4999 and **really wish** it were an 89.5. Unfortunately I am not able to change the laws of mathematics, no matter
how much I like you. Instead, I work to build in grace throughout the semester (by dropping lowest
grades, giving extra credit, etc.)—this way everyone gets the same deal. I do not adjust grades.

Polling
We are still working out the details, but aim to do some in-class polling/voting, which will count towards
your participation grade.

ADA accommodations
Students who are seeking support for a disability or a suspected disability should contact Disability
Resources at 314-935-4153. If needed, please obtain a Verification of Individual Student
Accommodation (VISA) from the Disability Resources center at Cornerstone and email it to me by the

It is not practical to take quizzes at Cornerstone. I suggest you sit near the front of the class so you can
start on it as soon as possible. In past semesters this has given people enough time (it can effectively
be time-and-a-half). However, if you sit in front and still feel that your performance on a quiz was
affected by the time, please make a note on the quiz and come speak with me.

University policies and guidance

Accommodations based on sexual assault
The University is committed to offering reasonable academic accommodations to students who are
victims of sexual assault. Students are eligible for accommodation regardless of whether they seek
criminal or disciplinary action. Depending on the specific nature of the allegation, such measures may
include but are not limited to: implementation of a no-contact order, course/classroom assignment
changes, and other academic support services and accommodations. If you need to request such
accommodations, please direct your request to Kim Webb, Director of the Relationship and Sexual
Violence Prevention Center, or Jen Durham Austin, Support Services Counselor. Both Kim Webb and
Jen Durham Austin are confidential resources; however, requests for accommodations will be shared
with the appropriate University administration and faculty. The University will maintain as confidential
any accommodations or protective measures provided to an individual student so long as it does not
impair the ability to provide such measures.

If a student comes to me to discuss or disclose an instance of sexual assault, sex discrimination, sexual
harassment, dating violence, domestic violence or stalking, or if I otherwise observe or become aware
of such an allegation, as a faculty member of Washington University, I am required to immediately
report it to my Department Chair or Dean or directly to the University’s Title IX Director.

You can also report incidents or complaints to the Office of Student Conduct and Community Standards
or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. See also https://
titleix.wustl.edu. You may want to spend some time online searching for Title IX cases to get an
understanding of how these cases frequently proceed.

You can also speak confidentially and learn more about available resources at the Relationship and
Sexual Violence Prevention Center by calling (314) 935-3445 for an appointment or visiting the 4th floor
of Seigle Hall.
Bias Reporting

The university has a process through which community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University’s Bias Report and Support System (BRSS) team. See: brss.wustl.edu.

Mental Health

Mental Health Services’ staff works with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression.

Center for Diversity and Inclusion

The Center of Diversity and Inclusion (CDI) supports and advocates for undergraduate, graduate, and professional school students from underrepresented and/or marginalized populations, creates collaborative partnerships with campus and community partners, and promotes dialogue and social change. One of the CDI's strategic priorities is to cultivate and foster a supportive campus climate for students of all backgrounds, cultures and identities. See: diversityinclusion.wustl.edu.

Improving your grade

If your grade is not as good as you would like it to be, I suggest starting with the following:

- Take a look at how much time you are devoting to the course. You need to devote enough time to master the material. People will differ in how much time they need to do well. You may need to consider letting some things in your schedule go if your grades are not what you would like. (This is certainly not the only reason for not doing as well as you like, but it’s a good one to keep in mind as you think about your situation.)
- Be intentional about your study habits. One reason I provide the concept and long answer lists ahead of time is to give you structure in studying. The first thing I suggest is to have a running list of concept list items and fill them in as you do the reading and in lecture. For any items you aren't sure of, post to Canvas to see what others think and/or come to office hours.
- Come talk to me or a TA regularly (not just right before the exam). We can help answer specific questions, but also provide general suggestions for studying.
Frequently asked questions and frequently given answers

I know the syllabus says the final exam time is set and there are “no exceptions”, but I think I have a really good reason. Can that be an exception?
No.

I really want a higher grade than I earned. Can you give me more points?
No. I’m sorry you’re disappointed in your grade. I would be happy to meet with you to talk about class, but as a policy I don’t adjust people’s grades unless there was an error in grading. Instead I work hard to build in some grace along the way — dropping your lowest exam grade, dropping lowest quiz grades, extra credit — to give everyone the same opportunities and hopefully some wiggle room for challenging circumstances.

But I only need .0001 more points, are you sure I can’t have it?
Yes.