### Instructor:
- Dr. Sharon Thompson-Schill
- Office: 3810 Walnut Street, Room 208
- Tel: 215-573-3533
- Email: thompson@psych.upenn.edu
- Office Hour: Monday 5-6 pm
- Out-of-office Hour: Friday 9:30-10:30am

### Teaching Assistants:
- Marina Bedny
  - Office: 3810 Walnut, Rm 302 (3-3536)  
  - Office Hour: Thu 11:30am-12:30pm
- Irene Kan
  - Office: 3810 Walnut, Rm 206 (3-3534)  
  - Office Hour: Tues 3-4pm

### Required Reading:
- **Primary text:** MS Gazzaniga, RB Ivry, GR Mangun. *Cognitive Neuroscience: The Biology of the Mind.* SECOND EDITION (2002) [TEXT]
- **Auxillary text:** JA Ogden. Fractured Minds: A case-study approach to clinical neuropsychology. (1996) [FM]

### Recommended Reading:

### Course Web Page:
- [http://psych.upenn.edu/courses/psych149/psych149.html](http://psych.upenn.edu/courses/psych149/psych149.html)

Important information will be posted routinely on the course web page, including handouts, exam answer keys, upcoming events, grades, links to useful resources, etc. If you have suggestions for the web page, please let us know.

### Grading Policies:

**Make-up policy:**
Do not miss an exam. With the exception of an authorized university absence, exams will **not** be rescheduled. If you miss an exam, that will automatically be the grade that is dropped when calculating your final grade for the course (see Exams).

**Late policy:**
Papers must be turned in **by the beginning of class** (i.e., 1:30) on the day they are due. Any assignment received after this time will automatically receive a full letter grade deduction and will not be eligible for extra credit (see Short Papers). Any assignment received more than 48 hours after this time will not be graded. There are no exceptions to this policy. You have been forewarned!

**Re-grading:**
If you have a question or concern that there was an error in grading any of your work, you must submit your request **in writing** to have the work regraded, no more than one week after work was returned in class. No requests will be considered beyond this date. If you submit a request, your work will be regraded in entirety, and the final grade could be higher or lower than your original grade.

**WATU credit:**
This is a WATU-affiliated course. You have the **option** of taking the course for WATU credit; additional WATU-requirements are noted in the syllabus. You must elect the WATU option **no later than 9/18** by notifying the TA in writing.

**Plagiarism:**
Be sure you understand the University’s guidelines on Academic Integrity before submitting any assignment. See me or someone from the Office of Student Conduct (http://www.upenn.edu/osc) if you have any questions, especially about plagiarism (what it is and how it can be avoided).

### Final grade:
Your final grade will be a weighted sum of the following items:

- Midterm Exams (best 2 of 3) **60%**
- Short Papers (2) **10%**
- Final Exam or Term Paper **30%**
# Schedule at a Glance

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 4</td>
<td>Introduction</td>
<td>[TEXT 1]</td>
<td></td>
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<tr>
<td>Sep 9</td>
<td>Neurophysiology</td>
<td>[TEXT 2]</td>
<td></td>
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<tr>
<td>Sep 11</td>
<td>Neuroanatomy</td>
<td>[TEXT 3] [FM 1]</td>
<td></td>
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<tr>
<td>Sep 16</td>
<td>Methods</td>
<td>[TEXT 4] [FM 2]</td>
<td>Wed 9/17: Review session, 8pm</td>
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<tr>
<td>Sep 23</td>
<td>Perception</td>
<td>[TEXT 5]</td>
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<tr>
<td>Sep 25</td>
<td>Perception (Kan)</td>
<td>[TEXT 5]</td>
<td>Thur 9/25: Optional Journal Club, 8pm</td>
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<tr>
<td>Sep 30</td>
<td><strong>Exam 1</strong></td>
<td></td>
<td>Mon 9/29: Review session, 6pm</td>
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<tr>
<td>Oct 2</td>
<td>Object Recognition</td>
<td>[TEXT 6]</td>
<td>Thur 10/2: Writing Tutorial, 8pm</td>
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<tr>
<td>Oct 7</td>
<td>Face Recognition</td>
<td>[TEXT 6] [FM 8]</td>
<td>Wed 10/8: Optional Journal Club, 8pm</td>
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<tr>
<td>Oct 14</td>
<td><strong>Fall Break – No class</strong></td>
<td></td>
<td>Thur 10/16: <strong>Short Paper due</strong>/ WATU Topic due</td>
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<tr>
<td>Oct 16</td>
<td>Memory: Overview</td>
<td>[TEXT 8]</td>
<td>Thur 10/16: Review session 8pm</td>
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<tr>
<td>Oct 21</td>
<td>Declarative Memory</td>
<td>[TEXT 8] [FM 3]</td>
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<tr>
<td>Oct 23</td>
<td>Nondeclarative Memory</td>
<td>[TEXT 8] [FM 14]</td>
<td>Thur 10/23: <strong>Short Paper due</strong></td>
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<tr>
<td>Oct 28</td>
<td><strong>Exam 2</strong></td>
<td></td>
<td>Mon 10/27: Review session, 6pm</td>
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<tr>
<td>Oct 30</td>
<td>Frontal Lobes</td>
<td>[TEXT 11] [FM 9-10]</td>
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<tr>
<td>Nov 6</td>
<td>Language (Bedny)</td>
<td>[TEXT 9] [FM 5]</td>
<td>Thurs 11/6: <strong>Short Paper due</strong></td>
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<tr>
<td>Nov 11</td>
<td>Language (Bedny)</td>
<td>[TEXT 9]</td>
<td>Wed 11/12: Optional Journal Club, 8pm</td>
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<tr>
<td>Nov 13</td>
<td>Reading</td>
<td></td>
<td>Thurs 11/13: <strong>Short Paper due</strong></td>
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<tr>
<td>Nov 20</td>
<td>Development/Plasticity</td>
<td>[TEXT 15]</td>
<td>Thur 11/20: Review session, 8pm</td>
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<td>Nov 27</td>
<td><strong>Thanksgiving – No class</strong></td>
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<tr>
<td>Dec 2</td>
<td><strong>Exam 3</strong></td>
<td></td>
<td>Mon 12/1: Review session, 6pm</td>
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<td>Dec 4</td>
<td>Recap</td>
<td></td>
<td><strong>Thur Dec 4: WATU Short Paper revision due</strong></td>
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**Short Papers**

The purpose of the Short Papers is to gain experience reading and critically evaluating primary references in the field of cognitive neuroscience.

For each Short Paper, you must select two related primary (empirical) papers that fall under the assigned topic within the field of cognitive neuroscience. (If you aren’t sure whether the topic encompasses your choices, check with the TA first.) A good test of whether they are related is that one probably will cite the other one. Both papers should be no older than 1990 (unless you get my permission). The Short Paper should contain the following three elements: (i) an introduction of the problem or issue that the two papers address; (ii) for each study, a brief summary of the methods and most significant findings, as well as any shortcomings or limitations; (iii) an integration of the two findings. *Be sure to explain the relation of the findings to each other (does one finding elaborate or build on a prediction of another; are the findings in disagreement, and if so, which is more convincing; if different methodologies are used, what unique contributions are made to the question by each?) as well as to the problem they address.* Sample Short Papers are available to download from the course web page.

You will have six opportunities to submit a Short Paper. You are only required to submit two of these assignments: you must submit one Short Paper from Group A and one Short paper from Group B (see lists below). Each Short Paper will be worth 5% of your final grade. In addition, you have the option of submitting one additional Short Paper to earn extra credit; this could add an additional 5% towards your final grade. The extra Short Paper can be from either Group A or B.

The Short Paper may not exceed 1000 words (about 3-4 double-spaced pages). Note the total word count somewhere on your paper. Put your name on a separate cover sheet but not on the other pages of the paper (so you are anonymous when we are grading). Along with your paper, you should attach a copy of each article you are reviewing. Your paper may include additional references (it is a good idea!) but you should attach only the two articles that are the focus of your paper.

The topics and due dates (by the beginning of class) for the Short Papers are as follows:

**Group A:**
- Object/Face Recognition Oct 9
- Attention/Neglect Oct 16
- Memory Oct 23

**Group B:**
- Frontal Lobes Nov 6
- Language Nov 13
- Reading or Hemispheric Diff. Nov 20

*You can substitute a paper reporting on a Learning Outside the Classroom event one time by turning in that report instead of a Short Paper on any one of the above dates (see description later in syllabus).*

*If you are taking the course for WATU-credit, you must submit a revision of any Group B Short Paper that receives a grade lower than 80.*

Checklist for Short Paper submission:
1. Do you have two related papers about the assigned topic published after 1990?
2. Have you included a full APA-style citation for each paper and a copy of each paper?
3. Have you included all three elements of the assignment, described above?
4. Is your name on a separate cover sheet only?
5. Is your word count (≤ 1000 words) noted somewhere in the paper (e.g., on the cover sheet)?
Term Paper (WATU students only)

The purpose of the Term Paper is to gain in-depth knowledge about a particular subject area in the field of cognitive neuroscience and to develop your writing skills in organizing and synthesizing a large body of research, critically evaluating empirical and theoretical arguments, and expressing scientific ideas clearly.

You have the option of submitting a term paper instead of taking the final exam by enrolling in the course for WATU credit. You must inform us of your intention to do so by September 18. After this date, you do not have the WATU option. However, if you sign up for WATU and change your mind or fail to meet the WATU requirements (see final page), you always retain the option of taking the final exam.

For your Term Paper, you must select some topic in the field of cognitive neuroscience that is of interest to you, and for which there is a sufficient literature to digest for your paper. You should read a number of secondary and primary references about this topic. Your paper should include a clear explanation of the problem of interest and a critical analysis of the current research findings in this area. The Term Paper must include the following components: (i) The paper must begin with an abstract that summarizes your research in no more than 200 words. (ii) The text of the paper should be around 12 pages and absolutely no longer than 5000 words (about 20 pages). (iii) The paper must end with a complete bibliography of work cited throughout the paper. You must include at least 10 primary references (i.e., empirical research studies), in addition to any secondary references (i.e., review papers) that you read. You should be clear to distinguish your ideas from ideas presented by other people, and follow APA format for citing references.

You may find it helpful to pick an area in which there is some controversy; in your paper you could present the relevant evidence for each side of the debate and provide your evaluation of which evidence is most compelling. The following are examples of topics, but this is by no means an exhaustive list: (i) Are faces a special class of objects? (ii) Is semantic knowledge organized according to category or modality? (iii) Are there separate implicit and explicit memory systems? (iv) What is the relevant reference frame in neglect? (v) How homogeneous are the functions of prefrontal cortex? (vi) What is the best way to describe the specializations of the left and right hemispheres? You may also choose to expand one of your Short Papers into a longer, more in-depth analysis of a topic.

There is a series of assignments related to the term paper that you must complete:

Oct 16 Topic due: Must include 2-3 sentence description of proposed paper topic. You will get advice on how to proceed, what references to start with, and other suggestions. (5%)

Nov 4 Annotated reading list due: List of 10 references with 1-2 sentence description of main point of each article. You will get feedback on areas you may have overlooked. (10%)

Nov 25 Term paper draft due: A complete draft of your term paper, including abstract and reference list. Review the late policy carefully, and make sure you have enough toner in your printer, a back-up of your diskette, no vacation plans for that week, etc. etc. well in advance of this deadline! You will get feedback on how to improve your paper. After this date you must schedule a writing conference to discuss your paper. (45%)

Dec 11 (5 pm) Revision of term paper due: You should respond to suggestions for improvements to your first draft and incorporate additional research as advised. (40%)
Exams

The purpose of the Midterm and Final Exams is to assess basic factual knowledge of topics covered in lectures and readings, to review critical concepts and theories that are important in the field of Cognitive Neuroscience, and to challenge you to think deeply about ideas presented in class. In addition, the Final Exam will also require you to synthesize information across diverse areas and perhaps think about topics in novel ways.

There are three midterm exams scheduled during the semester. Each of these exams will be administered during the regular class time, and should last approximately 45 minutes (although you will be allowed to use the entire class time). Two of these exams will contribute a total of 60% towards your final grade (30% each); the third exam score – with the lowest grade – will be dropped. If you are happy with your first two exam scores, you do not have to take the third exam.

The exams are scheduled as follows:

- **Exam 1**  Sep 30  Lectures from Sep 4 – Sep 25, TEXT 1-5; FM 1-2
- **Exam 2**  Oct 28  Lectures from Oct 2 – Oct 23, TEXT 6-8; FM 3, 7-8, 14
- **Exam 3**  Dec 2  Lectures from Oct 30 – Nov 25, TEXT 9-11,15-16; FM 5, 9-10, 15-16

Review sessions with the Teaching Assistants will be scheduled for an evening prior to each exam.

**There are no make-up exams:** With the exception of an authorized university absence, exams will not be rescheduled. If you miss an exam, that will automatically be the grade that is dropped when calculating your final grade for the course.

Each exam will consist of three types of questions: (i) multiple choice questions designed to assess detailed knowledge presented either in lecture or in readings; (ii) short answer questions designed to address basic knowledge about topics presented both in lecture and in readings; (iii) essay questions designed to assess in-depth knowledge and to integrate information across lectures or readings. Although the essay questions will be primarily graded based on content, clarity of expression and organization of ideas will not be ignored.

A complete sample exam (and answer key) is available from the course web page.

The final exam will be **cumulative.** It will last 2 hours, and will be worth 30% of your final grade. The final exam will follow the same general format as the exams, with multiple choice, short answer, and essay questions. The date of the final exam will be as set forth by the University. (As of this writing, the exam is tentatively scheduled for Thursday, December 18, from 11:00-1:00, but you should check this.)

If you elect to take the course for WATU credit, you will submit a term paper in lieu of taking the final exam.
Learning Outside the Classroom

There will be a number of opportunities to participate in events outside of class where you can see real, live cognitive neuroscience in action. These events will be posted on the course web page and in some instances will be announced in class or by email. These include:

- **Patient case conferences.** Medical charts and brain scans for new neurology cases are reviewed for research purposes. Case conferences take place at the hospital once a month (on Wednesday mornings) and require my permission to attend, due to space constraints. The schedule will be posted on the course web page. In past years, students have found these to be both interesting and informative; if you are interested, email me as early as possible to sign up.

- **Colloquia/Seminar on topics relating to cognitive neuroscience.** A number of groups on campus hold weekly or biweekly talks which may be related to topics we are discussing in class. Typically, these talks are given by leaders in the field of cognitive neuroscience. Attending a talk gives you an opportunity to hear the details of experiments that are only briefly described in your textbook or in lecture and to learn what is happening on the cutting edge of the field. Talks of interest may be held at:
  - Center for Cognitive Neuroscience (CCN) – Mon 12:00
  - Institute for Research in Cognitive Science (IRCS) – Fri 12:00
  - Institute for Neurological Sciences (INS) – Wed 4:00
  - Brain and Language Group – Wed 10:00

- **Research participation.** The Center for Cognitive Neuroscience has ongoing research projects, ranging from cognitive testing to fMRI scans. We are routinely looking for participants for these studies. Research participation opportunities will be posted on the course web site, along with information and eligibility requirements. (Certain studies have exclusionary conditions that may not permit all students to participate.)

You are strongly encouraged to take advantage of as many of these opportunities as possible to extend your learning outside the classroom. To give you even more encouragement, you can write a summary of the event you attended which can be substituted for any one of the Short Papers. If the event is not listed on the web site, you must get approval before writing the paper. **The due dates and length restrictions are the same as noted for the Short Papers.** If you have questions about what information to include in this report, please see me prior to submitting it.

You can only substitute a Learning Outside the Classroom report one time during the semester, although you may participate in the above events as many times as you would like. Events that qualify for this assignment will be noted on the course web page. If you have any questions, please ask!
Writing Across the University (WATU) Requirements

This is a WATU-affiliated course. You have the option of taking this course in partial fulfillment of the University Writing Requirement. (For more information about the WATU program, visit the Writing Program’s web page at http://www.sas.upenn.edu/writing/index.html)

You must decide if you are going to complete the WATU portion of the course by September 18. Please review the WATU requirements summarized on this handout, and return it with your decision no later than September 18. After this date, you do not have the WATU option; if we do not hear from you, we will assume you have elected not to complete the WATU requirements. However, if you sign up for WATU and change your mind or fail to meet the WATU requirements, you always retain the option of taking the final exam.

Additional WATU requirements:

1. You must complete all four stages of the term paper assignment: topic, annotated reading list, draft, and revision.
2. You must have at least two conferences with the Writing Fellow.
3. You must submit a revision of any Group B Short Paper that receives a grade lower than 80. This revision is due no later than December 2, following a conference with the Writing Fellow.

Name: ___________________________________________ (Please print legibly!)

ID: ___________________________________________

_____ I am going to complete the WATU portion of the course.

_____ I am not going to complete the WATU portion of the course.

Return this form no later than September 18.