Sensory Perception  
BIO45400 Code3406  
Summer 2013 Syllabus  
3 credits

Instructor  
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Office hrs by appointment only.

Monday and Wednesday 9:30 – 10:45 am  
MR506

Course description: Different types of sensory systems with their functional modalities will be presented. The biological bases for how these functions are generated and modified will then be described. Scientific data will be integrated into the lectures, such that students use critical skills in analyzing data, proposing hypotheses and designing experiments.

Complementary courses: Biology 10050, 20700, 35400, 35500, 37900, 45100.

Course goals:

• Students will be able to identify the different sensory systems in humans and other animals.
• Students will learn basic mechanisms involved in sensation and perception.
• Students will be able to evaluate past and present theories of perception and critically evaluate evidence in favor or against those theories.

Learning outcomes: After completing this course, students should be able to:

• 1) describe what the different sensory modalities encompass.
• 2) describe the process of transduction in each sensory modality.
• 3) describe the basic brain circuits mediating the different sensory modalities.
• 4) design, perform, and interpret psychophysical experiments.
• 5) plot psychophysical data and generate psychometric functions from them.
• 6) explain how sensory processing can be modified by other brain processes such as attention or memory.
• 7) describe the relationship between brain activity and perceptual (behavioral) state.
• 8) interpret scientific data from primary research papers on sensory perception.
• 9) propose experiments to test hypotheses on sensory perception.

Learning assessment: Writing a successful term paper.


Textbook options:
ISBN-10: 0-7167-5754-0

Supplementary texts and readings are available in pubmed (using the provided PMID), and blackboard. Contact the instructor if you need help accessing these resources.
Grading
Quizzes: 5%
Writing assignments: 15%
Oral presentations: 15%
Term paper: 20%
Exam 1: 15%
Exam 2: 15%
Final Exam: 15%

Lectures and classroom: Developing a sense of confidence and good communication with your peers and professors is a very important skill to succeed in the professional world. In this class we will organize group discussions centered on the course materials and readings. So it is very important that you come prepared for class.

Exams & quizzes: There will be 3 exams. Each exam will cover topics since the start of the course or previous exam (i.e. are non-cumulative). In addition there will be a brief quiz at the start of most first classes (i.e., when we start a new topic); quizzes will be brief, and will start promptly at the start of each lecture. The quiz will consist of questions on the textbook readings assigned that week (I might ask you to explain a figure from the reading).

Exams cannot be made up. Do not miss an exam unless you have a strong reason (e.g., medical, jury duty). Missed quizzes cannot be made up, but I will drop the lowest quiz grade. I will expect you to have read the assigned reading from the text for each lecture before class, since the lectures will typically assume that you have read the material. You will probably wish to read the assigned material again more carefully after the lecture. You will be responsible on the exams both for material covered in class and in other readings. In other words, I expect you to come to class and to do the readings.

Writing: In this course I would like you to exercise your scientific reading and writing skills. Your assignment will be to write a one-page critique on selected articles: In three short paragraphs explain a) the goal of the paper, and b) the major strength and c) weakness of the paper. Turn your writing assignment after taking the quiz. If you cannot attend a quiz class, make sure you give advance notice to the instructor, and arrange for a time to turn your assignment (before the quiz class). Writing assignments are to be delivered in hard copy on the date in which they are due. Emails are NOT accepted. Late assignments are NOT accepted.

You will also be expected to write a term paper. We will discuss the format in more detail in class, but the paper will be in the form of a research proposal in a topic directly related to sensory perception that interests you. The term paper will consist of four sections: BACKGROUND: two or three paragraphs that explain the question or issue of interest, why is it important and the state of the art in that field. HYPOTHESIS: what is the main goal of your experiment proposal? APPROACH: how are you going to test the hypothesis?, what results do you expect?, what problems do you anticipate?, and consider alternative solutions. SIGNIFICANCE: If your experiment can successfully test the hypothesis, what happens next?

On September 30th, I expect that you will have prepared a draft of your term paper. Be prepared to present your term paper in class. I will read your draft and give it back to you with comments so that you can improve your paper, and obtain a better grade.
The scientific community relies on being able to accept at face value what is written in journals; the most serious act of dishonesty is to present something as being written by you when it has in fact been written by someone else. In this course we will use the standard that if more than a sentence is copied verbatim or text longer than a paragraph paraphrased without being given a source, that will be considered plagiarism, and will lead to a failing grade in the assignment or course. (see statement on Academic Integrity policy below).

Student Presentations
In addition to the writing assignment we will have a group discussion of the assigned papers. We will form groups of students (this depends on the number of people registered for class). As indicated in the schedule every student group will be expected to lead more than one 15-minute discussion during the summer session. Every student will also have the opportunity to do an individual presentation on their term paper. Swapping dates is allowed, but make sure to contact the instructor at least a week before the date of your group presentation. Discussions will be based on the assignment for that class and everyone is expected to participate. Presenting students are encouraged to contact the instructor if they feel they need help preparing their presentation.

Extra readings and links
Additional readings and links to complementary information will be posted regularly in blackboard. Check the relevant folders, as this information will be updated throughout the course. You are also encouraged to use the web resources of the textbook.

Statement on Academic Integrity:
The CCNY policy on academic integrity will be followed in this course. The document can be found through the CCNY website by clicking on Current Students → Academic Services → Policy on Academic Integrity. http://www1.ccny.cuny.edu/upload/academicintegrity.pdf
All students must read the details regarding plagiarism and cheating in order to be familiar with the rules of the college. Cases where academic integrity is compromised will be prosecuted according to these rules. In addition, the Policy of Academic Integrity can be found in the Undergraduate Bulletin 2007-09 in Appendix B.3 on pg 312.

Important dates to remember:
08/21/2013 Last day to apply for an e-permit
08/27/2013 Last day to drop classes with a 100% refund
09/03/2013 Last day to drop classes with a 75% refund
09/10/2013 Last day to drop classes with a 50% refund
09/17/2013 Last day to drop classes with a 25% refund
09/17/2013 Last day to drop without the grade of “W”
09/18/2013 Course withdrawal period begins – No refund
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<th>Unit 1</th>
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| 08/28  | Foundations: Psychophysics and cognitive psychology | Ch1 | Q1 due on 08/28  
PMID: 21817052 |
| 09/02  | Labor day | No class | Choose a topic for your term paper and start working on a draft presentation of your term paper |
| 09/09  | Foundations: Neurophysiology and imaging | Ch1 | A1 due on 09/09  
**A1 discussion: Team 1**  
A2: Barlow (1972)  
PMID: 4377168 |
| 09/11  | The body senses | Ch12 | Q2 and A2 due on 09/11  
**A2 discussion: Team 2**  
A3: Logothetis (2008)  
PMID: 18548064 |
| 09/16  | The body senses | Ch12 | A3 due on 09/16  
**A3 discussion: Team 3**  
A4: Pulver et al (2011)  
PMID: 21386006 |
| 09/18  | The chemical senses: odors | Ch13 | Q3 and A4 due on 09/18  
**A4 discussion: Team 4**  
PMID: 12853416 |
| 09/23  | The chemical senses: tastes | Ch13 | A5 due on 09/23  
**A5 discussion: Team 5**  
A6: Maimon (2011)  
PMID: 21628097 |
| 09/25  | Light and the eyes | Ch2 | Q4 and A6 due on 09/25  
**A6 discussion: Team 6**  
PMID: 17060642 |
| 09/30  | Light and the eyes | Ch2 | A7 due on 09/30  
**A7 discussion: Team 7**  
A8: Sincich et al. (2009)  
PMID: 19561602  
Term paper draft presentations Q&A |
| 10/02  | Exam 1 | Chs  
1,12,13,2 | |
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<td>The visual brain</td>
<td>Ch3</td>
<td>Q5 and A8 due on 10/07</td>
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<td><strong>A8 discussion: Team 8</strong></td>
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<td>PMID: 15660108</td>
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<td>10/09</td>
<td>The visual brain</td>
<td>Ch3</td>
<td>A9 due on 10/09</td>
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<td><strong>A9 discussion: Team 1</strong></td>
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<td>A10: Greif and Siemers (2010)</td>
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<td>PMID: 21045825</td>
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<td>10/14</td>
<td>Columbus day</td>
<td>No classes</td>
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<td>10/15</td>
<td>Recognizing visual objects</td>
<td>Ch4</td>
<td>Q6 and A10 due on 10/15</td>
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<td>Monday schedule</td>
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<td><strong>A10 discussion: Team 2</strong></td>
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<td>10/16</td>
<td>Recognizing visual objects</td>
<td>Ch4</td>
<td>A11 due on 10/16</td>
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<td><strong>A11 discussion: Team 3</strong></td>
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<td>10/21</td>
<td>Perceiving color</td>
<td>Ch5</td>
<td>Q7 and A12 due on 10/21</td>
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<td><strong>A12 discussion: Team 4</strong></td>
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<td>A13: Sheinberg and Logothetis (2001)</td>
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<td><strong>A13 discussion: Team 5</strong></td>
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<td>A14: van der Willingen et al (2011)</td>
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<td>Perceiving depth</td>
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<td>Q8 and A14 due on 10/28</td>
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<td>10/30</td>
<td>Perceiving depth</td>
<td>Ch6</td>
<td>A15 due on 10/30</td>
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<td><strong>A15 discussion: Team 7</strong></td>
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<td>11/04</td>
<td>Perceiving motion and perception for action</td>
<td>Ch7</td>
<td>Q9 and A16 due on 11/04</td>
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<td>11/06</td>
<td>Perceiving motion and perception for action</td>
<td>Ch7</td>
<td>A17 due on 11/06</td>
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<td>A18: Blake and Logothetis (2002)</td>
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| 11/13      | Attention and awareness                    | Ch8      | Q10 and A18 due on 11/13  
A18 discussion: Team 2  
PMID: 12354405  
A19 due on 11/18  
A19 discussion: Team 3  
PMID: 22658603 |
| 11/18      | Attention and awareness                    | Ch8      | A19 due on 11/18  
A19 discussion: Team 3  
PMID: 22658603 |
| 11/20      | Sound and the ears                         | Ch9      | Q11 and A20 due on 11/20  
A20 discussion: Team 4  
A21: Osmanski & Dooling (2009)  
PMID: 19640055  
A21 due on 11/25  
A21 discussion: Team 5  
PMID: 20036538 |
| 11/25      | Sound and the ears                         | Ch9      |  |
| 11/27      | Friday Schedule                            | NO CLASSES | WORK ON YOUR TERM PAPER |
| 11/28-12/1 | THANKSGIVING                               | NO CLASSES | WORK ON YOUR TERM PAPER |
| 12/2       | The auditory brain and perceiving auditory scenes | Ch10    | Q12 and A22 due on 12/2  
A22 discussion: Team 6  
PMID: 20670839  
A23 due on 12/4  
A23 discussion: Team 7  
A24: Beck & Eccles (1992)  
PMID: 1333607 |
| 12/4       | Perceiving speech and music                | Ch11     | A23 due on 12/4  
A23 discussion: Team 7  
A24: Beck & Eccles (1992)  
PMID: 1333607 |
| 12/9       | Perceiving speech and music                | Ch11     | Q13 and A24 due on 12/9  
A24 discussion: Team 8  
PMID: 16647799  
A24 due on 12/11  
A25 due on 12/11  
A25 discussion: Group |
| 12/11      | Group Review                               | Chs 8-11 | Term paper due on 12/11  
A25 due on 12/11  
A25 discussion: Group |
| 12/16-23   | FINAL EXAM in MR 506                       | Chs 8-11 | Time: TBA |

NO CLASSES work on your term paper.

Friday Schedule.

Thanksgiving.

Final Exam in MR 506.