

**PY 417: Advanced Neuroscience Seminar**

Block 7, 2008  
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**Course Description**

This course provides an opportunity for more in depth, student-centered exploration of fundamental areas of neuroscience. Topics may include, but are not limited to cellular and molecular neuroscience, nervous system development, sensory and motor systems, regulatory systems, behavioral and cognitive neuroscience.

The course is organized as a **seminar**, which means there will be no formal lectures by the professor. Instead, student will be doing the lecturing. Students share equal responsibility (with the professor and other students) for contributing to lectures/discussions, and for the success of the course. The key to good discussions is a willingness to express and support your opinion—don't be disappointed if someone challenges your opinion or disagrees with you; simply reevaluate your position, and then continue to participate in the discussion process. To discuss the material adequately, it is essential that you read the assigned chapters well ahead of time, preferably twice, and that you think about the readings in relative depth before you come to class. We must all work together to insure meaningful coverage of the material. Class will generally begin exactly at 9 AM and discussions will continue as long as they are fruitful. Articles for reading are on PROWL under PY417 (<http://prowl.coloradocollege.edu/>). The password is "titmouse".

**Required Textbooks**

Kandel, E.R., Schwartz, J.H., & Jessell, T.M. (2000). *Principles of neural science* (4<sup>th</sup> ed.). New York: McGraw-Hill.

**Grading Procedures**

Final grades are calculated as follows (you decide the specifics for items 2-5):

1) Class discussion/interaction grade	10%
2) Review examination	10%
3) Lecture	30-50%
4) Final paper	30-50%
Total	100%

with the following breakdown (of course, "+" and "-" will also be given when appropriate)::

A =	90-100%
B =	80-89%
C =	70-79%
D =	65-69%
NC =	below 65%

A = Excellent work that reflects superior understanding and insight, creativity, or skill.

B = Good work that reflects a high level of understanding and insight, creativity, or skill.

C = Adequate work that indicates readiness to continue study in the field.

D = Marginal work, only minimally adequate, indicating lack of readiness to continue in the field.

NC = Failing work, clearly inadequate and unworthy of credit.

**Note: Your grade in this course is based only on your mastery of the material, not on your perceived effort.**

- 1) **Class discussion/interaction** grades will be given by the professor to the class as a whole—in other words, everyone will receive the same discussion/interaction grade for the course. Absences on any given day will negatively affect the grade. In general, grades will be based on whether the class generates meaningful, on-topic discussions that illustrate not only comprehension of the basic material but insight that goes beyond the material itself. A key factor here is each student's ability to involve others in the discussion of the material. Discussions must involve everyone in the course and must be balanced to be successful. Knowing when to talk, and when to listen to others are equally important.
- 2) The **review examination** covers information from chapters 1, 2, 4, 10, 15, 17, and 18 of Kandel et al. (2006), which serve as a brief review of the PY299:Neuroscience course itself. All questions on the review exam will be given orally by the professor.
- 3) For the **lecture**, you will work individually or in pairs (depending on the size of the class) and are responsible for the following:
  - (a) A complete lecture of the topic assigned for that day. In this lecture, you should synthesize the main points from your sources and present them to the class in a coherent, logical, and instructive manner. This is not simple reporting of a handful of articles—it should be a cohesive lecture on the topic itself. The lecture should not be read. It is generally helpful to provide the class with a handout to make it easier to follow your lecture--but the handout should be in outline form only (i.e., not complete summaries or sentences). You have two hours to present all of the necessary material (with a 10 minute break in the middle). Lectures should be somewhat interactive--allow for ample opportunity for students to ask questions regarding the lecture, both during the lecture itself and afterwards.

- (b) In preparation, you must meet with the professor at least 2 class days (preferably much sooner) before you give your lecture to discuss which aspects of the material will be addressed and how. For this initial meeting, you need to have perused every article you are considering for your lecture—at a minimum, this should be every article on PROWL for that topic. Realize you will probably go beyond the articles themselves for your lecture. Be prepared at this meeting to outline in detail what you have planned in terms of the lecture itself and in terms of leading the subsequent discussion. The extent of your preparation for this meeting will also figure into your lecture grade.
- (c) You may use Powerpoint, but be careful to use it appropriately—reading off of Powerpoint slides is not acceptable.
- (d) After the lecture, you will be responsible for leading the discussion of the topic for that day—two class days before your lecture, you will assign one article from PROWL for the entire class to read for this day. You should have discussion questions ready.

Your grade will be based on the quality of your lecture, its interactive nature, and your contribution to leading subsequent class discussion (see grade sheet at end of syllabus). If done in pairs, both students will receive the same grade unless there are extenuating circumstances.

- 4) **Final Paper:** This is a formal research paper on a neuroscience topic of your choice—topics must focus on issues in basic neuroscience; as such, they may NOT involve any disorders or diseases. The topic may NOT be the same as you did for your presentation. All topics must be approved in advance by the professor and cannot be changed once approved. The paper must be typed (in current APA format) and provide a concise but thorough discussion of the topic. Excessively wordy or vague papers will lose points. References must also be cited where relevant (on average, papers should have approximately 20 references, mostly from journal articles; no internet citations will be accepted). The paper is limited to 5 pages—longer papers will lose points. You must turn in the grade sheet attached to your paper (failure to attach the grade sheet will result in points being deducted). Late papers will result in a minimum of a full-grade deduction, if they are accepted at all.

With regard to the evaluation of your writing, you should consider the following grading standards:

An 'A' paper commands attention because of its insightful development and mature style. It presents a cogent analysis of the topic, elaborating with well-chosen examples and persuasive, original reasoning. The paper is concise and shows that its writer can usually choose words aptly, use sophisticated sentences effectively, and observe the conventions of formal written English. It is generally a pleasure to read.

A 'B' paper is clearly competent. It presents a thoughtful analysis of the topic, elaborating with appropriate examples and sensible reasoning. It is typically less cohesive and concise than an 'A' paper, with a less fluent and complex style. The paper shows that the

writer can usually choose words accurately, vary sentences with some degree of effectiveness, and observe most conventions of formal written English. Generally, it can be read without undue effort on the part of the reader.

**A 'C' paper** is satisfactory, sometimes marginally so. It presents an adequate analysis of the topic, elaborating with sufficient examples and acceptable reasoning. Just as these examples and reasoning will be less developed than those in a 'B' paper, so will the paper's style be less effective--even to the point of distracting the reader and making the logic difficult to follow. Nevertheless, the paper shows that the writer can usually choose words of sufficient precision, control sentences of reasonable variety, and observe most conventions of formal written English. It is generally somewhat difficult to read.

**A 'D' paper** is unsatisfactory in some marginal way. It presents an insufficient analysis of the topic, with poor elaboration and/or reasoning. The paper's style is generally not effective, making the paper difficult to follow. Words may not be chosen with sufficient precision, with insufficient control of formal written English. It is difficult to read and understand, requiring effort on the part of the reader.

**A 'NC' paper** is unsatisfactory in one or more ways. It may analyze the topic illogically or disregard the topic's demands; it may lack coherent structure or elaboration with examples; it may reflect an incomplete understanding of the topic. Its prose is usually characterized by at least one of the following: wordiness, frequently imprecise or simplistic word choice, little sentence variety or fragmented sentence structure; occasional major errors in grammar and usage, or frequent minor errors. Takes considerable effort to read and understand the main points of the paper.

## HONOR SYSTEM

According to the Colorado College Honor System, students must adhere to the following general guideline regarding **plagiarism**:

In papers, direct quotations must be acknowledged by quotes and footnotes. Ideas or paraphrasing taken from outside sources (including course textbooks) must be properly acknowledged, unless the professor specifically states otherwise (*Pathfinder*, 1996-97, p. 57).

More specific rules about plagiarism are found in the *American Psychology Association (APA) Publication Manual* (1994, pp. 292, 294):

Quotation marks should be used to indicate the exact words of another. Summarizing a passage or rearranging the order of a sentence and changing some of the words is paraphrasing. Each time a source is paraphrased, a credit for the source needs to be included in the text . . . The key element of this principle is that an author does not present the work of another as if it were his or her own work. This can extend to ideas as well as written words.

Plagiarism is avoided by proper use of quotations and paraphrasing.

**A quotation** is an exact copy the language from your source; for this you use quotation marks, cite the reference and the page number(s)--as detailed in the APA Publication Manual (see pp. 168-174). In general, one will quote in scientific writing only when the original text contains memorable words or phrases. These quotes generally have emotional overtones, and often express the original author's bias. **Because science is primarily concerned with information (more so than how the ideas are expressed), quotations are very rare in scientific writing. Overuse of quotations detracts from a paper in both style and content, and generally reflects a lack of effort on the part of the writer.**

**Paraphrasing** is a presentation of information from another source in your own words (and therefore in your own style and syntax). You only need to give the source of the original text (no page number) for the in-text citation. Paraphrasing is very common in scientific writing because you often base your arguments on information synthesized from other sources. You should paraphrase when you want to simplify or summarize ideas presented in the original text.

If you have any questions with regards to this matter, you may also find valuable information on the following websites:

<http://www.ColoradoCollege.edu/Dept/PY/Plag.html>  
<http://www.coloradocollege.edu/Library/Course/webplag2b.html>

If you continue in this course beyond the first day, it is assumed you fully understand and accept the guidelines of the course as outlined in this syllabus (and by the Psychology department), and that you have familiarized yourself with the general guidelines of the Colorado College honor system. In accordance with the honor system, you must write and sign the following on your paper and on your tests:

"On my honor, I have neither given nor received any unauthorized aid on this paper/exam."

Do not put your name anywhere on your paper; **use only your student ID#**. Sign the honor code only with your student ID# as well.

## WEEKLY SCHEDULE

Notes: You are responsible for knowing this schedule. Complete all readings by the day and time they are listed and be ready to discuss them. Dates and times listed are subject to change.

### **WEEK #1**

#### **MONDAY**—[50 pages]

9 AM: Introductions and overview of course: Discussion about discussions

Chapter 1: The Brain and Behavior (pp. 5-18)

Chapter 2: Nerve Cells and Behavior (pp. 19-35)

Chapter 4: The Cytology of Neurons (pp. 67-87)

Note: No lecture today, but you may ask questions about the assigned chapters and work with each other in preparation for the review examination.

#### **TUESDAY**—[58 pages]

9 AM: Review session:

Chapter 10: Overview of Synaptic Transmission (pp. 175-186)

Chapter 15: Neurotransmitters (pp. 280-297)

Chapter 17: The Anatomical Organization of the Central Nervous System (pp. 317-336)

Chapter 18: The Functional Organization of Perception and Movement (pp. 337-348)

Note: No lecture today, but you may ask questions about the assigned chapter and work with each other in preparation for the review examination.

#### **WEDNESDAY**

9 AM: **REVIEW EXAMINATION** (On chapters 1, 2, 4, 10, 15, 17, and 18)

#### **THURSDAY**

10 AM: Individual meetings

#### **FRIDAY**

10 AM: Individual meetings

**WEEK #2**

**MONDAY**

10 AM: Individual meetings

**TUESDAY**

10 AM: Individual meetings

**WEDNESDAY**

9 AM: DENDRITES

Gordon, U., Polsky, A., & Schiller, J. (2006). Plasticity compartments in basal dendrites of neocortical pyramidal neurons. *Journal of Neuroscience*, 26, 12717 – 12726.

Kubota, Y., Hatada, S., Kondo, S., Karube, F., & Kawaguchi, Y. (2007). Neocortical inhibitory terminals innervate dendritic spines targeted by thalamocortical afferents. *Journal of Neuroscience*, 27, 1139 – 1150.

Ludwig, M., & Leng, G. (2006). Dendritic peptide release and peptide-dependent behaviours. *Nature Reviews Neuroscience*, 7, 126-136.

Migliore, M., & Shepherd, G. M. (2002). Emerging rules for the distributions of active dendritic conductances. *Nature Reviews Neuroscience*, 3, 362-370.

Segal, M. (2005). Dendritic spines and long-term plasticity. *Nature Reviews Neuroscience*, 6, 277-284.

Shepherd, G. M. (2003). Information processing in complex dendrites. In L.R. Squire et al. (Eds.) *Fundamental neuroscience* (pp. 319-337). Amsterdam: Academic Press.

Spruston, N. (2008). Pyramidal neurons: Dendritic structure and synaptic integration. *Nature Reviews Neuroscience*, 9, 206-221.

Wong, R.O.L., & Ghosh, A. (2002). Activity-dependent regulation of dendritic growth and patterning. *Nature Reviews Neuroscience*, 3, 803-812.

Yuste, R. & Bonhoeffer, T. (2004). Genesis of dendritic spines: insights from ultrastructural and imaging studies. *Nature Reviews Neuroscience*, 5, 24 – 34.

## THURSDAY

### 9 AM: MIRROR NEURONS

- Aziz-Zadeh, L., Koski, L., Zaidel, E., Mazziotta, J., & Iacoboni, M. (2006). Lateralization of the human mirror neuron system. *Journal of Neuroscience*, *26*, 2964 – 2970.
- Blakemore, S. J., & Decety, J. (2001). From the perception of action to the understanding of intention. *Nature Reviews Neuroscience*, *2*, 561-567.
- Cheng, Y., Meltzoff, A.N., & Decety, J. (2007). Motivation modulates the activity of the human mirror-neuron system. *Cerebral Cortex*, *17*, 1979-1986.
- Hadjikhani, N., Joseph, R.M., Snyder, J., & Tager-Flusberg, H. (2006). Anatomical differences in the mirror neuron system and social cognition network in autism. *Cerebral Cortex*, *16*, 1276 - 1282.
- Iacoboni, M., & Dapretto, M. (2006). The mirror neuron system and the consequences of its dysfunction. *Nature Reviews Neuroscience*, *7*, 942-951.
- Prather, J.F., Peters, S., Nowicki, S., & Mooney, R. (2008). Precise auditory-vocal mirroring in neurons for learned vocal communication. *Nature*, *451*, 305-312.
- Siegal, M., & Varley, R. (2002). Neural systems involved in ‘theory of mind’. *Nature Reviews Neuroscience*, *3*, 463-471.

## FRIDAY

### 9 AM: ENRICHMENT AND PLASTICITY

- Bavelier, D., & Neville, H. J. (2002). Cross-modal plasticity: Where and how? *Nature Reviews Neuroscience*, *3*, 443-452.
- Burke, S.N., & Barnes, C.A. (2006). Neural plasticity in the ageing brain. *Nature Reviews Neuroscience*, *7*, 30-40.
- Hensch, T.K. (2005). Critical period plasticity in local cortical circuits. *Nature Reviews Neuroscience*, *6*, 877-888.
- Lamprecht, R., & LeDoux, J. (2004). Structural plasticity and memory. *Nature Reviews Neuroscience*, *5*, 45-54.
- Münte, T.F., Altenmüller, E. & Jäncke, L. (2002). The musician's brain as a model of neuroplasticity. *Nature Reviews Neuroscience*, *3*, 473 – 478.

Nithianantharajah, J., & Hannan, A.J. (2006). Enriched environments, experience-dependent plasticity and disorders of the nervous system. *Nature Reviews Neuroscience*, 7, 697-709.

Sur, M., & Leamey, C. A. (2001). Development and plasticity of cortical areas and networks. *Nature Reviews Neuroscience*, 2, 251-262.

van Praag, H., Kempermann, G., & Gage, F. H. (2000). Neural consequences of environmental enrichment. *Nature Reviews Neuroscience*, 1, 191-198.

Kandel et al. (2000): Chapter 56: Sensory experience and the fine-tuning of synaptic connections (pp. 1115-1130)

<b>WEEK #3</b>
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**MONDAY**

9 AM: INSULA

Ackermann, H. & Riecker, A. (2004). The contribution of the insula to motor aspects of speech production: A review and a hypothesis. *Brain and Language*, 89, 320-328.

Bamiou, D-E., Musiek, R.E., & Luxon, L.M. (2003). The insula (Island of Reil) and its role in auditory processing: Literature review. *Brain Research Reviews*, 42, 143-154.

Bennett, S. & Netsell, R.W. (1999). Possible roles of the insula in speech and language processing: Directions for research. *Journal of Medical Speech-Language Pathology*, 7, 253-270.

Frot, M., Magnin, M., Mauguière, F., & Garcia-Larrea, L. (2006). Human SII and posterior insula differently encode thermal laser stimuli. *Cerebral Cortex*, 17, 610-620.

Henderson, L.A., Gandevia, S.C., & Macefield, V.G. (2007). Somatotopic organization of the processing of muscle and cutaneous pain in the left and right insula cortex: A single-trial fMRI study. *Pain*, 128, 20-30.

Naqvi, N.H., Rudrauf, D., Damsio, H., & Bechara, A. (2007). Damage to the insula disrupts addiction of cigarette smoking. *Science*, 315, 531-534.

Sander, K. & Scheich, H. (2005). Left auditory cortex and amygdala, but right insula dominance for human laughing and crying. *Journal of Cognitive Neuroscience*, 17, 1519-1531.

Shelley, B.P. & Trimble, M.R. (2004). The insular lobe of Reil—Its anatomico-functional, behavioural and neuropsychiatric attributes in humans: A review. *World Journal of Biological Psychiatry*, 5, 176-200.

Simmons, A., Strigo, I., Matthews, S.C., Paulus, M.P., Stein, M.B. (2006). Anticipation of aversive visual stimuli is associated with increases insula activation in anxiety-prone subjects. *Biological Psychiatry*, 60, 402-409.

Stein, M.B., Simmons, A.N., Feinstein, J.S., & Paulus, M.P. (2007). Increased amygdala and insula activation during emotion processing in anxiety-prone subjects. *American Journal of Psychiatry*, 164, 318-327.

## **TUESDAY**

10 AM: Individual meetings

## **WEDNESDAY**

9 AM: PREFRONTAL LOBE and associated functions

Adolphs, R. (2003). Cognitive neuroscience of human social behaviour. *Nature Reviews Neuroscience*, 4, 165-178.

Amodio, D.M., & Frith, C.D. (2006). Meeting of minds: The medial frontal cortex and social cognition. *Nature Reviews Neuroscience*, 7, 268-277.

Ghazanfar, A. A., & Santos, L. R. (2004). Primate brains in the wild: The sensory bases for social interactions. *Nature Reviews Neuroscience*, 43, 177-181.

Ramnani, N., & Owen, A. M. (2004). Anterior prefrontal cortex: Insights into function from anatomy and neuroimaging. *Nature Reviews Neuroscience*, 5, 184-194.

Schall, J. D. (2001). Neural basis of deciding choosing and acting. *Nature Reviews Neuroscience*, 2, 33-42.

Wood, J.N. & Grafman, J. (2003). Human prefrontal cortex: processing and representational perspectives. *Nature Reviews Neuroscience*, 4, 139 – 147.

## **THURSDAY**

10 AM: Individual meetings

**FRIDAY**

9 AM: HUMAN LANGUAGE (and language acquisition)

- Bates, E. (2003). Natura e cultura nel linguaggio [On the nature and nurture of language]. In R. Levi-Montalcini, D. Baltimore, R. Dulbecco, & F. Jacob (Series Eds.) & E. Bizzi, P. Calissano, & V. Volterra (Vol. Eds.), *Frontiere della biologia [Frontiers of biology]. Il cervello di Homo sapiens [The brain of homo sapiens]*. (pp. 241-265). Rome: Istituto della Enciclopedia Italiana fondata da Giovanni Treccani S.p.A.
- Beaucousin, V., Lacheret, A., Turbelin, M-R., Morel, M., Mazoyer, B., & Tzourio-Mazoyer, N. (2007). FMRI study of emotional speech comprehension. *Cerebral Cortex*, *17*, 339 - 352.
- Brown, T.T., Lugar, H.M., Coalson, R.S., Miezin, F.M., Petersen, S.E., & Schlaggar, B.L. (2005). Developmental Changes in Human Cerebral Functional Organization for Word Generation. *Cerebral Cortex*, *15*, 275-290.
- Catini, M., Jones, D.K., & Ffytche, D.H. (2004). Perisylvian language networks of the human brain. *Annals of Neurology*, *57*, 8-16.
- Golestani, N., Molko, N., Dehaene, S., LeBihan, D., & Pallier, C. (2007). Brain structure predicts the learning of foreign speech sounds. *Cerebral Cortex*, *17*, 575 - 582.
- Kuhl, P.K. (2004). Early language acquisition: cracking the speech code. *Nature Reviews Neuroscience*, *5*, 831 - 843
- McNealy, K., Mazziotta, J.C., & Dapretto, M. (2006). Cracking the language code: Neural mechanisms underlying speech parsing. *Journal of Neuroscience*, *26*, 7629 - 7639.
- Meyer-Lindenberg, A., Mervis, C.B., & Berman, K.F. (2006). Neural mechanisms in Williams syndrome: A unique window to genetic influences on cognition and behaviour. *Nature Reviews Neuroscience*, *7*, 380-393.
- Minagawa-Kawai, Y., Mori, K., Naoi, N., & Kojima, S. (2007). Neural attunement processes in infants during the acquisition of a language-specific phonemic contrast. *Journal of Neuroscience*, *27*, 315 - 321.
- Obleser, J., Scott, S.K., & Eulitz, C. (2006). Now you hear it, now you don't: Transient traces of consonants and their nonspeech analogues in the human brain. *Cerebral Cortex*, *16*, 1069-1076.
- Spitsyna, G., Warren, J.E., Scott, S.K., Turkheimer, F.E., & Wise, R.J.S. (2006). Converging language streams in the human temporal lobe. *Journal of Neuroscience*, *26*, 7328 - 7336.

Ullman, M.T. (2001). A neurocognitive perspective on language: The declarative/procedural model. *Nature Reviews Neuroscience* 2, 717 – 726.

Vargha-Khadem, F., Gadian, D.G., Copp, A., & Mishkin, M. (2005). FOXP2 and the neuroanatomy of speech and language. *Nature Reviews Neuroscience*, 6, 131-138.

Werker, J.F. & Yeung, H.H. (2005). Infant speech perception bootstraps word learning. *TRENDS in Cognitive Sciences*, 9, 519-527.

Kandel et al. (2000): Chapter 59: Language and the aphasias (pp. 1169-1187)

**WEEK #4**

**MONDAY**

9 AM: EMOTION—broadly defined

Baxter, M.G., & Murray, E.A. (2002). The amygdala and reward. *Nature Reviews Neuroscience*, 3, 563-573.

Damasio, A. R. (1995). Towards a neurobiology of emotion and feeling: Operational concepts and hypotheses. *The Neuroscientist*, 1, 19-25.

Fisher, H.E., Aron, A., & Brown, L.L. (2006). Romantic love: A mammalian brain system for mate choice. *Philosophical Transactions of the Royal Society of Britain*, 361, 2173-2186.

Hyman, S. E., & Malenka, R. C. (2001). Addiction and the brain: The neurobiology of compulsion and its persistence. *Nature Reviews Neuroscience*, 2, 695-703.

Kringelbach, M.L. (2005). The human orbitofrontal cortex: Linking reward to hedonic experience. *Nature Reviews Neuroscience*, 6, 691-702.

LaBar, K.S., & Cabeza, R. (2006). Cognitive neuroscience of emotional memory. *Nature Reviews Neuroscience*, 7, 54-64.

Schultz, W. (2000). Multiple reward signals in the brain. *Nature Reviews Neuroscience*, 1, 199-207.

Sugrue, L.P., Corrado, G.S., & Newsome, W.T. (2005). Choosing the greater of two goods: Neural currencies for valuation and decision making. *Nature Reviews Neuroscience*, 6, 363-375.

Vogt, B. A. (2005). Pain and emotion interactions in subregions of the cingulate gyrus. *Nature Reviews Neuroscience*, 6, 533-544.

Kandel et al. (2000): Chapter 50: Emotional states and feelings (pp. 982-997)

**TUESDAY**

Work on final paper

**WEDNESDAY**

10 AM: Final paper due  
FINAL DISCUSSION

<b>Guidelines for lectures</b> (adapted from Kristi Erdal)
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**Make eye contact with the class.**

- Do not just read from your notes or from Powerpoint slides.
- Do not just look at the professor.

**Dress appropriately.**

- This is a formal presentation so make sure you dress accordingly.

**Practice speaking clearly and fluently.**

- Fluency in the material means very few of the following:
  - a) "umms"
  - b) starting sentences over 2, 3 and 4 times
  - c) stammerings

**Monitor the speed of your lecture.**

- Do not speak more quickly than people can take notes—you are teaching, not presenting.  
[e.g., After defining a word, wait for the class to write it down before proceeding.]  
[The class will not be shy about telling you if you are going too fast.]

**Use visual aids (e.g., whiteboard, transparencies, handouts).**

- These should help you tell the “story” you want to tell.
- It might be particularly helpful to use the figures from articles, and to walk the class through what is happening in each figure you present.
- Less is more in visual aids. Do not put up more than the class can digest at one time.  
[e.g., If you are putting up text, only write single words or an outline.]
- If you are using graphs, make sure you explain them fully; that is, describe the x- and y- axes before moving on to the content of the graph.
- If you use Powerpoint, use it appropriately—many a good lecture has been ruined by improper use of Powerpoint..

**Appropriately target your information.**

- Explain technical language (e.g., terms you might have had trouble with yourself when you were reading the article).

**Organize your lecture flawlessly.**

The flow should be from general to specific, from less difficult to more difficult, etc.

**Be sure you are competent in the material.**

- The class and the professor should have several questions for you. Be sure you understand the material well enough such that you could provide a well-informed guess even though you may not know the exact answer.

**Complete the lecture in the allotted time.**

- You must practice and time your lecture. Remember: you are the professor for this lecture.

### Advice from former students

- Don't slack off on the days that you don't have class, and just do a lot of preparing, especially for the paper. It would be better to have all of the references and to have read them in advance so that you can have more time to piece it together. Be really interactive with the class for the presentation, it makes it more interesting and easier for others to pay attention. Also, if you start your presentation and feel that you don't want to continue, just pass out or have a seizure or something. Then you get to stop:)
- Try to spread out the course requirements. For example, schedule your test and lecture during different weeks, preferably before the fourth week. Also, don't delay in acquiring and reading articles for the paper. It takes a considerable amount of effort to synthesize so much information. Don't slack on the free days, use them to review material and prepare for your lecture or paper.
- Plan to spread out your paper, lecture and test throughout the course and make sure you get enough rest and stay healthy.
- Take this class if you think neuroscience is fun
- Start paper early for ILL
- Take the free time to really dive into some of the topics. Don't see free time as time to sit back. Know ahead of time your research topic. Also really take time to understand your topic.
- Do not procrastinate!
- Space out assignments, and make sure you are self-motivated.
- start researching stuff for research paper over break
- don't save everything for the last week
- start things early but don't be intimidated.
- Read the review articles carefully prior to studying for the oral exam. The days off are nice, but do not slack off because it catches up to you.
- Start early in studying for the oral exams, the two hour presentation, and the paper. Days that there are not class, do not blow off and think you have nothing to do. It has been proven that the more the information is recited, the more of a chance it can leaving the working memory and enter long term memory. It also helps to untangle all those concepts that might not make sense at first.
- At the end of the syllabus you will see a list of articles. Look them over before class starts because you have to choose them on the first day. The articles are important. You see, if you don't like the article for that day, the class discussion goes nowhere. For the paper, start looking for info on your topic the first day. You will find that some articles have to be

ordered by ILL or prospector. You have to read 20 or 30 articles on one topic, so choose a topic you like.

- Students definitely need to spread their projects out between the three weeks, and read the syllabus before class starts, so they can choose the chapters they want to lecture on and begin preparing for their paper. A trip to the CU Med library, depending on the paper subject was most helpful- may in the long run expediate the process. Work hard and it will pay off.
- do the reading. do the reading. start preparing for your lecture and oral exam early.

<b>Worksheet for Discussions</b>
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1. Think of the best group discussions you've ever been involved in. What things happened that made these conversations so satisfying? Make a few notes on this by yourself.
2. Think of the worst group discussions you've ever been involved in. What things happened that made these conversations so unsatisfactory? Make a few notes on this by yourself.
3. Now form a group with 3 other people. Take turns in talking about what made discussion groups work so well for you. Listen for common themes, shared experiences and features of conversation that a majority of you would like to see present in this course.
4. Take turns in talking about what made discussion group work so awful for you. Listen for common themes, shared experiences and features of group conversation that a majority of you would like to see avoided in this course.
5. For each of the characteristics of good discussion you agree on, try and suggest three things a group could do to ensure that these characteristics were present. Be as specific and concrete as you can. For example, if you feel good conversation is developmental, with later themes building on and referring back to earlier ones, then you could propose a rule that every new comment made by a participant is prefaced with an explanation as to how it relates to an earlier comment.
6. For each of the characteristics of bad discussion you agree on, try and suggest three things a group could do to ensure that these characteristics were avoided. Be as specific and concrete as you can. For example, if you feel that bad conversation happens when one person's voice dominates then you could propose a rule whereby once someone has spoken they are not allowed to make a second comment until at least three other people have spoken (unless another group member explicitly invites the participant to say something else).
7. Try and finish this exercise by drafting a charter for discussion that comprises the specific ground rules you agree on. We will make each group's rules public and see if we can develop a charter for discussion to guide us in the coming weeks.

<b>Grade Sheet for Lecture</b>
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**Students** \_\_\_\_\_ **&** \_\_\_\_\_ **Overall grade** \_\_\_\_\_

**Chapters presented** \_\_\_\_\_

**I. Lecture**

Background information	A	B	C	D	NC
Lecture was interactive (i.e., involved students)	A	B	C	D	NC
Summary of information in readings	A	B	C	D	NC
Integration of information/focus on topic	A	B	C	D	NC
Organization	A	B	C	D	NC
Clarity	A	B	C	D	NC
Presentation form, style, pacing, etc.	A	B	C	D	NC
Other points:	A	B	C	D	NC

**II. Contribution to leading discussion**

Preparation for initial meeting with professor	A	B	C	D	NC
Overall coverage of topic	A	B	C	D	NC
Ability to stimulate meaningful discussion	A	B	C	D	NC
Other points:					

## Correcting Symbols

<u>Symbol</u>	<u>Problem</u>	<u>Example</u>
A	article	<u>The</u> water is necessary for life.
Agr.	agreement (verb or noun)	The professor <u>lecture</u> every <u>days</u> .
Awk/?/unclear	awkwardness	(unclear, confusing sentence, or suggested change).
C.	capital letter	We are studying <u>E</u> ngineering.
Combine	sentences are too short	The experiment was successful. The engineers were impressed. (The successful experiment impressed the engineers.)
Frag.	fragment	<u>The meter that was broken.</u>
G:I	gerund: infinitive	They want <u>working</u> in the lab.
Id.	idiom	The hot water <u>contacts</u> the outer pipes.
Irr.	irrelevant	[the sentence(s) underlined do not pertain to the topic]
Poss.	possessive	The plastic lost <u>it's</u> flexibility.
Pr.	preposition	The plane landed <u>in</u> LAX. (at)
P.	punctuation	Nevertheless__he was quite upset. (.)
RC	relative clause	[use a relative clause]
Red.	redundant	The basic <u>fundamental</u> concept was incorrect.
Ref.	referent is unclear	The reactor produced plutonium and <u>it</u> was expensive.
Reg.	register (spoken vs. written)	It was a <u>real good</u> experiment.
RO	run-on sentence	<u>Reagan is the president, he beat Mondale.</u>
S.	spelling	They <u>recived</u> a note of gratitude.
Sub.	subordination	The man is not nice. But I like him. --> Although the man is not nice, I like him.
T.	tense (including passive)	We <u>have lived</u> here in 1973.
Tone	inconsistency of tone	The water is heated. <u>Return the solution to the flask.</u>
TR	transition	[you need a transition, or a better transition]
WF	wrong form	She sings <u>beautiful</u> .
WM	word missing	You must cover the vase to protect_____.
WO	word order	He <u>at eight o'clock was watching T.V.</u>
WW	wrong word	He <u>discussed</u> with us. (talked)
Wordy	wordiness	<u>This was a situation which was really very dangerous and we could have avoided it.</u>

<b>Scoring guide for final papers</b> (attach to the end of your paper)
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TOTAL \_\_\_\_\_/250      \_\_\_\_\_%    GRADE \_\_\_\_\_

**CONTENT:** Relevant, important, and sufficient information is presented. Ideas are thoroughly and completely developed.

\_\_\_\_\_ /150

**ORGANIZATION:** Clearly organized so each main idea is logically connected. Ideas flow smoothly. Paragraphs are evenly balanced with good transitions. Within paragraphs, each idea is logically developed and supported by the data.

\_\_\_\_\_ Very good (25 points)

\_\_\_\_\_ Good (20 points)

\_\_\_\_\_ Adequate (10 points)

\_\_\_\_\_ Inadequate (5 points)

**RHETORIC:** Appropriate use of formal academic language, and adheres to APA style guidelines. Correct word choice and usage. The essay is concise and clearly written.

\_\_\_\_\_ Very good (25 points)

\_\_\_\_\_ Good (20 points)

\_\_\_\_\_ Adequate (10 points)

\_\_\_\_\_ Inadequate (5 points)

**LANGUAGE:** Clear sentence structure, use of English grammar; incorporates a variety of sentence structures; sentences are easy to process.

\_\_\_\_\_ Very good (25 points)

\_\_\_\_\_ Good (20 points)

\_\_\_\_\_ Adequate (10 points)

\_\_\_\_\_ Inadequate (5 points)

**MECHANICS:** Neatly typed according to APA format, including margins, in-text citations, references, spelling, and punctuation.

\_\_\_\_\_ Very good (25 points)

\_\_\_\_\_ Good (20 points)

\_\_\_\_\_ Adequate (10 points)

\_\_\_\_\_ Inadequate (5 points)

<b>Student contract</b>
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**Note:** This sheet must be turned in to the professor by the second day of the class.

1) Mark the courses below that you have taken in Psychology:

- |                                  |                                |
|----------------------------------|--------------------------------|
| _____ PY299: Neuroscience        | _____ PY202: Research Design   |
| _____ PY362: Abnormal Psychology | _____ PY209: Social            |
| _____ PY332: Learning            | _____ PY374: Development       |
| _____ PY344: Cognition           | _____ PY433: Neuropharmacology |
| _____ PY412: Neuropsychology     | _____ PY394: Emotion           |

What biology/chemistry courses have you had? \_\_\_\_\_

2) I have read and understand the requirements of this course with regard to the following (initial each):

\_\_\_\_\_ This is a seminar and, as such, student participation is essential. It is important that I come to class well-prepared to discuss the readings.

\_\_\_\_\_ In discussions, some one may disagree with my opinion. This is okay. It is important to both express and support my opinion. Not everyone will agree on all points.

\_\_\_\_\_ All grading in the course is done blindly; grades are based entirely on the quality of the work turned in, and not on the perceived effort involved in doing the work.

\_\_\_\_\_ The paper, its due date and time; paper must be turned in complete with references—a late paper will either not be accepted, or will lose a minimum of one full grade.

\_\_\_\_\_ The requirements for the lectures

\_\_\_\_\_ The requirements for the examinations

\_\_\_\_\_ The Honor System, including plagiarism, quotations, citations and APA format

\_\_\_\_\_ I will only put my student ID# (not my name) on all assignments.

\_\_\_\_\_ Class begins exactly at 9 AM unless specifically noted otherwise.

3) Please fill in the percentages you would like for each assignment—total must be 100% (print clearly!):

1) Class discussion/interaction grade	10%
2) Review examination	10%
3) Lecture	_____ (30-50%)
4) Final paper	_____ (30-50%)
Total	100%

I have thoroughly read and understand the above:

Signature: \_\_\_\_\_

Print name: \_\_\_\_\_

Date: \_\_\_\_\_