

BRAIN MECHANISMS OF BEHAVIOR

Instructor: Richard Marrocco

Office hours: U,H 11:30-12:30 (or by appt.)

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Text: Physiology of Behavior. 8th ed, Carlson

SYLLABUS

- 1/6 Introduction: historical views and general remarks about the nervous system.
- 1/8 The scope and methods of biological psychology. Ch. 1
- 1/13 Membrane potentials, Action potentials, neural integration: Pp. 27-49
- 1/15 Synaptic transmission: pp 49-62.
- 1/20 Synaptic transmission: cont. Assignment I due.
- 1/22 Neuroanatomy of CNS. Ch. 3
- 1/27 **Midterm exam I**
- 1/29 Visual system: retina and color vision. Pp. 161-176; 185-187.
- 2/3 Visual system: form vision. Pp. 176-183; 187-193.
- 2/5 Visual system: visual processing streams. Pp 184-185
- 2/10 Hearing: peripheral and central mechanisms. Pp 201-214
- 2/12 Hearing: sound localization; Pp. 214-217
- 2/17 Somatosensory system: touch. Pp 221-230. Assignment II due
- 2/19 Somatosensory system: pain.
- 2/24 **Midterm exam II**
- 2/26 Spinal motor physiology: spinal reflexes, feedback control of movement. Pp. 243-251
- 3/2 Poster group meetings
- 3/4 Cortical motor physiology: higher reflex pathways, voluntary movements. Pp. 251-268
- 3/9 Covert orienting: visuospatial integration
- 3/11 Poster presentations Assignment III due. .
- 3/17 Final exam 8:00 am

Notes:

Outlines of the lectures for this class have been compiled into a **packet** that is sold at the bookstore. It is highly recommended. Its purpose is to help you with the overall structure of the topics and alleviate some of the difficulties of taking notes while trying to listen to me. Not all of the topics in the packet will be covered this term, as you will see from the syllabus.

Your grade in class will be based on exam scores, scores on homework assignments, and the term paper. All exams count toward the final grade. **Exams** are subjective (midterms worth about 65 pts, final about 90 pts) and will be graded on a curve. A paper grader will grade the exams based on a key that I supply.

There will be three **homework assignments** during the term and one will be due the class meeting prior to each midterm and the final exam. For these assignments, I want you to write two types of questions and answers. The first type is a short identification question in which you identify a term or concept (e.g., *temporal summation*) and then define it fully in a cogent paragraph. The second type of question is an essay question, in which you address broader issues that integrate

over several areas (e.g., *compare the neural coding used by the visual and auditory systems for the representations of visual and auditory space*), and then answer the question in about one page. A sample of both types of questions and answers is included in the course packet. Each assignment consists of three (3) short identification questions and answers and one (1) essay question and answer. I will grade the questions for accuracy on a 20 pt scale. I will pick some of the questions to use on the tests. The assignments will be graded and returned by the next class period so that we can go over them in preparation for the midterm.

A **poster** will be due on November 30th (last day of class). Please see below for details.

Please note that the final exam is scheduled for the 3rd of December. No exams will be given prior to that date. Make your Holiday travel plans with that date in mind.

Term Poster Projects.

A. General Idea

You will be constructing and presenting a “poster” on a particular topic from the second half of the term. A poster is one of several standard formats through which scientific findings are communicated at professional conferences. A typical poster is 8 feet wide by 4 feet tall, presents the background, methods, results, and conclusions from one or more studies in a format that includes both text and graphics (that can be read from several feet away, thus, the text and pictures are usually largish in size). In your case, the posters will be smaller (4 feet by 4 feet) and will instead provide a tutorial on some interesting topic that you and your group will select from among the seed articles provided (these will be made available to you by your instructor).

When your poster is completed, you will present it in a “poster session” to be held during 10th week. Faculty and graduate students from the department of psychology will be invited.

B. Poster Team

You will be working in groups of 2-3 people to construct the posters. You can select your groups however you like, but you will need to agree on a topic that interests you all. This is intended to be a collaborative effort: the work for the poster should be divided up as evenly as you can, so that each person contributes some significant aspect of the poster. You will need to work together on the research, writing, and construction of this poster outside of class. In week 7, I will give you an overview of the assignment, and groups will be formed. One class period will be devoted to planning the poster (5/24/01). On weeks 8 and 9, you should meet with your group. I will “make the rounds” between the groups, answering any questions you might have, providing constructive feedback, or otherwise giving guidance.

c. Poster Requirements

Your poster should conform to the structure described in the suggested outline (see below). To do your poster, you will need to read your seed article and also look up additional references in the library relevant to the subsections of the poster. Don’t go overboard-- 2 articles per Focus topic should be sufficient. You will also need to be present at the poster when it is presented and be ready to provide a guided tour of the material presented in the poster.

D. Grading

Posters will be graded on the following dimensions.

- (a) Amount of effort that went into the poster, the skill and clarity with which ideas are presented and illustrated in the poster, as well as the perceived depth of the research that went into the topic (e.g., if it’s just a summary of the seed article, that is not enough. you should go beyond it.
- (b) Originality of thought (where might you take these ideas?)

- (c) Quality of writing
- (d) Overall “look” of the poster-how well constructed is it?
- (e) Quality of the presentation at the poster

E. The Poster Presentations

In the poster presentation, the authors will stand in front of their poster and present it to whoever walks by. Generally, one or two team members can stand at the poster while the other team member/s go and look at everybody else’s posters, read them, and interact with the other poster givers on their topics. When they have looked at all the other posters, somebody should go back and “relieve” the team member who is presenting the team poster, so they can go read the posters. I will wander around and read the posters too, and chat with you about your topics. Other members of the psychology department may also be there, out of general interest.

F. Suggested Schedule and Division of Labor

To do a good job on the poster, you will need to cooperate with your group members. You should meet early to decide how to divide up the responsibilities for the different segments of the poster, and set a schedule for meeting the major milestones of the poster project. The more organized you are as a group, the better the project will function. Here is a suggested schedule of meetings, and what you should try to accomplish in each.

Meeting 1. (sometime before Week 8)

- a. Before the meeting: All members of the group have read the seed article and are prepared to discuss it. All members have thought about some suggestions for dividing up the poster into Focus Topics (see below).
- b. Goals of the Meeting: Identify the main topic that you will present and a title for the poster. Identify and agree on the 3 focus topics that you will present in the poster. Assign people to go out and research the 3 focus topics. Each member of the group might pick one focus topic and look up a couple of articles and read about it.

Meeting 2. (in Week 8, or before).

- a. Before the meeting: All group members have gone out and found a couple of relevant articles on their focus topic, have read and understood them, and have constructed an outline for their focus section (see below). They should be prepared to describe the main content of the focus section to the other group members and walk them through the outline. Finally, all group members should have given some thought to the figures/diagrams/illustrations that they want to accompany their focus section. Have fun with this: make the diagrams instructive and engaging.
- b. Goals of the meeting:
 - Each person shares what they have learned about the focus topic with the others, reviews the outline they have constructed, and describes or shows diagrams and figures.
 - After everyone has shared their work, work as a group to refine the outline of the poster text. Put all the work together into a master outline.
 - Discuss the layout of text for each section on the poster board, estimating how many paragraphs you will need for each section, and where the diagrams will fit in. Once this is decided, each person should then go away after the meeting and write the necessary text for the focus section, and generate the diagrams/illustrations.
 - Some sections, such as the (a) introduction, (b) abstract, (c) relations/implications sections are not part of the focus sections. These should be divided up among the group members. Before the meeting ends, discuss the general contents and format of each of these

sections, and have people commit to producing it by the next meeting. (see below for a complete listing of sections).

Meeting 3. (week 9 or before).

a. Before the meeting: All group members should have produced a complete and reasonable draft of their assigned sections. They should also have generated the necessary figures/diagrams.

b. Goals of the meeting:

-Now that you have all the text and diagrams, you can plan the poster format more precisely. On a sheet of paper, make a diagram of your poster, being sure to make it to scale. Do all your pieces fit? How will they be arranged?

-Agree on the writing and diagrams (go through each others writing and suggest clarifications/edits/rewriting that you think are necessary. Revisions are to be expected, so don't get too wedded to your text. Suggested revisions may be based on clarity, or on a need to conserve space so that you can fit everything on the poster. Remember poster readers don't like a ton of text. Only put as much text as you need to make your point.

-Consider how you will present the poster when you are standing in front of it with others asking you about it. Have a "presentation plan"

-Schedule another meeting or two to actually make the poster.

-Assign somebody to pick up poster construction materials at the bookstore.

Meeting 4. (a day or two before presentation on 10th week at latest).

Get together to actually make the poster

Week 10 presentation.

Everybody should be there to discuss the posters and read others posters too.

Suggested Outline / Components for the Poster

Title

1. Author

Abstract:

A brief, 100 word summary of what is discussed in the poster.

Introduction of the topic. In this section, you should motivate the topic for the reader, and introduce the basic terms and questions. Depending on the content of the remainder of your poster, this may also be the best place to describe general ideas and background that will be necessary to understand material that cuts across the sections of your poster. Towards the end of the introduction, describe the organization of the remainder of your poster (e.g., "in this poster, we describe research on x, focusing on three main issues: x, y, and z."). (approximate length, 2-4 paragraphs).

5. Three "Focus Sections". The poster should have 3 main "focus sections". Each focus section will present some significant aspect of the topic under discussion. You can divide up the focus sections either according to subtopics of the main topic, or according to different theoretical perspectives on the main topic. Each focus section should have a clear title, and the following rough structure (the details of which will be determined by your topic).

- a. motivate the issue, subtopic, or perspective
- b. explain the main questions/concerns/ideas
- c. describe specific hypotheses/experiments or results, as you see fit to illustrate your points.

- d. illustrate the ideas/experiments graphically. Number the Figures. Refer to them in text, as in “Fig. 1 shows that...”

In designing these focus sections, you should not let the section be completely dominated by writing. The sections should provide ample and relevant illustrations/graphics-people at posters don’t “like to read a ton of text”. **JUST THE RIGHT AMOUNT** of text, with supplementary graphics. (about 3-4 paragraphs each, tops)

6. Relations and Implications. The posters should have a section that “wraps up” the poster by relating what you are discussing to some applied issues, or broader theoretical concerns. The intention is to put the work in a broader context and make people really interested in what you are presenting. (about 2 paragraphs)

7. “Take home points”. List 3 or 4 main “take home points” each in a very brief, one line statement that is memorable.

8. References List all the sources that you used to make the poster, in (the following APA) style: Schwartz, Benjamin, & Bjork (1997). The inferential and experiential basis of metamemory. *Current Directions in Psychological Science*, 6, 132-138.