

Human Performance (PSY 436/536)

University of Oregon
Spring 2010



10:00-11:20 TTh; Straub 146
4 credits; 35134 (436), 35145 (536)
Prerequisites: PSY 302, 303

Instructor: Prof. Paul Dasonville
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Office hours: MW 2:30-3:30, or by appt.

General Course Description: In this course, we will examine the perceptual, motor and intellectual capacities and limitations of the human brain, including discussions of the neural bases of these capacities, the role of attention, the flow of information within the nervous system, and applications of performance principles to human-machine systems and clinical populations. Although the only prerequisites for the course are PSY 302 & 303, the material in the course is in many ways an extension of the material presented in other psychology courses (Cognition, Learning & Memory, Perception, Psycholinguistics, Decision Making, etc.). In addition, this course will cover many mathematical descriptions of human performance. *However, this course will be conducted in a way that does NOT assume that you have completed these other psychology courses or your math requirements.*

Text: *Engineering Psychology and Human Performance* (3rd edition, 2000, Prentice Hall, Upper Saddle River, NJ) by Wickens & Hollands (please note that the 3rd edition of the text is very different from earlier editions).

Course Website: The official course website is on Blackboard (<http://blackboard.uoregon.edu>). Please notify the instructor if you have difficulty logging into the site. This site will provide supplemental information for the course (course outline, grades, copies of overheads, etc.).

Optional Reading/Weblinks: As *optional* reading on the subject of Engineering Psychology and Human Performance, try *The Psychology of Everyday Things* by Donald A. Norman (a copy is on reserve in the Knight Library). You can also find related information at the following web sites of interest:

Human Interface Evangelism & Practical Design (<http://www.asktog.com/menus/designMenu.html#articles>)

Bad Human Factors Designs (<http://www.baddesigns.com/>)

Usernomics (<http://www.usernomics.com/>)

Research-based Web Design & Usability Guidelines (<http://usability.gov/guidelines/index.html>)

Mind Hacks (<http://0-proquest.safaribooksonline.com.janus.uoregon.edu/0596007795>)

If you find other web sites of interest, please pass them along to the instructor.

Course Format: The material in this course will be presented through a combination of assigned reading from the text and additional handouts, class lectures, in-class discussion, and demonstrations. Lecture material and readings will have some overlap, but will not be replications of each other; some lecture material will not be covered in the readings and vice versa. You are expected to do the assigned reading *before* the class period in which it is due. Reading the material before the corresponding lectures will help your performance in two ways. First, discussions of the material during lecture will be more fruitful if you have at least a general understanding of the material beforehand, helping you to ultimately comprehend and retain the material. Second, questions drawn from the assigned readings will be included on the regularly scheduled quizzes, *even if they have not yet been discussed in lecture (see below)*.

Grading: Grading will be based on the combined scores of the quizzes (10%), term paper (20%), and exams (midterm #1 20%, midterm #2 25%, final 25%), with a possible 5 points of extra credit added to the final sum. Letter grades will be determined as follows: A (90-105% of total possible points), B (80-89%), C (70-79%), D (60-69%), F (0-60%). However, the instructor reserves the right to relax (but not stiffen) this criterion, depending on the actual distribution of grades (graduate students will be curved differently, or not at all – see also the Graduate Credit section below).

Quizzes (10% of final grade): Short quizzes will occasionally be given either in the first 5 minutes of class (see the course outline, below). Quizzes will contain 3 multiple choice questions that pertain to the recently presented lecture

material and the readings from the text. Questions will occasionally be drawn from readings that have been assigned but have not yet been discussed in lecture (even those due the day of the quiz); however, these questions will be of a more general nature and should be easily answered if you have read the material.

Of the eight quizzes, the two with the lowest scores will be dropped, with the average score of the remaining six yielding 10% of the final grade. No make-up quizzes will be offered; if you miss a quiz, that grade will be one of the two that will be dropped.

Exams: Midterm #1 (20%), Midterm #2 (25%), & Final (25%): The midterm and final exams will be part multiple choice, part fill-in-the-blank and part short answer/short essay. The final exam will contain questions drawn from the entire course, but with a greater focus on material covered after Midterm #2. ***No make-up exams will be given without evidence of a valid excuse, and the final cannot be taken earlier or later than the time listed in the University final exam schedule – if you know in advance that you cannot take all exams on the appointed dates (see the course schedule below), do not take this course!*** If unforeseen circumstances during the term prevent you from taking an exam, notify the instructor immediately.

Term Paper (20%): Students will be required to write a 5 – 7 page (double-spaced, 1 inch margins, 10-12 point font) term paper that describes, compares and contrasts two journal articles that address a single topic relevant to human performance. I suggest that you use the textbook as a source for selecting a general topic, followed by library, PsychINFO, and Medline searches for the selection of the two articles (for online assistance in your search, see <http://libweb.uoregon.edu/guides/psychology/>). The referenced articles must be empirical in nature, with data collected to investigate a specific question related to the topic of interest (*i.e., no review or summary articles*). In addition, the two articles must have been published after 1980, and they must have been written by different groups of authors (that is, no researcher can be listed as an author on both articles).

A short paragraph (approx. 100-200 words) describing the chosen topic and articles (please include full references, and attach Xeroxed copies of the first page of the chosen articles) is due near the middle of the term (see the course outline, below), and will account for 5% of the term paper grade. *After this date, you may not change your chosen topic and articles without the instructor's consent.*

The paper should include:

- 1) An introduction to the general topic.
- 2) a summary of the articles in your own words, including the question under investigation, the hypothesis being tested, the methods used, the findings, and the conclusions drawn by the authors.
- 3) a comparison of the two articles, describing how the findings of one either support, conflict, or extend the findings of the other.
- 4) a discussion of the merits and deficits of the articles, including suggested ways that the deficits could have been avoided. For example, questions such as these should be addressed: Is the question an interesting one, and is it framed properly? Is the hypothesis valid and defensible? Are the methods appropriate to address the question? Are the findings clear and interpreted appropriately? Are the authors' conclusions warranted, given the findings?
- 5) an overall assessment of the significance and quality of the contribution of the articles to the field of human performance and the specific topic addressed.
- 6) Xeroxed copies of the two articles that are summarized.

In regards to formatting (e.g., title page, font size, margins, page numbers, citations and references), the paper should be written in APA style (reference copies of the APA Publication Manual are available in many of the University Libraries). However, you are not required to have separate sections for the introduction, methods, results, etc. (*i.e., it is acceptable to have the text as one flowing document, not broken into sections*). *The paper should be in your own words* – as a general rule, I do **NOT** allow any quotations (even properly cited ones), since their inclusion prevents you from demonstrating that you understood the quoted material.

In order to improve the quality of papers, and to provide you with experience editing, papers will be peer edited. On the day that the paper is "due for edit", you will turn your paper in at the beginning of class. At the end of class, you will be given someone else's paper to edit. You will have 4 days to edit the other student's paper, then you will bring the paper to the class and return it to the student. Your paper, meanwhile, will have been edited by someone else. You will then have a few more days to consider the corrections, incorporate those you think are good, revise the paper, and then turn in your "final version" of the paper AND the corrected original. Your grade on the paper will be based mainly on the final version, but your original will be considered too, in order to prevent people from turning in sloppy first drafts. Your editing will also be evaluated, and you will receive points toward your final grade for it. Guidelines for editing will be distributed in class (see also the Blackboard web site).

Important note: *ALWAYS keep a copy of your paper, either on disk, or a hard copy!* Your peer editors are, on average, no more reliable than you, perhaps less so, and they may misplace or forget your paper. If your peer editor does not return your edited paper to you, you will not be penalized (except that your paper will not have the benefit of having been edited – you may wish to ask a friend in the class to edit your paper for you), but you will still be responsible for turning in an original and final version of the paper when it is due. Also, please keep in mind that just as the quality of students in this course varies, so does the quality of editing. Taking bad advice from a peer editor is no excuse for errors in a paper.

Papers are due at the beginning of class on the day they are due. If you don't turn your paper in before the start of class, it will not be eligible for peer editing, and you will not be given a paper to edit (so you will lose your peer editing points). If you cannot be in class the day a paper is due for peer editing, you may turn in the paper early so that you will be eligible for the peer editing system, but it is your responsibility to arrange to pick up the paper you are to peer edit from me. If you cannot be in class the day peer edited papers are to be returned to their authors, you can also return the edited paper early.

The term paper grade will be determined by the quality of 1) the paragraph describing the term paper topic (5%), 2) the final paper (90%), and 3) the peer edit that you provide another student (5%); in total, the paper grade is worth 20% of the final grade in the course.

Finally, plagiarism will not be tolerated, and will be dealt with according to official University policy (see section on Academic Honesty below).

Extra Credit – up to 5 points added to final grade: Extra credit can be earned in one of two ways:

1) Students can prepare for the class a 5–10 minute demonstration of a psychological phenomenon that fits within the topics of discussion in the course. These demos can be either high-tech (e.g., computer programs, edited videos, etc.) or decidedly low-tech (e.g., using only navel lint, an ice cube and duct tape), and they must be accompanied by an informal one-page written description of the phenomenon and its relation to the information presented in the lecture and reading materials. A good source of inspiration for this type of extra credit presentation is the book *Mind Hacks* (<http://0-proquest.safaribooksonline.com.janus.uoregon.edu/0596007795>).

2) Students can prepare a 5–10 minute presentation on a recent news item (i.e., one reported during the term) related to the topics discussed in the course. For optimal success in this type of presentation, you must do more than simply relate the information that was presented in the newspaper article or news program – this may involve a web search to find pictures/video to accompany your presentation, a dig in the scientific literature to find relevant details and hard data, etc. These presentations must also be accompanied by an informal one-page written description of the phenomenon and its relation to the information presented in the lecture and reading materials.

The value of extra credit will range between 0 and 5 points to be added to your final grade, determined according to four criteria as assessed by the instructor: 1) the presentation's effectiveness at demonstrating the desired phenomenon or news item; 2) the creativity of the presentation; 3) the quality of the one-page description; and 4) the amount of work that was required in creating the presentation (e.g., writing a computer program to demonstrate the performance effects of divided attention will be worth much more than simply reading a newspaper article on the hazards of using a cell phone while driving). Two or more students can work as a team to devise a presentation, with the total amount of extra credit evenly divided between the team members. Those wishing to create a presentation should confer with the instructor before beginning – if two or more students have the same idea for a presentation, the one that informs me first (in person, by phone, or by email) will have exclusive rights to the idea. The instructor reserves the right to deny any request to do an extra credit presentation if the request is made too late in the term (lecture time invariably becomes tighter as the term progresses).

Graduate Credit: Students taking the course for graduate credit are required to prepare and deliver a 5-10 minute class presentation, as described in the Extra Credit section above (note, however, that this is a *requirement* for graduate credit, not extra credit). This presentation will be worth 5% of the final grade in the course.

Due Dates: Due dates for the term paper are contained in the course outline. *Assignments are due by the start of lecture on the appropriate date*, and can be turned in to the instructor during class, during office hours, or to the personnel in the Psychology Office (Rm. 131 Straub) *by 4:00 PM the day before it is due*. An assignment turned in after its deadline will be marked down 10% for each day late.

Academic Learning Services: If you have difficulty with the course materials at any time, you are encouraged to contact the instructors or TA so that we can provide timely assistance. In addition, the resources of the Academic Learning Services (<http://als.uoregon.edu/services/services.html>) can be invaluable to students that require assistance in, for example, perfecting good study habits or honing their writing skills.

Students with Disabilities: If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with the instructor as soon as possible. Also, please request that the Counselor for Students with Disabilities (Hillary Gerdes, hgerdes@oregon.uoregon.edu, tel. 346-3211, TTY 346-1083) send a letter verifying your disability. For a list of resources provided by the Office of Disability Services, please see <http://ds.uoregon.edu>.

Students for whom English is a Second Language: If you are a non-native English speaker and think you may have trouble in this course due of language difficulties, please see the instructor as soon as possible to make special arrangements.

Academic Honesty: All work submitted in this course must be your own. For the consequences of academic dishonesty, refer to the Schedule of Classes published quarterly. Violations will be taken seriously and are noted on student disciplinary records. If you are in doubt regarding any aspect of these issues as they pertain to this course, please consult with the instructor before you complete any relevant requirements of the course. (For more information, see the UO web site regarding academic honesty at: <http://studentlife.uoregon.edu/StudentConductandCommunityStandards/ResourcesforStudents/tabid/71/Default.aspx>).

Course Outline: This is only a working draft of the course outline; it will be revised as the quarter progresses. Additional readings may be added. Dates on which particular topics are to be presented in lecture are subject to change, as are reading assignment due dates; however, I will not change the dates of quizzes, exams or term paper deadlines unless absolutely necessary. The official updated version of the outline will reside on the Blackboard web site. Updated print versions can also be obtained from the instructor during normal office hours.

Week	Date	Topic	Reading Assignments	Exams/ Quizzes
1	Mar. 30	Overview of Course, Intro. to Engr. Psychology & Human Performance	Chapter 1	Take-home Quiz #1 due Apr. 6
	Apr. 1	Signal Detection Theory, Information, etc.	Chapter 2	
2	Apr. 6			Quiz #2 (Quiz #1 due)
	Apr. 8			
3	Apr. 13	Attention in Perception & Display Space	Chapter 3	Quiz #3
	Apr. 15			
4	Apr. 20			Quiz #4
	Apr. 22	Spatial Displays	Chapter 4	Paper topic due
5	Apr. 27	Midterm Exam #1 (Chapters 1-3)		Midterm #1
	Apr. 29			
6	May 4	Language & Communications	Chapter 6	Quiz #5
	May 6	Memory & Training	Chapter 7	
7	May 11			Quiz #6
	May 13	Selection of Action	Chapter 9	
8	May 18			
	May 20	Midterm Exam #2 (Chapters 4, 6-7)		Midterm #2
9	May 25			Quiz #7
	May 27	Attention, Time-Sharing, & Workload	Chapter 11	Paper due for edit
10	June 1			Quiz #8; Peer edits due
	June 3	Stress & Human Error	Chapter 12	Final paper due by 4 pm, June 4
11	Thurs., June 10, 8:00 am	Final Exam (Chapters 9, 11-12, Comprehensive)		Final