# Human Performance (PSY 436) <br> University of Oregon <br> Summer 2004 

2:00-3:50 M,T,W,Th; 112 Esslinger
4 credits; CRN: 44952 (PSY 436)
Prerequisites: PSY 302, 303

| Instructor: | Courtney Darves Stevens |
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| Office hours: | T, W 11-12:00, or by appt. |

General Course Description \& Objectives: In this course, we will examine what is known about the perceptual, motor, intellectual, and social capacities and limitations of the human brain. 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.). The material will include coverage of the neural bases of these capacities, the flow of information within the nervous system, and mathematical descriptions of human performance. For these reasons, students should consider waiting to take this class until they have completed their math requirements and have taken some of the psychology courses listed above. In addition, we will be applying the psychological principles covered to the design of effective technology that can work with or compensate for the limitations of the human brain. It is important to realize that scientific "facts" often change as more research is conducted in an area. For this reason, the course will take an evidence-based approach, in which emphasis is placed on reading and understanding primary research articles. By the end of this course, you should be able to articulate the relevance of human performance research to the design of technology, describe limitations of the human brain (e.g., in memory, attention, etc.), and relate those human limitations to product design.

Course Format: The material in this course will be presented through a combination of class lectures, assigned readings, in-class discussion and activities, and demonstrations.

Text: The only book you need to purchase for this course is The Design of Everyday Things (2002 edition) by Donald Norman, which costs $\$ 17$ (a copy is on reserve in the Knight Library). This is an easy-read book that presents several of the central issues of the course in an enjoyable manner. However, it does not provide the level of detail covered in lecture or expected of you in this course. To provide greater depth of coverage in specific topics, several required primary readings are available for free download from the Blackboard website. These primary readings also support the evidence-based approach that will be central to this course. You can expect these readings to be more difficult than chapters from a standard textbook. Students who want a more traditional text or plan to pursue this area may consider purchasing the optional supplementary text, Engineering Psychology and Human Performance ( $3^{\text {rd }}$ edition, 2000, Prentice Hall, Upper Saddle River, NJ) by Wickens \& Hollands. A copy of the Wickens \& Hollands text is also on reserve in Knight Library.

Course Website: A course website, which will be used extensively throughout the course, is available on Blackboard (http://bb1.uoregon.edu). In addition to containing electronic copies of required primary readings, the site will provide supplementary information for the course (reduced lecture notes, assignment information, etc.). For this reason, it is important that you notify me as soon as possible if you have difficulty logging onto the site.

## Tentative Topic Outline \& Reading Schedule

The amount of reading in this course is moderately heavy, and I would like you to keep pace. You are responsible for reading the assigned material prior to the relevant class meeting. This preparation will make in-class discussions and assignments more meaningful and productive.

* Copies of these readings are available for free download from the course Blackboard site
** Optional supplementary readings are intended for students who miss a lecture, need further clarification of a particular topic, or want references to relevant primary articles. Material from these sources not also covered in lecture will not be tested.


## I. Week 1, July $\mathbf{1 9}^{\text {th }}-$ July $\mathbf{2 2}^{\text {nd }}$

Topic 1 (M): Introduction to Human Factors
*Wickens Ch. 1 (pp. 1-16), Norman Ch. 1 (pp. 1-33), *Keele 2000 (2 pp)
Topic 2 (T/W): Signal Detection Theory \& Information Processing
*Wickens Ch. 2 (pp. 17-68 - skip pgs 26-30)
Topic 3 (Th): Memory \& Training
Norman Ch. 3 (pp. 54-80); *Catrambone \& Carroll 1987 (pp. 169-173), *Barfield 1997 (pp. 14711480); **Wickens Ch. 7

## II. Week 2, July $\mathbf{2 6}^{\text {th }}$ - July $\mathbf{2 9}^{\text {th }}$

Topic 4 (M): Attention
*Strayer et al in press (pp. 2-22), *Zhang 2000 (pp. 1-25), *Wald 2000 (1 pp), *AP 2003 (2 pp);
**Wickens Ch. 3, */**Lee et al 2004 (pp. 65-72)
Topic 5 (T): Language \& Communications
*Wickens Ch. 6 (pp. 196-240), *Jonsson 2004 (pp. 1219-1222)
Topic 6 (W): Data Display
*Gillan, et al 1998 (pp. 28-41), *Goettle, et al 1991 (pp. 1046- only to 1055!); **Wickens Ch. 4
Midterm: Thursday, July 29 ${ }^{\text {th }}, 2-3: 50 \mathrm{pm}$.

## III. Week 3, August $\mathbf{2}^{\text {nd }}-$ August $5^{\text {th }}$

Topic $7(\mathrm{M} / \mathrm{T})$ : Selection of Action
Norman Ch. 4 (pp. 81-104), *Dassonville et al 1999 (pp. 235-240), *Shulman \& McConkie 1973 (pp. 375-378); **Wickens Ch. 9
Topic 8 (W): Attention, Time Sharing, \& Workload
*Beatty \& Kahneman 1966 (pp. 371-372), *Bahrick \& Shelly 1958 (pp. 288-293), *Rowe et al 1998 (pp. 480-487), *Henig 2004 (1 pp); **Wickens Ch. 11

Topic 9 (Th): Social Norms
*Reeves \& Nass Introduction (pp. 3-15), Ch. 4 "Flattery" (pp. 53-63), Ch. 12 "Specialists" (pp. 143-152), *Nass et al 1994 (pp. 72-78), *Darves \& Oviatt in press (15 pp)

## IV. Week 4, August $\mathbf{9}^{\text {th }}$ - August $\mathbf{1 1}^{\text {th }}$

Topic 10 (M): Stress \& Human Error
Norman Ch. 2 (pp. 34-53) \& Ch. 5 (pp. 105-140), *Oviatt 2000 (pp. 45-51), *Isa et al, 1983 (pp. 6871), *Steinhauer 2001 (2 pp); **Wickens Ch. 12

Topic 11 (T/W): Design Process \& Implications
Norman Ch. 6 (pp. 141-186) \& Ch. 7 (pp. 187-217), *Papert 1980 (foreward \& pp. 3-18)
Final Exam: Thursday, August 12 $^{\text {th }}, \underline{8: 30-10: 20}$ am.

## Evaluation Proposal

Your grade will be based on a mixture of exams (60\%), empirical paper reports (25\%), and attendance (15\%).

Exams ( 240 points, $\mathbf{6 0 \%}$ )-There will be one midterm and one final exam for this course. Each will be worth 120 points, or $30 \%$ of your final grade. These exams will consist of short-answer, essay, and multiplechoice questions. One question from each exam may be an applied, take-home question that will be due at the time of the exam. More details will be provided before each exam. Make-up exams will not be given except under extreme circumstances (e.g., serious illness, injury, family death). Proof of the extenuating circumstance may need to be provided (e.g., doctor's note).

Empirical Paper Reports (100 points, 25\%) - Several of the assigned readings are empirical papers. Of these, you will need to choose 5 for which you will complete typed, written responses to the "Empirical Paper Discussion Questions" posted in the Course Documents folder of the Blackboard site. The folder also contains a list of which readings from the syllabus are appropriate for this assignment. These reports are designed to support the evidence-based approach that is central to this course. They will also give you experience in extracting the relevant details from papers that are, at times, quite technical. You can expect that this assignment will be very difficult for some of the papers, but it is good practice to learn how to sift through a dense article and get to the heart of the argument. An example report is posted on Blackboard to provide a model of what is expected. You are welcome (and even encouraged!) to discuss your answers to these questions with other students, but I ask that you work independently when typing up your final responses to turn in. Reports are due at the beginning of the class period for which the reading is assigned. Late reports will not be accepted because the expectation is that you have read the material prior to the class meeting in which it is discussed. At least 2 reports must come from each half of the term. I will drop your lowest individual report score.

Attendance ( 60 points, $\mathbf{1 5 \%}$ ) - A portion of the class will include in-class activities and discussion. For this reason, attendance is mandatory, and I consider participation a crucial measure of your involvement in the course. I will consider one absence a freebie that can be made up by submitting a 2-page typed, doublespaced paper summarizing the readings covered in lecture that day. After that, $1 \%$ will be subtracted from your course grade for each absence. Attendance will be taken via in-class assignments or sign-in sheets.

## Evaluation Alternatives

If you find that the above proposal does not meet your needs for this class and want your grade to reflect some other course-related work, please plan to present your strategy to me by Thursday of the first week of class (proposals will not be considered after that point). You are strongly encouraged to meet with me in person to discuss your proposal before submitting the written version.

The following guidelines are suggested: 1) develop a proposal that outlines what you will do to convey to me that you engaged the course material/readings, 2) provide a brief explanation of what needs of yours are met by doing the work as you propose (e.g., I will enjoy learning about human performance more by applying my artistic talents or web-design talents to course projects), 3) explain how each of your proposed projects will show me that you engaged each major segment of the course material (be aware that I want to see that your projects are directly related to the course content), and 4) provide a suggested scoring rubric that I can use for objectively evaluating your performance.

Your proposal may substitute any element of my proposal with your own, or you may want to do things that convey your understanding of the course material in ways that totally diverge from my proposal above. These options may be discussed in detail during office hours or by appointment.

## Additional Notes

Accommodations: If one of the following applies to you and you anticipate needing accommodations in this course, please see me as soon as possible to make adjustments:

- Documented learning disability
- Non-documented need for adjustments to help you learn
- On a sports team that travels this term
- English is not your first language

Academic Honesty: Cheating will not be tolerated. If a student is suspected of cheating, then the University will be notified and appropriate action will be taken. If you are in doubt regarding any aspect of these issues as they pertain to this course, please consult with me before you complete any relevant requirements of the course. (For more information, see the UO web site regarding academic honesty at: http://darkwing.uoregon.edu/~conduct/).

Concerns: If you find yourself doing more poorly in the class than anticipated, please see me sooner rather than later. If you wait to come forward with any problems, you may find that it is too late to do anything about your grade.

## Other 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/)
Human Factors and Ergonomics Links (http://www.usd.edu/hfnews/HF links.htm)
Research-based Web Design \& Usability Guidelines (http://usability.gov/guidelines/index.html)

I am always looking for additional web sites on human factors issues. If you know of other web sites of interest, please pass them along to me.

Letter grades: The following standard scale (based on the percentage of total points earned) will be used when calculating letter grades. Depending upon the actual distribution of grades at the end of the term, the criteria may be relaxed to include an expanded $C$ range, but the criteria will not be stiffened (i.e., it is possible for everyone to earn an A in the class).

| $\mathbf{\%}$ | Grade |
| :--- | :--- |
| $98-100$ | A + |
| $93-97$ | A |
| $90-92$ | A- |
| $87-89$ | B + |
| $83-86$ | B |
| $80-82$ | B- |
| $77-79$ | C + |
| $73-76$ | C |
| $70-72$ | C- |
| $67-69$ | D+ |
| $63-66$ | D |
| $60-62$ | D- |
| below 60 | F |


| $\mathbf{\%}$ | Status |
| :--- | :--- |
| $>70$ | Pass |
| $<70$ | No Pass |

