

# Ergonomics

## *Course Syllabus*

Psychology 340, Section 01  
North Carolina State University  
Fall Term, 2012

### *Instructor*

Michael S. Wogalter, Ph.D.  
Office: 730 Poe Hall  
Office Phone: 515-1726  
Ergonomics Lab: 740 Poe Hall  
Lab Phone: 515-8260

### *Class Meetings*

*Tuesdays & Thursdays*  
Sec 01: 11:45 AM - 1:00 PM  
in 736 Poe Hall

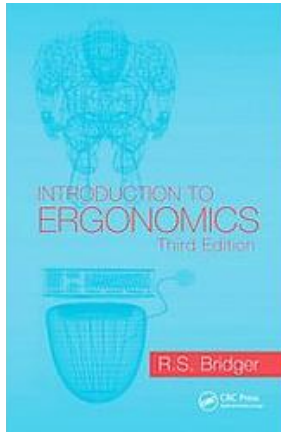
### *Office Times*

*Tuesdays*  
11:30 AM - 11:45 AM &  
1:00 PM - 1:15 PM  
*Thursdays* 11:30 AM - 11:45 AM  
or by appointment

### *Course Objectives*

The aim of the course is to examine the relationship between people and various aspects of the world around them. People's characteristics—their abilities and their limitations—will be considered as they relate to the design of equipment, consumer products, environments, and work. Ways to improve productivity, satisfaction, and safety in the technological age will be discussed.

### *Course Requirements*



The required textbook is:

**Bridger, R. S. (2006). *Introduction to Ergonomics (3rd Ed.)*.  
Boca Raton, FL: CRC. ISBN: 9780849373060**

See calendar for specific pages to read and study before each exam. In addition, at different points during the course, the instructor will make available (probably by email) lectures. These will be provided as PowerPoint slides. These notes will not be as detailed as the actual lecture presentation. These notes are an approximate guide to the material covered in class. Some material (such as examples in the visual "displays" lectures) will be presented and available for viewing only during the lectures.

### *Exams*

Three exams will be given. The exams will be based on the assigned readings and lectures. The first exam will be worth 27% of the course grade. The second and third exams will each be worth 35% and 38% of the course grade, respectively. All students are required to take the exams on the dates specified on the attached calendar. The last exam given in this course will be the third exam. The exams are not cumulative evaluations. Exams 2 and 3 test material in the readings/lectures since the previous exam. Students taking an exam later than the specified date and time on the calendar will be assessed an automatic penalty equal to 20% of the exam grade per day.

You are strongly encouraged to study the material so that you can recall it later from memory. A variety of types of questions are asked. Assume that all areas of the covered material will be asked. Exams will be machine graded (e.g., matching, multiple choice and true-false questions). The scores will be posted next door outside of the Cognitive Ergonomics Lab (740 Poe) according to a self-assigned 5-digit PIN provided by the student on each exam.

### ***Data collection and summarization project***

A data collection project will be offered to students as extra credit. This will likely involve collecting empirical ergonomics-related data from 10 persons using a questionnaire provided by the instructor. To receive extra credit, all completed surveys must be turned in together with a 5-6 page written summary of the data from any main sub-section of the questionnaire. If the assignment is completed satisfactorily as specified, the student will receive 5% points to the final grade. If it is less than satisfactory (i.e., inadequate in one or more respects), then the student will receive fewer or no extra points. The extra credit assignment, including the questionnaire, the specific instructions on how to administer it and what should be in your short report, will be emailed to all students in the course after Fall Break and will be due on a date one month later. The specific due date will be announced after it is distributed by the instructor. Note that this is an optional assignment. It provides a data collection experience and it is an opportunity to learn something new, particularly in the process of interpreting the data. In addition, it provides a mechanism to assist in reducing the effect of a poorer than expected grade on an exam.

### ***Attendance Policy***

Students are expected to attend every class meeting. Other than excused absences, penalties for absences will be enforced by strict adherence to deadlines for exams and other assigned work. Very simply, failure to attend will tend to produce incorrect answers on the exams. Excused absences will be limited to verifiable medical, legal, meteorological or religious reasons. In case of a snow/ice emergency, consult a reliable weather and news reporting service. Please note that if the Wake County Public Schools are closed the day of a class due to a weather emergency, you can assume that this class is cancelled and that work intended to be done during the cancelled class will be shifted to the next held class. Material that follows will be compressed into the remaining classes. There may be other legitimate excuses for missing class and the instructor will rule on those individually. Of course, if you miss class you are still responsible for the material covered in the lecture and for any new assignments made during your absence. Attendance is important for exposure to *all* of the material that will be on the exams. Take notes on material presented in class as class lectures may be the only times certain material is presented. Take the necessary precautions to avoid getting sick, breaking the law, having roommate problems, etc. Sometimes the instructor may be late or absent. If so, the instructor will attempt to send an email alert as quickly as possible. The instructor apologizes in advance for any inconvenience this may incur.

When work is missed because of an excused absence, make-up will be by the class meeting following the missed session unless previously arranged with the instructor. Students anticipating missing class because of an excused academic-related activity are expected to make advance arrangements (before the scheduled exam) on taking the exam immediately following the excused academic-related activity. Some of the excuses not considered legitimate include, but are not limited to: (1) ride leaving early or only available flight, etc., (2) big party or other social event, (3) other exam on same date, (4) did not know of the assignment, and (5) forgot the exam or assignment due date. Attendance during the exams is mandatory.

It has been the instructor's experience that students who regularly attend class get As and Bs, and the ones who do not, receive Cs and Ds. If you must miss a lecture, then be sure to get any additional notes and material given in that class from someone else in the class.

## Grading

All students are expected to do and turn in their own work. Academic integrity is expected. Dishonorable behavior will not be tolerated and when necessary will be pursued through the NCSU's judicial channels. Grading will employ the University's current plus/minus grading system.

A summary of the percentages assigned to each of the graded components appears below. Note that exams progressively count more. Exams are not cumulative. The material covered by an exam is information given since the start of the course or a previous exam.

<i>Exams</i>	1st	27%
	2nd	35%
	3rd	38%
<b>TOTAL</b>		<b>100%</b>

The percentages assigned to plus/minus letter grades are:

98-100	A+	72-77.9	C
92-97.9	A	70-71.9	C-
90-91.9	A-	68-69.9	D+
88-89.9	B+	62-67.9	D
82-87.9	B	60-61.9	D-
80-81.9	B-	Below 60	F
78-79.9	C+		

## Human Factors / Ergonomics (HF/E) Web Sites

Cognitive Ergonomics Lab-NCSU Psychology  
<http://www.safetyhumanfactors.org>

Human Factors and Ergonomics Society  
<http://hfes.org/>

International Ergonomics Association  
<http://www.iea.cc/>

Carolina Chapter of HFES  
<http://www.hfescarolina.com/>

NC State Student Chapter of HFES  
<http://clubs.ncsu.edu/hfes/>

The Ergonomics Society  
<http://www.ergonomics.org.uk/>

Association for Computing Machinery SIGCHI  
<http://www.acm.org/sigchi/>

Usability Professionals Association  
<http://www.upassoc.org>

Association for Information Systems  
<http://plone.aisnet.org>

Industrial Designers Society of America  
<http://www.idsa.org/>

American Institute of Graphic Arts  
<http://www.aiga.org/>

Ergoworld  
<http://www.interface-analysis.com/ergoworld/>

Ergoweb  
<http://www.ergoweb.com/>

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

Usable Web (links on web usability)  
<http://usableweb.com/>

HCI Bibliography  
<http://www.hcibib.org/>

Human Factors and Aviation  
[http://www.faa.gov/education\\_research/research/merged\\_humanfacs/humanfactors/](http://www.faa.gov/education_research/research/merged_humanfacs/humanfactors/)

Mac OS Human Interface Guidelines  
<http://developer.apple.com/techpubs/mac/pdf/HIGOS8Guidelines.pdf>

Contents of Lecture Topics in Human-Computer Interaction (HCI)  
[http://www.cpsc.ucalgary.ca/~saul/hci\\_topics/index.html](http://www.cpsc.ucalgary.ca/~saul/hci_topics/index.html)

An Introduction to HF in Medical Devices  
<http://www.fda.gov/cdrh/humfac/doi/pdf.pdf>

**Ergonomics Abstracts Online:** Human Factors / Ergonomics database of scientific, peer-reviewed empirical article is accessible through the NC State University library website for unity account users.

# Calendar for Ergonomics

<i>Date</i>	<i>Topic</i>	<i>Subtopic</i>	<i>Readings</i>
Aug 16	First Meeting, Syllabus	Introduction	
Aug 21	History of Ergonomics	Systems	• Bridger: Chap 1
Aug 23	Human Information Processing 1	Working memory	
Aug 28	Human Information Processing 2	Long-term memory	• Bridger: Chap 12
Aug 30	Human Information Processing 3	Attention	
Sep 4	Human Information Processing 4	Heuristics, Decision Making	
Sep 6	Vision 1	Physiology, Sensation	• Instructor's Lectures & Notes
Sep 11	Vision 2 & Visual Displays 1	Perception	• Bridger: pp. 363-378
Sep 13	Visual Displays 2	Static	
Sep 18	<b>E X A M 1</b>		
Sep 20	Visual Displays 2	Dynamic	
Sep 25	Visual Displays 3	Symbolic	• Bridger: pp. 503-520
Sep 27	Visual Displays 4	Warnings	• Instructor's Lectures & Notes
Oct 2	Visual Displays 5	Forensics	
Oct 4	FALL BREAK (No Class)		
Oct 9	Audition 1	Sensation & Perception	• Bridger pp. 409-455
Oct 11	Audition 2, Auditory Displays 1	Dynamic	
Oct 16	Auditory Displays 2		
Oct 18	Noise, Stress, Tactile Displays,		
Oct 23	<b>E X A M 2</b>		
Oct 25	Reading Day (No Class)		
Oct 30	Controls 1		• Bridger pp. 520-524
Nov 1	Controls 2		• Bridger: pp. 524-549
Nov 6	Ergonomic Devices		•
Nov 8	Anthropometry & Biomechanics 1	Physical Ergonomics	
Nov 13	Anthropometry & Biomechanics 2		
Nov 15	Human Error and Reliability		
Nov 20	Human-Computer Interaction 1		• Bridger: pp. 553-604
Nov 22	THANKSGIVING (No Class)		
Nov 27	Human-Computer Interaction 2		
Nov 29	Transportation Systems		• Instructor's Notes
Dec 13	<b>E X A M 3</b> (Final Exam) Exam starts at 9:00 AM (instead of 8 AM) in usual classroom (736 Poe).		