

### Syllabus Overview: Human Factors in Design

Course Designator	DES	Section Number	01
Course Number	5185	Semester and Year	Spring 2017

Class Meeting Days & Time	Tues 6:15-9:00pm
Classroom	McNeal Hall 250
Number of Credits	3
Final Exam Date & Time (Also state if there is NO final)	6:30pm-8:30pm, Tuesday May 9, reserved for final presentations

### Instructor's Information

Name	Dr. Brad Holschuh
Office Location	220 McNeal Hall
Office Phone	612-624-3210
Email	bth@umn.edu
Office Hours	Tuesdays, 1:30-3pm or by appointment

### Course Information and Instructor's Expectations

#### Course Description:

Exploration of the theories and methods that influence the assessment of physical, cognitive, social, and psychological human factors and the analysis of user needs with application to designed products and systems that interact with a human user or the human body.

This course is an introductory overview to the theories and concepts of Human Factors and their application through the methods of User-Centered Design. Typically the class is comprised of students from a wide variety of disciplines and backgrounds. Course material is explored through readings, lectures, discussions, case studies, and course projects.

#### Required and Recommended Materials:

##### Required text

Norman, Donald A. (2013). The Design of Everyday Things (revised and expanded). New York: Basic Books.

Norman, Donald A. (2004). Emotional design. New York: Basic Books.

Proctor, Robert W. et al. (2008). Human Factors in Simple and Complex Systems. Florida: CRC Press.

#### Student Learning Outcomes following course completion: *(must identify at least one outcome and how it relates to this course how it will be addressed and how it will be assessed, <http://www.slo.umn.edu/>)*

1. *Students in this course will be able to identify, define, and solve problems of human needs and human factors in the design of interactive or worn products and systems. Learning will be assessed through evaluation of existing products and systems, and through the design of original products that consider human needs.*
3. *Students in this course will have mastered a body of knowledge and a mode of inquiry through readings and research. Knowledge will be applied through evaluation of existing products and systems and through the design of original products and systems. Learning will be assessed through evaluation of these design projects and systems and through exams.*

#### Release of Work Statement:

Students understand that enrollment in this course grants consent for their work to be selected for inclusion in college or departmental publications (online or in print). Your instructor may select to use your work to represent her/his skills as an instructor in a teaching portfolio (online or in print).

**Attendance:**

As the course only meets once per week, attendance is strongly encouraged for all class sessions, and punctuality is essential. If you must miss a class session, you are responsible for arranging to make up any missed work and for all material and information covered in that class. You are encouraged to take advantage of the scheduled class time to seek my feedback and that of your peers, and to share your experiences so that others might benefit as well. You are expected to participate in class discussions and critiques, and be respectful and polite when critiquing classmates' work.

The following reasons justify absences and makeup requests and must be documented: (a) illness certified by the Boynton Health Service or another physician (b) death of parent, sibling, or grandparent (proof of funeral attendance must be supplied), (c) participation in religious observances with advance instructor notification (d) participation, certified by the Office for Student Affairs (Office of the Registrar-St. Paul, 190 Coffey Hall), in University approved co-curricular activities.

**Workload:****Readings**

Most weeks include an explicit reading assignment as well as self-directed project research reading. Assigned reading can be completed before or after the relevant lecture, per your individual preference. It is expected that you keep up with continuous project research throughout the semester.

**In-Class Exam**

One in-class exam will be administered during the semester. The exam is expected to take 1hr to complete, though 1hr30m will be provided. The exam is closed-book, and is aimed at reinforcing important concepts in the lectures and textbook/supplementary readings.

**Case Studies**

Each student will be responsible for analyzing and presenting two case studies. The first case study – a detailed commercial product analysis – will be completed individually; the second case study – an accident investigation or product recall case study – will be completed with a partner. Each case study will involve a written report as well as an in-class presentation. Full details will be provided in project assignments.

**Final Project**

A product design final project will be completed with a partner, culminating in a detailed final report, a high-fidelity prototype, and an in-depth class presentation. Full details will be provided in the project assignment.

**Grading Structure:**

<http://policy.umn.edu/Policies/Education/Education/GRADINGTRANSCRIPTS.html>

A grading rubric will be provided for each assignment, and will outline the criteria for evaluation for the specific assignment. If these criteria are not clear, it is your responsibility to ask for clarification. Your course grade will be calculated from your weighted project grades, as follows:

Class Participation:	10%
Product analysis case study:	15%
Accident or recall case study:	15%
Exam:	20%
Product design final project:	<u>40%</u>
	100% total

The final grade is based on accumulated points divided by total points possible. Grades are determined as follows:

A	93.3%	B	83%	C	73%	D	63%
A-	90%	B-	80%	C-	70%	F	below 60%
B+	86%	C+	76%	D+	66%		

**Accepting and Returning Assignments:**

Most work (except for physical components such as prototypes) will be submitted digitally, by email or through Moodle. Assignment comments are returned digitally or physically, depending on the assignment, and grades are posted on the course Moodle site.

**Grading Late Work:**

Assigned project work and case studies are due at the beginning of class, and will otherwise be considered late. Late work will be accepted at the beginning of the next class period, with a penalty of one letter grade. No work will be accepted more than one class period late.

**Policy for Missed Exams:**

Exams must be taken in-class on the date administered. They will be administered at the start of class and last one hour, so punctuality is critical and extensions will not be granted for students who arrive late. Make up-exams will not be given, except in the case of a university-excused absence.

**Make Up Work for Legitimate Absences:**

<https://policy.umn.edu/education/makeupwork>

**Extra Credit Options:**

Extra credit options are rare, and will be announced in class if and when they arise.

**University Policies****Personal Electronic Devices in Classroom:**

Students may be directed to turn off personal electronic devices if the devices are not being used for class purposes. Students are not permitted to record any part of a class/lab/other session unless explicitly granted permission by the instructor. If the student does not comply, the student may be asked to leave the classroom.

**Use of Class Notes and Materials:**

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community.

**Scholastic Dishonesty and Student Conduct Code:**

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis.

[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student\\_Conduct\\_Code.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf)

**Sexual Harassment:**

<https://policy.umn.edu/hr/sexualharassment>

**Statement on Climate of Inclusivity:**

You are expected to be attentive during class, ask questions if you do not understand something, and to offer your opinion. You are also expected to listen respectfully to other students and to me when speaking. The University of Minnesota is committed to providing a safe climate for all students, faculty, and staff. All persons shall have equal access to its programs and facilities without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. Racism, sexism, homophobia, classism, ageism and other forms of bigotry are inappropriate to express in this class. Reports of harassment are taken seriously, and there are individuals and offices available for help.

**Academic Freedom and Responsibility:**

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom and conduct relevant research. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled. When conducting research, pertinent institutional approvals must be obtained and the research must be consistent with University policies. Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help.

**Availability of Disability and Mental Health Services:**

The University of Minnesota is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact DS at 612-626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations. If you are registered with DS and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course. For more information, please see the DS website, <https://diversity.umn.edu/disability/>.

**Academic Services:**

If you would like additional help, please contact one of the offices listed below.

Center for Writing	10 Nicholson Hall, Mpls	612-626-7579
University Counseling and Consulting Services	340 Appleby Hall, Mpls	612-624-3323
	199 Coffey Hall, St. Paul	

**Course Schedule (\*Subject to change!) v1.0**

<b>Date</b>	<b>Topic</b>	<b>Textbook Readings/Assignments Due</b>
1	<b>1/17</b> Introduction to Human Factors, <i>Case Study #1 Introduction and Sign-up</i>	<i>Norman (DOET): chs 1-2</i> <i>Proctor: chs 1-2</i>
2	<b>1/24</b> <b>NO CLASS</b> Human Bodies: Anthropometrics, Ergonomics, and Work <b>online lectures</b>	<i>Proctor: chs 16-17</i> <b>Product Analysis Case Study topic selection due</b>
3	<b>1/31</b> Sensory Systems: Visual	<i>Proctor: chs. 5-6</i>
4	<b>2/7</b> Sensory Systems: Auditory, Tactile, Vestibular, Olfactory, Displays	<i>Proctor: chs. 7-8</i>
5	<b>2/14</b> Cognition I: Information Processing, Signal Detection <b>Product Analysis Case Study Presentations</b>	<i>Norman (DOET): ch. 3</i> <i>Proctor: ch. 4</i> <b>Product Analysis Case Study report, slides due</b>
6	<b>2/21</b> Cognition II: Attention, Workload, Situational Awareness <b>Product Analysis Case Study Presentations</b> <i>Case Study #2 Introduction and Sign-Up</i>	<i>Proctor: ch. 9</i>
7	<b>2/28</b> Cognition III: Memory, Mental Models, Decision Making	<i>Proctor: chs. 10-11</i> <b>Accident/Recall Case Study partner/topic selection due</b>
8	3/7 <b>EXAM 1</b> SPECIAL TOPICS: Automated Systems, Space Exploration and Human Factors	<i>No Readings</i>
	<b>3/14</b> <b>SPRING BREAK – NO CLASS</b>	
9	<b>3/21</b> Psychology and Emotion <b>Accident/Recall Case Study Presentations</b>	<i>Norman (ED): chs. 1-3</i> <b>Accident/Recall Case Study report, slides due</b>
10	<b>3/28</b> Identity and Social Elements (guest Lecture by Dr. Lucy Dunne) <b>Accident/Recall Case Study Presentations</b> <i>Final Project Introduction and Sign-Up</i>	<i>Norman (ED): chs. 4-6</i>
11	<b>4/4</b> Product Design: Research and Synthesis Former Students Feedback Session	<i>Norman (DOET): ch. 4</i> <b>Final project partner/topic selection due</b>
12	<b>4/11</b> Product Design: Ideation Final Project peer review workshop	<i>Norman (DOET): ch. 5</i> <b>Design research, first user interaction session completed</b>

13	<b>4/18</b> Product Design: Feedback and Refinement Final Project peer review workshop	<i>Norman (DOET): ch 6</i> <b>Low-fidelity prototypes due</b>
14	<b>4/25</b> <b>NO CLASS – Continue work on Projects</b>	<i>Norman (DOET): ch. 7</i>
15	<b>5/2</b> <b>LAST DAY OF CLASS</b> <b>Final Project Presentations</b>	<i>No Readings</i> <b>Design project report, high-fidelity prototypes, and slides due</b>
FINALS WEEK	TUESDAY, MAY 9 – 6:30-8:30pm <b>Final Project Presentations (cont'd)</b>	