IDES 2600 - Ergonomics for Product Design - Winter 2019

Instructor: Chantal Trudel
Office Hours: Office hours are by appointment. Please email me in advance. 3476, Mackenzie Bldg. (ME) (w) 613-520-2600 ext.5626 (e) chantal.trudel@carleton.ca

Teaching Assistant: Maham Farooq, MahamFarooq@cmail.carleton.ca
Office Hours: During class and by appointment.

Course Time and Location: Wednesdays 11:35 – 14:25, Paterson Hall Rm. 201

Course Description:
Physical, biomechanical, environmental and cognitive issues. Displays, controls, workstations, tools and software interfaces are examined from scientific and practical perspectives.

Prerequisite(s): PSYC 1001 and PSYC 1002, or PSYC 1000.
Lectures and discussion three hours a week.

Learning Outcomes:
By the end of this course, students will be able to:

1. Identify and apply HF/E principles and methods to better understand issues affecting people and systems to inform potential design interventions to improve quality of life.
2. Apply relevant principles and information on anthropometrics and the physiological limitations/capabilities of people to identify issues and opportunities affecting user experience, health, safety, performance and/or productivity.
3. Apply relevant knowledge of cognitive, social and/or emotional factors in design to improve people’s experience, health, safety, performance and/or productivity.
4. Identify possible environmental influences on people’s experience and design such as spatial considerations, materiality, lighting, thermal considerations, noise and vibration, and air quality.
5. Describe possible work/activity influences on design such as pace of work, stress, fatigue, and boredom.
6. Apply HF/E principles and methods to evaluate and/or design: seating, handles, manual materials handling devices or systems, digital devices or experiences, wearables, consumer electronics, work areas, residential products or areas, services and/or systems.
7. Produce written reports, oral and visual presentations demonstrating HF/E research, analysis and design recommendations/proposals.
8. Collaborate with team members and take responsibility for individual contributions.
9. Demonstrate professional behaviour.
Course Overview
This course introduces ergonomic/human factors (HF/E) design as it relates to product assessment and development within a system and/or context. Here we introduce students to key principles, basic practices and applications of HF/E. The first half of the course will focus on physical ergonomic considerations and the second half will cover basic considerations in cognitive ergonomics and human-technology interaction.

Part 1 – Physical Ergonomics - Basic Principles and Application
Introduction to human anatomy, anthropometric, physiological, bio mechanical characteristics, etc. as they relate to physical activity or interactions.

Part 2 – Cognitive Ergonomics, Human-Technology Interactions
Introduction to mental processes, perception, memory, reasoning, etc. and their influence on interactions among people and elements of a system (interfaces, products, environments, etc.).

Course Schedule: See Appendix A.

Required Materials: Both of the textbooks below are required and are available at the Carleton Bookstore and Haven Books (43 Seneca St. corner of Sunnyside and Seneca). There is also one hardcopy of each book on reserve at the Carleton Library and an etext of the 3rd edition of the Preece, Sharp & Rogers book available (for more information see Library Reserves - View course in Ares on CULearn).

Note: Required for Part 1 – Physical Ergonomics,

Note: Required for Part 2 –Cognitive Ergonomics, Human-Technology Interactions

Course Projects/Assignments*
1. Reading Quizzes
2. Individual Assignment
3. Team Assignment
*Each project may have some requirements for uploading files to CULearn as part of the hand-in. These files are to be uploaded as per instructions on CULearn, by the assigned due date.

Course Evaluation Information
The following activities/deliverables are required to complete this course and the weight of each assessment will be as follows:
- Reading Quiz 4* quizzes: 10% x 4 = 40%
- Individual Assignment (25%)
- Team Assignment (Presentation: 10%, Report: 20% = 30%)
- Professionalism, Participation & Peer Assessment (5%)

*There will be an option to do a bonus quiz at the end of the course for those that wish to try augmenting their grade (lowest quiz will be dropped from the calculation).
In order to absorb and practice the course content, students will need to read assigned articles, chapters, etc. on HF/E. This material will be assigned on a weekly basis. Student reading progress will be assessed through quizzes to help keep students on track. An individual and team assignment will allow students to apply this content to real world design curiosities, problems and explorations.

**Individual/Group Work**
Courses may include various combinations of individual and group work. Students must demonstrate individual aptitude. It is important where collaborative work is undertaken that students be able to clearly demonstrate that individual contribution has been made. Where the evaluation for individual work is below a passing grade, that grade will be awarded for the course.

**Late Submission of Deliverables**
Course deliverables for reviews and other due dates: All deliverables submitted late will accrue a 10% per day deduction from the determined grade, to a maximum of 3 days, from the original deadline time and date. Failure to submit within 3 days, without approval from the instructor, will result in a grade of F.

**Participation and Professionalism**
Active participation and professional conduct are particularly important in studio courses and will be evaluated. At the same time, when the student’s work is reviewed at the end of the course, an evaluation will be made based on one or more of the following: in class discussion; consultations with instructors; and work ethic. However, none of these evaluations will be used to raise an overall failing grade, to a passing one, based on the quality of the work.

**Requests for Academic Accommodation**
You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

**Pregnancy obligation**
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [https://carleton.ca/equity/accommodation/](https://carleton.ca/equity/accommodation/)

**Religious obligation**
Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity Services website: [https://carleton.ca/equity/accommodation/](https://carleton.ca/equity/accommodation/)

**Academic Accommodations for Students with Disabilities**
If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. [carleton.ca/pmc](carleton.ca/pmc)
Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: carleton.ca/sexual-violence-support

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

For more information on academic accommodation, please contact the departmental administrator or visit: students.carleton.ca/course-outline

Student Responsibility
The student is responsible for knowing the content of this course outline, the schedule of classes, assignments, and reviews; and material covered during any absence from scheduled classes.

Unless otherwise arranged, the class will meet during regularly scheduled studio hours. These meetings are mandatory; important issues and questions will be raised, and announcements might be made. Everyone is expected to be based in studio and to work during scheduled hours. The studio should be considered a professional design studio environment. Because of the special involvement of external professionals, scheduling changes for guest lectures, presentations, and reviews may occur at short notice; students should stay informed regularly.

Other Considerations
In industrial design, ideas and concepts come from a multitude of sources to be modified and utilized in the design and development process. The student should reference sources appropriately.

Changes to the Course Outline
The course outline may be subject to change in the event of extenuating circumstances.
### APPENDIX A - COURSE SCHEDULE

<table>
<thead>
<tr>
<th>IDES 4310 – Winter Term 2018 – Phases 3, 4 &amp; 5</th>
<th>What to work on during this week (see CULearn for specific page numbers for readings)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activities &amp; Deliverables</strong></td>
<td><strong>Readings from Bodyspace</strong> (read below to prepare for Quiz 1)** Read Ch. 1 Introduction to Ergonomic Design** <strong>Read Ch. 2 Principles and Practice of Anthropometrics</strong></td>
</tr>
<tr>
<td><strong>Wk</strong></td>
<td><strong>Date</strong></td>
</tr>
<tr>
<td>1</td>
<td>J9</td>
</tr>
<tr>
<td>2</td>
<td>J16</td>
</tr>
<tr>
<td>3</td>
<td>J23</td>
</tr>
<tr>
<td>4</td>
<td>J30</td>
</tr>
<tr>
<td>5</td>
<td>F6</td>
</tr>
<tr>
<td>6</td>
<td>F13</td>
</tr>
<tr>
<td>7</td>
<td>F27</td>
</tr>
<tr>
<td>8</td>
<td>M6</td>
</tr>
<tr>
<td>9</td>
<td>M13</td>
</tr>
<tr>
<td>10</td>
<td>M20</td>
</tr>
<tr>
<td>11</td>
<td>M27</td>
</tr>
</tbody>
</table>

**February 19-23 Winter Break, No Class**
APPENDIX B – BASIC INFORMATION ON DELIVERABLES

Instructor will provide additional information as needed on cuLearn throughout the term to assist you. A handout will be provided to help guide you in preparing your assignments.

General File Naming Requirement:
- Digital file submissions to be posted on CULea...