GENERAL COURSE INFORMATION AND SCHEDULING

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: Sanaz Hafezi, SanazHafezi@cmail.carleton.ca
Office Hours: During class and by appointment.

Course Time and Location: Wednesdays 11:35 – 14:25, Rm. 4332 Mackenzie Bldg. (ME)

GENERAL COURSE CONTENT INFORMATION

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. Understand what aspects in design makes people comfort or reducing discomfort, and optimizing the environment to arrive at an experience of comfort.
2. Investigate other case studies to understand how to conduct scientific ergonomic design, various methods and tools to increase end users’ physical as well as emotional comfort.
3. Familiarize with special terminologies in Ergonomics and understand basic statistical calculation.
4. Differentiate among Physical Factors (e.g. body sizes, forces, movements, capacities); Sensorial Factors (e.g. touch, smell, sounds, feel, etc.), Cognitive Factors (e.g. perception, memory, emotion etc.); and Cultural Factors (e.g. aesthetics, meanings, etc.) as they come into play during peoples' interactions with things.
5. Able to know how to optimize the user interface around how people can, want, or need to work, rather than forcing them to change how they work to accommodate the system or product.
6. Able to conduct ergonomic research in conjunction with a studio project by employing anthropometric and statistical knowledge.
7. Conduct ergonomic observations of interactions between people and products in a given contexts of use.
8. Effectively illustrate the practical benefits of ergonomics in product design.

PARTICULAR COURSE INFORMATION AND SCHEDULING

Course Overview
This introductory course focuses on ergonomic/human factors design as it relates to product assessment and development within a system and/or context. It is structured to introduce students to key principles, basic practices and applications of ergonomics/human factors (HF/E). Specifically, 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 (HTI).

Part 1 – Physical Ergonomics - Basic Principles and Application
Physical ergonomics is concerned with things like human anatomy, anthropometric, physiological and bio mechanical characteristics as they relate to physical activity or interactions.

Part 2 – Considerations in Cognitive Ergonomics and Human-Technology Interactions
Cognitive ergonomics is concerned with things like mental processes, perception, memory, reasoning, and how they affect interactions among people and other elements of a system such as products and the environment.

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, Quizes and Final Exam

Note: Required for Part 2 – Considerations in Cognitive Ergonomics and Human-Technology Interactions

COURSE COMPLETION AND EVALUATION INFORMATION

Course Quizzes, Team Field Assignment and Exam

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 along with accompanying
lecture materials and/or weekly in-class activities to practice/apply the content. Student progress will be assessed through quizzes to help keep students on track with the readings, a team field assignment to allow students to apply the content they are learning about and a comprehensive final exam that requires student to review the salient material covered throughout the term.

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 (6 in total with the lowest performance quiz omitted from the total calculation: 5 x 10% = 50%)
- Team Field Assignment (Presentation: 10%, Report: 15% for a total of 25%)
- Final Exam (20%)
- Professionalism and Participation (5%)

• 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.

• Student Access to Exam Papers
Examinations are for evaluation purposes only and will not be returned to the student.

STUDENT CONSIDERATIONS AND RESPONSIBILITIES

• Academic Accommodation (Equity Services)
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me 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: http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf
Religious obligation: write to me 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: http://carleton.ca/equity/wp-content/uploads/Student-Guide-to-Academic-Accommodation.pdf

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and 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 me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

- Instructional Offenses / Plagiarism
  The regulations of the university require that we bring to your attention regulations on Instructional Offenses, descriptions of which can be found in the current Academic Integrity Policy available on the Student Affairs website. The policy governs the academic behavior of students. At the same time it seems that students do not always understand the meaning of plagiarism and how to avoid it.

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.

- Student Responsibility
  The student is responsible for knowing the content of this course outline, the schedule of classes, assignments, and examinations; 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.

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

### IDES 4310 – Winter Term 2018 – Phases 3, 4 & 5

<table>
<thead>
<tr>
<th>Wk</th>
<th>Date</th>
<th>Activities &amp; Deliverables</th>
<th>What to Work on this Week (see CULearn for specific page numbers for readings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>J10</td>
<td>Introduction to human factors/ergonomics (HF/E).</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 1)&lt;br&gt;Read Ch. 1 Introduction to Ergonomic Design&lt;br&gt;Read Ch. 2 Principles and Practice of Anthropometrics</td>
</tr>
<tr>
<td>2</td>
<td>J17</td>
<td>Quiz 1&lt;br&gt;So what is normal? Anthropometrics and diversity.</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 2)&lt;br&gt;Read Ch. 2 Principles and Practice of Anthropometrics&lt;br&gt;Ch. 3 Human Diversity</td>
</tr>
<tr>
<td>3</td>
<td>J24</td>
<td>Hand anthropometrics, handedness, strength, handle design, biomechanics. What is neutral posture?</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 2)&lt;br&gt;Ch. 6 Hands and Handles</td>
</tr>
<tr>
<td>4</td>
<td>J31</td>
<td>Quiz 2&lt;br&gt;Clearances, reach, range of motion, postural loading, vision related to posture.</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 3)&lt;br&gt;Ch. 4 Workspace Design</td>
</tr>
<tr>
<td>5</td>
<td>F7</td>
<td>Basics of sitting, spine considerations, anthropometric principles of seat design, seat evaluation.</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 3)&lt;br&gt;Ch. 5 Sitting and Seating</td>
</tr>
<tr>
<td>6</td>
<td>F14</td>
<td>Quiz 3&lt;br&gt;HF/E considerations in work and home contexts.</td>
<td>Readings from <em>Bodyspace</em> (for Quiz 4)&lt;br&gt;Ch. 7 Ergonomics in the Office &amp; Ch. 8 Ergonomics in the Home</td>
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<td></td>
<td></td>
<td><strong>February 19-23 Winter Break, No Class</strong></td>
<td></td>
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<tr>
<td>7</td>
<td>F28</td>
<td>Quiz 4&lt;br&gt;What do we mean by cognition? What do we mean by user experience? Basics of cognitive frameworks.</td>
<td>Readings from <em>Interaction Design</em> (for Quiz 5)&lt;br&gt;Ch. 3 Cognitive Aspects, Ch. 1 What is Interaction Design, Ch. 2 Understanding and Conceptualizing Interaction</td>
</tr>
<tr>
<td>8</td>
<td>M7</td>
<td>Interface types, metaphors. natural interfaces.</td>
<td>Readings from <em>Interaction Design</em> (for Quiz 5)&lt;br&gt;Ch. 6 Interfaces</td>
</tr>
<tr>
<td>9</td>
<td>M14</td>
<td>Quiz 5&lt;br&gt;Types of social interaction, emotional aspects of interfaces.</td>
<td>Readings from <em>Interaction Design</em> (for Quiz 6)&lt;br&gt;Ch. 4 Social Interaction&lt;br&gt;Readings from <em>Interaction Design</em> (for Quiz 6)&lt;br&gt;Ch. 5 Emotional Interaction</td>
</tr>
<tr>
<td>10</td>
<td>M21</td>
<td>Working session/consultation for team field assignment.</td>
<td>Work on Presentation and Report due Week 11</td>
</tr>
<tr>
<td>11</td>
<td>M28</td>
<td><strong>Team Field Assignment Presentations</strong>&lt;br&gt;<strong>Team Field Assignment Reports Due</strong></td>
<td>Readings from <em>Interaction Design</em> (for Quiz 6)&lt;br&gt;Ch. 7 Data Gathering</td>
</tr>
<tr>
<td>12</td>
<td>A4</td>
<td>Quiz 6&lt;br&gt;Introduction to data gathering for design. Exam review.</td>
<td></td>
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</table>
APPENDIX B

DELIVERABLES – BASIC INFORMATION

Instructor will provide additional, more detailed information as needed throughout the term to assist you. A handout will be provided to help guide you in preparing the presentation and report.

General File Naming Requirement:
• Digital file submissions to be posted on CULearn submission link (source file plus pdf) for the Team Field Assignment Presentation and Report. The must follow the specific naming convention provided below (please make your team name short):

  Team Number - Team Name - IDES 2600 Presentation - Month.Day.Year
  For example:
  1 – HFE4ID - IDES 2600 Presentation - March.21.2018

  Team Number - Team Name - IDES 2600 Report - Month.Day.Year
  For example:
  1 – HFE4ID - IDES 2600 Report - March.21.2018

Presentation:
• Refer to Course Schedule for due dates of Team Field Assignment Presentations.
• Presentation schedule for groups to be posted on cuLearn prior to event.
• Presentations should be a combination of digital content and creative physical or interactive mediums as appropriate to the study (e.g. salient quotes from people, photos, sketches, illustrations, videos, acting/demonstrating tasks or activities, basic models, UI screen shots or mockups, material/finish considerations, etc.).
• Pay attention to legibility of text, graphics, images, video, etc.
• Reference all sources which helped you in your analysis and recommendations using APA standards.

Report:
• Refer to Course Schedule for due date of Team Field Assignment Report.
• Conducted in groups with description on individual contribution.
• Indicate project members and project title.
• Use a minimum of 1” margins, 10-11 pt font with a minimum of 1.5 line spacing.
• Maximum word count (for main document text) per group is 3000 words.
• Word count does not include words used in captions, tables, graphics, design ideas, references, data collection tools/materials (e.g. interview samples, activity scripts, etc.). Write clearly and succinctly to remain within word count.
• Place additional material in Appendices (e.g. data collection tools/materials).
• May embed links to video content if desired.
• Hand in one black and white document (for markups), one quality colour printed document (for archiving) and one colour digital file in PDF format submitted on cuLearn.
• Reference all sources which helped you in your analysis and recommendations using APA standards.