Course Description

This course explores how humans behave physically and psychologically in relation to particular environments, products, and services. It will do this by (1) providing an overview of Human Factors (aka Ergonomics) as a broad discipline, and (2) focusing on specific ways to incorporate Human Factors principles into both the Design Thinking process and your own personal design approach. It builds on the methods you’ve learned in Design Research Methods (DES 2820-001) and Introduction to Design Thinking (DES 2615) by applying them to project work.

As part of the journey, we will put a strong emphasis on learning to externalize and visualize your thinking process so others can discern, comment, and build on the work you’ve done. This class is more about thinking rather than making, so come prepared to ask (and answer) tough questions.

Prerequisites: Full Major status in Design

Course Objectives

The goal of this course is to help you understand the physical, psychological, and behavioral principles that drive our interactions with the world around us. It will introduce the field of Human Factors as a lens that can be applied to analyze and improve products, services, environments, and processes. By the end of this course your will be able to:

- Identify appropriate Human Factors resources for future physical, digital, and service design efforts
- Apply Human Factors principles to Design Thinking & Human-Centered Design methods
- Analyze existing offerings with a Human Factors lense to understand what is or isn’t working (and why)
- Articulate and visually communicate your design logic so it’s clear and compelling to others

Specifically, you will gain competency in:

- Visually recording and facilitating discussions
- Scoping and conducting design research efforts
- Mining insights by analyzing and synthesizing data
- Generating and evaluating concepts
- Presenting your work as a narrative to a variety of audiences

Teaching Methods & Ground Rules

This course utilizes a kinesthetic approach to teaching and learning: we will balance lectures and presentations with hands-on activities to help you learn not only by listening and seeing, but by doing, too. Every lecture will be paired with a set of activities to clarify and internalize the information shared. Activities will be completed both individually and in small groups to encourage you to think alongside others. To help you share and enroll teammates in your creative process we will employ a range of visual facilitation techniques to keep your thinking clear and your concept hygiene top-notch.

For the duration of this course, you will be expected to:

1. **Be on time.** 5 min late for 35 people is over 3 hrs of cumulative time lost.
2. **Be prepared.** This class builds on concepts and activities every week. Failing to complete activities and assignments on time will leave you and your team struggling to keep up. The excuse that work is left at home is not acceptable.
3. **Be ethical.** Approach every conversation with your peers and instructors with positive intent.
4. **Be mindful of your state.** Keep your emotions in check by identifying them and doing what you need to get your head back in the game.
5. **Be engaged.** Actively participate in class activities and discussions in a collaborative, respectful manner.
Attendance & Engagement
Your attendance and engagement is mandatory for the full duration of this course. You are expected to attend every class meeting for the full class period. You are expected to participate in the discussions and be mentally present in class. Missing class or showing up unprepared will hinder your ability to learn from discussion with your instructors and peers. Work on courses other than Human Factors during class hours will be recorded as an absence.

You may miss 1 class during the semester. Because we only get to meet once per week any days missed beyond 1 class will require an appraisal of abilities by the faculty to complete the required work successfully. Faculty will have the option to drop a student without notice on the second absence or any absence after.

Communication
Official class communication will occur in class, via email, and through Canvas. Check your email and Canvas frequently to make sure you’re aware of announcements or updates. Make sure your emails are linked properly: saying you missed class because you can’t check your email is not an excuse. If you’re having issues, contact the University of Utah help desk.

Evaluation Guidelines & Criteria
Your final grade for this course will be determined by your performance and engagement with the following deliverables and activities:

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Idea Log</td>
<td>10 pts</td>
</tr>
<tr>
<td>Visual Recording Session</td>
<td>8 pts</td>
</tr>
<tr>
<td>Weekly Readings and/or Assignments</td>
<td>20 pts</td>
</tr>
<tr>
<td>Final Project</td>
<td>42 pts</td>
</tr>
<tr>
<td>Attendance &amp; Participation</td>
<td>20 pts</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 pts</strong></td>
</tr>
</tbody>
</table>

Deliverables & Activities
- **Daily Idea Log.** Throughout the course you will be required to keep an observation journal, or ‘Idea Log’ to further your visual communication skills. You are required to make one entry every day that reflects an aspect of what you’ve learned in class. Idea Logs will be reviewed and graded two times at random during the semester.

- **Visual Recording Session.** During the course, you will be asked to visually record 20 minutes of some component of class (e.g., a lecture, group discussion, or presentation) on a large whiteboard. Visual recordings will be photographed and posted to Canvas after every class for reference.

- **Weekly Readings and/or Assignments** will be given out during class and posted to Canvas for the following week.

- **Final Project.** Based on a provided theme, you will be asked to 1) identify a relevant problem to solve, 2) perform field research, 3) analyze and synthesize data collected, 3) generate solutions, 4) evaluate and refine a select set, and 5) tell a compelling story that weaves together everything you’ve found. The final deliverable of this project is a 15 minute ‘Discovery Presentation.’ Further details on the effort will be provided in class.

Grading Policy
Late or incomplete work will not be accepted. Exceptions to this policy will only be granted for well-substantiated reasons (e.g., documented illness or documented university business).

Your final grade will be calculated by adding the points obtained in each of the above categories. The course will follow this Grading Policy for the final grade:
<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100–90 pts</td>
<td>Represents excellent performance. Work completed is outstanding and goes above and beyond project requirements.</td>
</tr>
<tr>
<td>B</td>
<td>80–90 pts</td>
<td>Represents good performance and substantial achievement. Work completed is above average and fulfills more than the minimum requirements necessary.</td>
</tr>
<tr>
<td>C</td>
<td>70–80 pts</td>
<td>Represents average or standard performance. Work completed meets all requirements.</td>
</tr>
<tr>
<td>D</td>
<td>60–70 pts</td>
<td>Represents substandard performance. Work completed does not meet all requirements.</td>
</tr>
<tr>
<td>E</td>
<td>&lt; 60 pts</td>
<td>Represents unsatisfactory performance. Work is insufficient to merit any credit or grade.</td>
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</tbody>
</table>

Course Schedule*
This course will have two phases. The first phase will provide an overview of Human Factors as a broad discipline based in psychology, sociology, engineering, anthropometry, physiology, industrial design, and interaction design. It will present design principles that are based on human capacity and limitation. The second phase will apply these principles to the Design Thinking process. The final output of this second phase is a Discovery Presentation (see 'Deliverables & Activities').

* Subject to change based on class progress and needs

Phase I. Human Factors Overview

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01/07</td>
<td>Course Introduction &amp; Opening</td>
</tr>
<tr>
<td>2</td>
<td>01/14</td>
<td>Human Factors Overview</td>
</tr>
<tr>
<td>3</td>
<td>01/21</td>
<td>Human Factors Deepdive 1</td>
</tr>
<tr>
<td>4</td>
<td>01/28</td>
<td>Human Factors Deepdive 2</td>
</tr>
<tr>
<td>5</td>
<td>02/04</td>
<td>Human Factors Deepdive 3</td>
</tr>
<tr>
<td>6</td>
<td>02/11</td>
<td>Human Factors Deepdive 4</td>
</tr>
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</table>

Phase II. Applying Human Factors to the Design Thinking Process

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>02/18</td>
<td>Design Thinking Stage 0</td>
</tr>
<tr>
<td>8</td>
<td>02/25</td>
<td>Design Thinking Stage 1</td>
</tr>
<tr>
<td>9</td>
<td>03/03</td>
<td>Design Thinking Stage 2</td>
</tr>
<tr>
<td>10</td>
<td>03/10</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>11</td>
<td>03/17</td>
<td>Design Thinking Stage 3</td>
</tr>
<tr>
<td>12</td>
<td>03/24</td>
<td>Design Thinking Stage 4</td>
</tr>
<tr>
<td>13</td>
<td>03/31</td>
<td>Design Thinking Stage 5</td>
</tr>
<tr>
<td>14</td>
<td>04/07</td>
<td>Design Thinking Stage 6</td>
</tr>
<tr>
<td>15</td>
<td>04/14</td>
<td>Project Workshopping</td>
</tr>
<tr>
<td>16</td>
<td>04/21</td>
<td>Final Project Presentations</td>
</tr>
</tbody>
</table>
Readings & Materials

Required:

- Strengthsfinder 2.0, Tom Rath (no need to purchase, will be distributed during the first class)
- Post-its, Sharpie markers, a blank notebook to use as your ‘Idea Log’

Recommended:

- The Design of Everyday Things, Don Norman
- The Hidden Dimension, Edward T. Hall
- Good Products, Bad Products, James Adams
- Designing Interactions, Bill Moggridge
- Mismatch: How Inclusion Shapes Design, Kat Holmes
- Design Meets Disability, Graham Pullin

Resources for Human Factors:

- Human Factors in Simple and Complex Systems, Robert W. Proctor
- Human Dimension and Interior Space, Julius Panero and Martin Zelnik
- Ergonomics: How to Design for Ease and Efficiency, Kroemer, et al.

Resources for Design Thinking & Visual Facilitation:

- Universal Principles of Design, William Lidwell
- Universal Methods of Design, Bruce Hanington and Bella Martin
- 101 Design Methods, Vijay Kumar
- The Field Guide to Human-centered Design, IDEO
- Visual Meetings: How Graphics, Sticky Notes and Idea Mapping Can Transform Group Productivity, Dave Sibbet
- The Back of the Napkin: Solving Problems and Selling Ideas with Pictures, Dan Roam

University Policies

1. Faculty & Student Responsibilities:

   Student. All students are expected to maintain professional behavior in the classroom setting in accordance with the Student Codes as spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. Students have a right to support and assistance from the University in maintaining a climate conducive to thinking and learning.

   Faculty. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee. Faculty must strive in the classroom to maintain a climate conducive to thinking, learning and student engagement.

2. The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

3. University Safety Statement. The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.
4. **Addressing Sexual Misconduct.** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

5. **Undocumented Student Support.** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

6. **Wellness.** It is important that every student is well and has all their needs met. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student’s ability to succeed and thrive at the University of Utah. Please let one of us know if you need additional help with anything. For helpful resources contact the Center for Student Wellness at www.wellness.utah.edu or 801-581-7776.

7. **Academic Misconduct.** Academic misconduct includes cheating, plagiarizing, research misconduct, misrepresenting one’s work, and inappropriately collaborating. Definitions of these and other terms can be found in the Student Code at [http://www.regulations.utah.edu/academics/6-400.html](http://www.regulations.utah.edu/academics/6-400.html). If an incident of misconduct has occurred the instructor is required to report the incident to their department administrator. Instructors have discretion on the appropriate sanction to impose in such circumstances, from grade reduction on a specific assignment/exam to failure of the entire course. Students who engage in academic misconduct more than once are subject to the policy of the College of Architecture + Planning, which directs college and department administrators to seek the dismissal of the offending students from their academic program.