



Course Syllabus

Course Information

Course Name: The Cognitive and Social Psychology of User-Centered Design

Course Number : RUCD120

Course Start & End Dates: January 12, 2022-March 22, 2022

Instructor's Name and Contact Information

Eva Kaniasty - kaniasty@brandeis.edu

Office Hours/Availability – By appointment, or as specified in LATTE.

1. Document Overview

This syllabus contains all relevant information about the course: its objectives and outcomes, the grading criteria, the texts and other materials of instruction, and of weekly topics, outcomes, assignments, and due dates. Consider this your roadmap for the course. Please read through the syllabus carefully and feel free to share any questions that you may have. Please print a copy of this syllabus for reference.

2. Course Description

This course will examine the psychological and social principles impacting human factors in physical and virtual environments. Students will explore biological, perceptual, and cognitive factors in the context of interface design and ergonomics. Human-centered design will play a central role in considering the cultural and social implications of design.

3. Course Outcomes

After taking this course, the student will be able to:

1. Define cognitive and social psychology theory in the context of human-centered design.
2. Describe human information processing, physiological, and person-technology models for user-centered design.
3. Explain the role of social identity and individual differences in user experience.
4. Identify universal design principles impacting usability, accessibility and inclusion.
5. Predict the emotional and behavioral responses of users to various designs.
6. Apply cognitive and social principles to design solutions in physical and digital environments.

Prerequisites: None

4. Materials of Instruction

1. Textbooks

A physical textbook will not be required for this course. Students will be referred to online textbooks and other digital resources available through the Brandeis library and the O'Reilly Safari Learning Platform: Academic Edition. However, the following reference texts are recommended for purchase by students of the User Centered Design program.

- Lidwell, Holden, K., & Butler, J. (2010). Universal principles of design. 125 ways to enhance usability, influence perception, increase appeal, make better design decisions, and teach through design (Rev. and updated ed.). Rockport Publishers.
https://search.library.brandeis.edu/permalink/01BRAND_INST/nmaao4/alma9923644102001921
- Weinschenk. (2012). 100 Things Every Presenter Needs to Know About People. New Riders.
https://search.library.brandeis.edu/permalink/01BRAND_INST/6qibql/cdi_askewsholts_vlebooks_9780132964104

2. Online Course Content

This section of the course will be conducted completely online using Brandeis' LATTE site, available at latte.brandeis.edu. The site contains the course syllabus, assignments, discussion forums, links/resources to course-related professional organizations and sites, and weekly checklists, objectives, outcomes, topic notes, self-tests, and discussion questions. Access information is emailed to enrolled students before the start of the course. To begin participating in the course, review Week 1 and read the first Course Announcement.

Additionally, many readings are accessible through <https://learning.oreilly.com>.

3. Mobile Touch Evaluation Template (\$5)

Order at <https://www.4ourthmobile.com/touch-templates>

Course Grading Criteria

Percent	Component	Outcomes Met	Week Due
30%	Discussions/Online Participation	NA	Every week
20%	Assignment #1: Human Factors Critique	2, 3, 4, 6	Week 4
25%	Assignment #2: Expert Review (Heuristic Evaluation)	2, 6	Week 7
25%	Final Assignment: Workplace Design White Paper	1, 2, 3, 5, 6	Week 10

Online Discussions

Online discussions should be completed during the course week in which they are assigned. Early or late discussion posts **do not earn credit**. Your first post should be made by Saturday at midnight (EST time) of each course week; follow-up posts or responses should be made by Tuesday at midnight (EST time). Unless stated otherwise, you

should expect to post substantive answers to each discussion prompt and at least 1 response to posts from two other students. Additionally, students are expected to reply to classmates who ask them a question or make a useful point on their original post (3-4 substantive posts per week). A substantive post is one that is about 300 words, and which makes a useful point or asks a reflective question. Replies should add to the discussion and/or question or challenge as appropriate. Posts which are poorly written, which merely quote from external sources, or which simply echo agreement or disagreement with another post will not earn credit.

Please be mindful that the Discussion Board is a space for academic exchanges. As a result, students are accountable for using proper punctuation, spelling, and grammar. In addition, you need to reference all sources in the APA citation format, with a permalink appended. Since class participation is 30% of your final grade, get involved in discussions early and often. It is crucial that all participants maintain a high regard for proper decorum in the Discussion Board. Please treat your classmates and the instructor with the utmost respect. Inappropriate posts will be removed immediately. The instructor reserves the right to penalize students for repeated violations of the participation policy (and/or Academic Integrity Policy) within a course.

Discussion Board Grading Rubric:

- **Primary Post - Comprehensive (60)**
Meets the minimum word count; follows discussion prompt directions; directly addresses all questions posed by the prompt;
- **Primary Post - Evidence-supported (10)**
Includes references to readings and/or quality independent research; defines terms or concepts learned through outside readings/independent research.
- **Primary Post - Accurate (10)**
Defines and utilizes new/relevant terminology correctly, as described in the readings or research.
- **Primary Post - Organized (5)**
- Focused on topic; Structured effectively; Easy for classmates and instructor to follow.
- **Reply – Complete (10)**
Required number of replies is submitted; Replies address prompt.
- **Reply - Engaged (5)**
Demonstrates critical thinking; Does not simply agree but clarifies and/or questions as appropriate.

Assignment Descriptions

Assignment 1: Human Factors Critique

During the first assignment, students will explore the usability and accessibility of a set of designs. For each design, discuss relevant human factors, including:

- Physical (Ergonomic & Haptic)
- Cognitive/Literacy
- Perceptual (Visual & Auditory)
- Social/Cultural

For each design, provide a summary of its strengths and weaknesses, as well as redesign suggestions for improving its usability and/or inclusiveness, if applicable. No design is perfect, though some of the designs shown may have more strengths than weaknesses. You don't have to cover every factor with every design - focus on what is most critical to the primary purpose of the design or device, and what you can glean about the context of use from the information provided (and your own research). Most of your analysis should be based on what you've learned in

Weeks 1-3, but informed by additional research as needed. In describing the social and cultural context of the designs you can draw on your own background and experiences.

Refer to Latte for detailed assignment format and submission guidelines.

Rubric

Content (0 to 16 points per design - up to 80 points total)	Student discusses relevant factors for each design included in the assignment prompt. Submission includes references to a mix of class readings/resources, student's independent research on human factors and inclusive design research studies, standards & guidelines.
Presentation/Style (0 to 10 points)	The submission is clearly organized. The information design makes it easy for the reader to follow the thoughts/discussions. Relevant references are included below each discussion. References follow APA style and include hyperlinks to the cited resource. The submission uses complete sentences and is free of spelling and grammatical errors.
Reflection (0 to 10 points)	Student reflects on how initial discussions prepared them for the first assignment; describes challenges/problems, incorrect expectations/assumptions and/or lessons learned or adaptations made. Includes recommendations for the instructor for clarifying expectations and improving the learning experience going forward if applicable.

Assignment 2: Expert Review Presentation

For this assignment, students will conduct a heuristic evaluation of a primarily visual UI design of their choice. The UI should include a transactional task component (e.g. ecommerce, banking, social media, or web app). At minimum, the presentation should include an analysis of the home page and a multi-step task or process (e.g. registration, checkout, or social media post). The target audience for this presentation is a team of design stakeholders. The graded deliverable will be a pre-recorded meeting presentation.

Part I: Report Deck

Develop a slide deck report to support the verbal presentation. Include annotated screenshots and enough information to prompt recall of key takeaways from the presentation.

Part II: Verbal Presentation

Record a 10-15 minute verbal presentation. Begin with a brief (<1 minute) description or demo of the goals and purpose of the UI, then analyze the strengths and weaknesses of the design using the heuristic framework.

Refer to Latte for the heuristic set, as well as detailed assignment format and submission guidelines.

Rubric

Content (0 to 60)	Student's evaluation demonstrates a deep knowledge of key usability and design concepts relating to visual interface design. Submission includes references to a mix of class readings/resources and student's independent research on human factors, standards & guidelines.
Slide Design (0 to 20 points)	The submission is clearly organized, with effective visual and information design. Effective use of Gestalt and preattentive principles makes it easy for the reader to follow the discussions. References are appended to the slide deck. follow APA citation style, and include hyperlinks to the cited resource. The submission is free of spelling and grammatical errors.
Verbal Presentation Style (0 to 20 points)	The verbal presentation complements and significantly expands on the information covered in slides. The student does not read from slides. Appropriate level of professional language is used (i.e. no slang). The presentation is fluent and well-rehearsed.

Final (3rd) Assignment: Workplace Design White Paper

Note: For the third, final assignment, students will work in pairs to share information to complete their assigned version of this assignment. Peer collaboration will focus on sharing experiences, draft review. Students are encouraged to conduct guerilla research in office and coworking spaces to inform their recommendations for this assignment.

The COVID pandemic has had a disruptive effect on office workers, forcing many who have worked in traditional office environments to work remotely for extended periods of time. Disruption often drives innovation, giving designers the opportunity to rethink the employee experience to improve employee motivation, productivity, satisfaction, and engagement.

Assignment Version A (Remote Work)

US employees of Company A, a software development company, have been working remotely for over a year. The company already had a multi-national remote presence, and an office lease that expired a few months ago has resulted in significant savings. Therefore, leaders of Company A are planning on **reducing the number of employees working on site** by 80%, but they are worried that this move will increase employee turnover. Your boss, the VP of User Experience, has asked you to submit recommendations for supporting remote employees.

Assignment Version B (On-Site Work)

US employees of Company B, a software development company, have been working remotely for over a year. Unfortunately, the pandemic coincided with the company's building of a new headquarters. Therefore, leaders of Company B are planning on having 80% of their workers **return to the office as soon as possible**, but they are worried that this move will increase employee turnover. Your boss, the VP of User Experience, has asked you to submit recommendations for improving the office environment to support in-person workers.

Context for Both Scenarios

Recognizing and working within context and constraints is a critical capacity for designers. Consider both the benefits and drawback of designing the work settings in your scenario. Your proposal should include both recommendations for the design of the work environment, and how you can use technology to compensate for the drawbacks of each setting. Assume that both companies have a workforce that is diverse in terms of age, life stage, and individual preferences - think about what kinds of tools and interventions may empower/or alienate individuals or stakeholder groups.

Connect with your partner weekly to brainstorm ideas and discuss the direction of your thinking. Compare your own experiences in different work settings with those of your partner.

Check Latte for assignment and submission guidelines.

Rubric

Content (0 to 80 points total)	Student discusses factors relevant to the assignment prompt. Submission includes references to a mix of class readings & resources. As always, consider the source, but for this assignment, references from reputable business and news publications (e.g. Harvard Business Review, The Economist) are acceptable.
Collaboration Reflection (0 to 10 points)	Student engages collaboratively with their partner to brainstorm ideas and share perspectives. Student attends all scheduled partner calls and communicates promptly about logistical challenges. Student provides feedback on their partner's draft work. Student reflects on lessons learned from this collaboration.
Presentation/Style (0 to 10 points)	The submission uses plain language understandable by a non-designer business stakeholder. The information design makes it easy for the reader to follow the thoughts/discussions. References reflect independent research from reputable publications (e.g. HBR). Relevant references are included as inline footnotes, and follow APA style and include hyperlinks to the cited resource. The submission uses complete sentences and is free of spelling and grammatical errors.

II. Weekly Information

Week 1	1 Human Factors Psychology and Universal Design
Objectives	<ul style="list-style-type: none"> • Understand the relationship between the fields of human factors, ergonomics, and user centered design. • Reflect on the history and evolving definition of universal design and accessibility. • Consider the impact of physical, social, and cultural accessibility barriers on technology users.
Learning Materials	<ul style="list-style-type: none"> • Chapter 1, “Historical Foundations of Human Factors” in Proctor, Robert, and Trisha Van Zandt. Human Factors in Simple and Complex Systems, 3rd Edition. CRC Press, 2018. • Persson, Hans et al. “Universal Design, Inclusive Design, Accessible Design, Design for All: Different Concepts—one Goal? On the Concept of Accessibility—historical, Methodological and Philosophical Aspects.” Universal access in the information society 14.4 (2015): 505–526 (2 subsections). • Multimedia and web resources
Discussion Topic	Introductions & Barriers to Accessibility
Week 2	2 Interaction Design
Objectives	<ul style="list-style-type: none"> • Define <i>affordances</i>, <i>signifiers</i>, <i>feedback</i>, <i>(spatial) mapping</i>, and <i>(guiding) constraints</i>. • Understand the utility and limitations of metaphor in interface design. • Consider the role of conceptual (or mental) models in driving user expectations.
Learning Materials	<ul style="list-style-type: none"> • Norman, D. (2013). Chapter 1: The psychopathology of everyday things. In <i>The design of everyday things: Revised and expanded edition</i>. New York, NY: Basic Books (pp. 8-36). • Select readings from Lidwell and/or Weinschenk • Multimedia and web resources
Discussion Topic	Usability Critique
Week 4	3 Cognition
Objectives	<ul style="list-style-type: none"> • Understand the limits of short term memory. • Explain attention, distraction, and its supporting theories. • Assess the impact of stress on cognitive performance.
Learning Materials	<ul style="list-style-type: none"> • Miller, G. A. (1956). The magical number seven, plus or minus two: Some limits on our capacity for processing information. <i>Psychological Review</i>, 63(2), 81–97. • Chapter 1: Attention and Distraction in Riley, Scott. <i>Mindful Design How and Why to Make Design Decisions for the Good of Those Using Your Product</i>. 1st ed. 2019. Berkeley, CA: Apress, 2019. Web. • Select readings from Lidwell and/or Weinschenk • Multimedia and web resources
Discussion Topic	Supporting Cognitive Limitations
Assignment	Assignment #1: Human Factors Critique

Week 3	4 Visual and Auditory Sensation
Objectives	<ul style="list-style-type: none"> • Understand the human visual and auditory systems. • Appraise the capacities and limitations of human vision. • Evaluate accessibility of digital interfaces.
Learning Materials	<ul style="list-style-type: none"> • Elliot, A. J., & Maier, M. A. (2014). Color psychology: Effects of perceiving color on psychological functioning in humans. <i>Annual Review of Psychology</i>, 65, 95-120. • Gernsbacher M. A. (2015). Video Captions Benefit Everyone. Policy insights from the behavioral and brain sciences, 2(1), 195–202. • Select readings from Lidwell and/or Weinschenk • Multimedia and web resources
Discussion Topic	Evaluating Accessibility
Week 5	5 Visual Perception
Objectives	<ul style="list-style-type: none"> • Categorize Gestalt principles of organization and other preattentive properties. • Describe the stimulus cues that influence depth and motion perception. • Define perceptual constancy, including size, shape, and brightness constancies.
Learning Materials	<ul style="list-style-type: none"> • Chapter 2: Vision, Perception & Aesthetics in Riley, Scott. Mindful Design. How and Why to Make Design Decisions for the Good of Those Using Your Product. 1st ed. 2019. Berkeley, CA: Apress, 2019. • Select readings from Lidwell and/or Weinschenk • Multimedia and web resources
Discussion Topic	Gestalt principles and other preattentive properties
Week 6	6 UI Design - Part I
Objectives	<ul style="list-style-type: none"> • Apply Fitts' Law and Hick's Law to UI design. • Understand the utility of design systems, interface standards, guidelines, and heuristics in UI design.
Learning Materials	<ul style="list-style-type: none"> • IYENGAR, Sheena S, and Mark R LEPPER. "When Choice Is Demotivating : Can One Desire Too Much of a Good Thing?" Journal of personality and social psychology 79.6 (2000): 995–1006. Web. • Select readings from Lidwell and/or Weinschenk • Multimedia and web resources.
Discussion Topic	Fitts' and Hick's Law
Assignment	Assignment #2: Expert Review (Heuristic Evaluation)
Week 7	7 UI Design - Part II
Objectives	<ul style="list-style-type: none"> • Describe key principles of dynamic interface design. • Understand the additional challenge of designing for mobile devices and multimodal interfaces.
Learning Materials	<ul style="list-style-type: none"> • Norman, D. A. (2010). Natural user interfaces are not natural. <i>Interactions</i>, 17(3), 6-10.

	<ul style="list-style-type: none"> Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2014). Chapter 13: Metaphors, idioms, and affordances. In <i>About face: The essentials of interaction design</i>. John Wiley & Sons (pp. 299-324). Multimedia and web resources
Discussion Topic	Design for Mobile
Week 8	8 Emotion and Behavior
Objectives	<ul style="list-style-type: none"> Define Norman's three dimensions of emotion elicited by products. Describe the relationship between aesthetics and usability. Appraise role of emotion in design
Learning Materials	<ul style="list-style-type: none"> Norman, D. A. (2004). Chapter 1: Attractive things work better. In <i>Emotional design: Why we love (or hate) everyday things</i>. Basic Civitas Books. Chapter 1: Our Emotional Relationship with Technology. In Pavliscak, Pamela. <i>Emotionally Intelligent Design : Rethinking How We Create Products</i>. First edition. Beijing: O'Reilly, 2019. Cooper, A., Reimann, R., Cronin, D., & Noessel, C. (2014). Chapter 8: Digital etiquette. In <i>About face: The essentials of interaction design</i>. John Wiley & Sons (pp. 179-204).
Discussion Topic	Beyond Usability
Week 9	9 Motivation and Engagement
Objectives	<ul style="list-style-type: none"> Compare intrinsic and extrinsic models of motivation. Describe design strategies for improving motivation. Explain the role of social belonging in driving engagement.
Learning Materials	<ul style="list-style-type: none"> Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. <i>Contemporary Educational Psychology</i>, 25(1), 54-67. Peters, D., Calvo, R. A., & Ryan, R. M. (2018). Designing for motivation, engagement and wellbeing in digital experience. <i>Frontiers in Psychology</i>, 9, 79. Seaborn, K., & Fels, D. I. (2015). Gamification in theory and action: A survey. <i>International Journal of Human-Computer Studies</i>, 74, 14-31. Multimedia and web resources
Discussion Topic	Design for Engagement
Week 10	10 Decision-Making
Objectives	<ul style="list-style-type: none"> Understand the role of heuristics and cognitive biases in decision-making Analyze biases relevant to the design process Understand dark patterns
Learning Materials	<ul style="list-style-type: none"> Thomas, David. <i>Design for Cognitive Bias</i>. 1st edition. A Book Apart, 2020. Print. Multimedia and web resources
Discussion Topic	Cognitive Bias
Assignment	Final Assignment: Workspace Design White Paper

III. Course Policies and Procedures

Late Policies

Assignments are due by the end of the relevant course week. (Weeks start on Wednesday and end the following Tuesday at 11:59 EST). If an assignment is late, it will lose 5 points for every day it is late. If an assignment is more than a week late, I will not accept it for credit. I do this so that I will have an opportunity to discuss the assignments and possibly post reference solutions to help the class.

Brandeis and its servers run on Eastern Time. If you are in another timezone, the times you see in LATTE are not converted to your local time unless you change your preferences. Due dates and times always reflect Eastern Standard Time or Daylight Saving Time when these are observed in Massachusetts.

Grading Standards

- Work expectations – Students are responsible to explore each week's materials and submit required work by their due dates. On average, a student can expect to spend approximately 3-6 hours per week reading and approximately 5-8 hours per week completing assignments and posting to discussions.
- Grading scheme:

94-100	A	73-76	C
90-93	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	59 or <	F

Feedback

My goal is to grade homework within a week of the due date. I will post an announcement if I am delayed in grading for some reason. If you submit an assignment late, I usually grade it after the following assignment is due, so that my feedback is timely for the greatest number of students.

If you have questions about assignments, I will either email you back, or if your question will help the entire class, I may take the liberty of answering it via the Questions and Answers forum.

If you send a message to my Brandeis email address, I normally respond within 24 hours of receiving it on weekdays, and 48 hours on weekends.

Confidentiality

- We can draw on the wealth of examples from our organizations in class discussions and in our written work. However, it is imperative that we not share information that is confidential, privileged, or proprietary in nature. We must be mindful of any contracts we have agreed to with our companies. In

addition, we should respect our fellow classmates and work under the assumption that what is discussed here (as it pertains to the workings of particular organizations) stays within the confines of the classroom.

- Finally, for your awareness, members of the University's technical staff have access to all course sites to aid in course setup and technical troubleshooting. Program Chairs and a small number of Graduate Professional Studies (GPS) staff have access to all GPS courses for oversight purposes. Students enrolled in GPS courses can expect that individuals other than their fellow classmates and the course instructor(s) may visit their course for various purposes. Their intentions are to aid in technical troubleshooting and to ensure that quality course delivery standards are met. Strict confidentiality of student information is maintained.

Time Management

Students sometimes run into problems related to managing their time, especially in distance learning courses. I hope these ideas will help you to succeed in the class:

- If you are employed full-time, do not take more than two courses at a time. I have never yet met a student who could successfully manage this, especially toward the end of the term as finals and projects come due.
- Keep up with the course week-to-week. Don't let yourself fall behind on readings, discussion posts, etc. Brandeis courses are not self-paced, and they depend on the collaboration of everyone. Participating late or "trying to get ahead" is very disruptive.
- Take a look at course assignments early in the week and consider how you will approach the solutions. Ask questions early, so I have time to answer them. Don't wait until Tuesday night to begin work.
- If you are planning a vacation, plan to continue participating in the class. Thanks to LATTE, you can post discussions and submit homework from virtually anywhere in the world. I will not be able to accept homework late because of a scheduled vacation.
- If you do find yourself short on time, remember that discussion posts count for 30% of your grade. Do not forgo discussions, because it's impossible to complete the course successfully without them.
- If you experience a serious situation, such as a severe illness, contact me as soon as you can, or contact the GPS office.

IV. University and Division of Graduate Professional Studies Standards

Please review the policies and procedures of Graduate Professional Studies, found at <http://www.brandeis.edu/gps/students/studentresources/policiesprocedures/index.html>.

We would like to highlight the following:

Accessibility and Accommodations

Brandeis seeks to welcome and include all students. If you are a student who needs accommodations as outlined in an accommodation letter, please talk with me and present your letter of accommodation as soon as you can. I want to support you.

In order to provide test accommodations, I need the letter more than 48 hours in advance. I want to provide your accommodations, but cannot do so retroactively. If you have questions about documenting a disability or requesting accommodations, please contact Student Accessibility Support (SAS) at 781.736.3470 or access@brandeis.edu.

Academic Honesty and Student Integrity

Academic honesty and student integrity are of fundamental importance at Brandeis University and we want students to understand this clearly at the start of the term. As stated in the Brandeis Rights and Responsibilities handbook, "Every member of the University Community is expected to maintain the highest standards of academic honesty. A student shall not receive credit for work that is not the product of the student's own effort. A student's name on any written exercise constitutes a statement that the work is the result of the student's own thought and study, stated in the student's own words, and produced without the assistance of others, except in quotes, footnotes or references with appropriate acknowledgement of the source." In particular, students must be aware that material (including ideas, phrases, sentences, etc.) taken from the Internet and other sources **MUST** be appropriately cited if quoted, and footnoted in any written work turned in for this, or any, Brandeis class. Also, students will not be allowed to collaborate on work except by the specific permission of the instructor. Failure to properly cite resources may result in a referral being made to the Office of Student Development and Judicial Education. The outcome of this action may involve academic and disciplinary sanctions, which could include (but are not limited to) such penalties as receiving no credit for the assignment in question, receiving no credit for the related course, or suspension or dismissal from the University.

Further information regarding academic integrity may be found in the following publications: "In Pursuit of Excellence - A Guide to Academic Integrity for the Brandeis Community," "(Students') Rights and Responsibilities Handbook," AND " Graduate Professional Studies Student Handbook." You should read these publications, which all can be accessed from the Graduate Professional Studies website. A student that is in doubt about standards of academic honesty (regarding plagiarism, multiple submissions of written work, unacknowledged or unauthorized collaborative effort, false citation or false data) should consult either the course instructor or other staff of the Rabb School Graduate Professional Studies.

University Caveat

The above schedule, content, and procedures in this course are subject to change in the event of extenuating circumstances. If you have questions or concerns about course content before the start of the course, please contact the instructor.