Northeastern University
College of Arts, Media and Design

11484 Interaction Design Principles - ARTG 2400 - 01 | CRN 41443

LongevityTech City: Interaction, Interface, and Impact

Lecturer: Sheng-Hung Lee, Ph.D. | https://www.shenghunglee.com/
Thursday | 1:30 pm – 5:00 pm | September 4 – December 11, 2025
Office hours: by appointment | shdesign@mit.edu

Course Description
Over the course of the semester, students will learn the fundamentals of interaction design principles, processes, and tools for the creation of responsive web experiences. Through hands-on activities, in-class and homework assignments, presentations, critiques, group work, and readings, students will apply human-centered research methods and strategies for design such as audience definition, prototyping, information structuring, usability testing, and iterative development. Restricted to selected Art + Design majors and combined majors.

CO-REQUISITE: Interaction Design Principles Tools (ARTG 2401)

Section-Specific Learning objectives
- Understand and practice the design process with emphasis on: 1. Ethnographic research, 2. Design prototyping, and 3. Storytelling.
- Apply interaction design methods to urban contexts (e.g., campuses, public spaces, services, experiences) with a focus on the aging population (aged 85 and above), utilizing evidence-driven research approaches.
- Prepare and develop a design and research portfolio tailored for future academic or industry careers.

Course format
- 30-minute skill share (Figma)
- 30-minute reading material presentation
- 60-minute lecture and case study
- 60-minute group discussion

Grading rubric, proportion, and expected outcome
- Grading Rubric: Research, Concept, Prototype, Iteration, and Storytelling
- 60%: Team project (DRS paper + tangible prototype + digital prototype (Figma))
- 30%: Individual presentation (one skill share and one paper presentation)
- 10%: Course participation

DRS conference paper
- LongevityTech Cities: Design for Age-Inclusive Urban Futures (10/31 due date): https://drs2026.thedrs.org/7-2-longevitytech-cities

Course project (optional)
- Longevity Planning Index (LPI) project

Learning Outcomes

	Outcomes	*Definition*
1	**Researching**	Learn and apply design research methods in order to identify interaction design opportunities and inform design decisions *as evidenced by designing, conducting, and analyzing original user research (interviews and other activities).*
2	**Interpreting**	Understand how a human-centered design approach provides insights that can lead to innovation and valuable experiences for participants *as evidenced by referencing specific quotes, themes, theories, or ideas from the assigned reading.* Engage in critical evaluation and analysis of case studies of interaction design practice (both physical and digital interfaces and interactions) *as evidenced by completing task flow benchmarking and studying other case studies.*
3	**Making**	Employ ideation techniques to experiment and explore a variety of solutions *as evidenced by creation of a large quantity of initial ideas in response to user research*. Use fundamental visual design principles to organize and sequence information, create hierarchy, and apply color and type systematically *as evidenced by the information architecture and visual design of your final screens.* Analyze and employ the fundamental components of human behavior with objects and interfaces *as evidenced by synthesizing user research to identify design opportunities and meaningful project concepts.*
4	**Critiquing**	Develop strategies for assessing interfaces to help users achieve, revise, or discover their goals based on current UI heuristics *as evidenced by conducting and documenting testing with both analog and digital prototyping methods and demonstrating how user input informs design decisions.* Learn and apply an appropriate vocabulary *as evidenced by evaluating your own or other students' work out loud during class or in written reflections.*
5	**Presentation**	Effectively convey your research, ideas, and design process in order to define and convey a rationale for design decisions *as evidenced by presenting your ideas clearly in an engaging and efficient written or visual form.* Demonstrate professional standards *as evidenced by meeting deadlines and project specs.*

Course structure

Date	Course Module	Location
9/4	**1. Intro: Design for Longevity (D4L)** What is a LongevityTech City, and how might we shape environments, products, services, and interactions for a society built around longevity (Scott, 2024)? This course engages the D4L Unclock Framework (Lee, 2025) to examine longevity, service, and system through the interconnected perspectives of design, technology, and society. To-do list - Ice-breaking - Course overview, expectation (grading and final deliverable) Assignment - Pre-course survey - Register D4L experiment study Reading and resources Design Future Longevity: Unclocking Time, Age, and Society: https://www.shenghunglee.com/_files/ugd/a1931c_7a3b05b3105e4d75899cad1aa877a323.pdf Design for Longevity: People, Process, and Platform: https://doi.org/10.30682/diid8224a Transformation by Human-Centered System Design: https://doi.org/10.1111/drev.12390 Soft City by David Sim: https://www.gehlpeople.com/knowledge-hub/publications/soft-city-the-time-of-your-life/	Rm. 239
9/11	**2. Context: LongevityTech City** We will employ evidence-based approaches and ethnographic methods to observe, ideate, and develop research and design studies centered on the concept of a LongevityTech City. This module helps define the scope of your course project by focusing on three key aspects: the feasibility of LongevityTech solutions, the desirability of meeting the needs of an aging population, and the viability of sustainable business strategies. To-do list Individual share (skill + paper) Team formation and assignment Frame challenges for interface design 1. Scale (product, service, experience, and system) 2. Technology (landscape, cityscape, servicescape) 3. User (age 85+) 4. Scenario (campus, gym, park, community) 5. Research plan (experiment flow, discussion or interview guide, documentation) Assignment Draft a project brief (5 slides team) Sketch out a user journey map (1 per team)	Rm. 239

Reading and resources
- The framework of urban exposome: Application of the exposome concept in urban health studies: https://doi-org.libproxy.mit.edu/10.1016/j.scitotenv.2018.04.329
- The City of Longevity: https://cityoflongevity.uknica.co.uk/
- The New Map of Life: https://longevity.stanford.edu/the-new-map-of-life-initiative/
- 8000 Day Framework: https://www.financialplanningassociation.org/sites/default/files/2024-06/8000%20Days%20client%20presentation%20SEM_8000%20PPT_.pdf

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9/18 **3. Research: Ethnographic Study** Rm. 239

Empathy plays a vital role in shaping inclusive LongevityTech environments, respectful interactions, and effective communication. For designers, this means learning to attune our senses to uncover people's needs, frustrations (pain points), and sources of joy (satisfaction points). What people leave unsaid can sometimes be even more important than what they express directly. That's why immersive ethnographic research is a critical first step before starting any design or creative process.

To-do list
Individual share (skill + paper)
Practice team field trip

Assignment
- Conduct interviews (5 per team)
- Conduct a field study (5 photos or videos per team)
- Refine a user journey map (1 per team)

Reading and resources
- Design documentaries: inspiring design research through documentary film: https://doi.org/10.1145/1142405.1142441
- Belonging & Belongings (pick one chapter to study): http://stbyblogs.eu/Belonging-Belongings/
- Designing Longevity Planning Blocks through experimental participatory observation and interviews: https://doi.org/10.21606/iasdr.2023.172
- Watch Me Play: Twitch and the Rise of Game Live Streaming (pick one chapter to study): https://tltaylor.com/wp-content/uploads/2025/07/Taylor-Watch-Me-Play-CC.pdf

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9/25 **4. Data: Slow Data and Soft City** Rm. 239

Data is continuously captured, documented, and analyzed in our daily lives through Internet of Things (IoT) devices, smartphones, and countless other AI-driven tools. LongevityTech City is built on these advanced social and informational infrastructures. Urban futurist Townsend (2013) reminds us, "Big data may make us lean and mean. Slow data will speak our souls." While big data helps streamline inefficiencies, it is slow data—collected intentionally and thoughtfully, rather than opportunistically from digital exhaust—that can foster deeper behavioral change. Together, big data and slow data provide a richer picture of our cityscapes. The question, then, is: how can we make sense of these complementary

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forms of data, spanning both public and personal information, to better shape our pace of life and patterns of living?

To-do list
- Individual share (skill + paper)
  Capture and document data (photo, audio, or video transcript)
  Analysis data (ATLAS.ti)

Assignment
  Brainstorm idea (10 ideas per team)

Reading and resources
- Collaborative imagining: The interactive use of gestures, talk, and graphic representation in architectural practice: https://doi.org/10.1515/semi.2005.2005.156.113
- From Brainstorming to Bodystorming: Co-creation Workshop Analysis Using Applied Video Ethnography: https://www.idsa.org/education-paper/from-brainstorming-to-bodystorming-co-creation-workshop-analysis-using-applied-video-ethnography/
- MIT Senseable City Lab (pick one case to study): https://senseable.mit.edu
- MIT City Science Group (pick one case to study): https://www.media.mit.edu/groups/city-science/overview/

10/2 **5. Prototype: Phygital Testing** Rm. 239

How do we prototype ideas and interfaces in a LongevityTech City? Service blueprints can guide designers in identifying critical moments for prototyping across products, services, experiences, and systems. Prototyping not only communicates early-stage ideas but also conveys the underlying design intention. By making ideas tangible, we can share them more effectively and efficiently with others.

To-do list
- Individual share (skill + paper)
  Conduct rapid prototype (paper, foamcore)

Assignment
  Refine ideas (5 ideas per team)

Reading and resources
- Experience Prototyping: https://dl.acm.org/doi/10.1145/347642.347802
- Design Thinking: https://designthinkingmeite.web.unc.edu/wp-content/uploads/sites/22337/2020/02/Tim-Brown-Design-Thinking.pdf
- Society of Grownups - building a new venture from the ground up: https://medium.com/anna-engström-studio/society-of-grownups-building-a-new-venture-from-the-ground-up-c86580285aff

10/9 **6. Interaction: Design for Engagement** Rm. 239

How can we rethink the design of interactions, interfaces, services, and experiences for an aging population? Interaction design extends beyond usability to include user behaviors, ergonomics, cultural values, social norms, business strategies, and more. In the context of a LongevityTech City, interaction design needs to move beyond efficiency and effectiveness to also embrace inclusiveness, respect, and delight.

To-do list

Individual share (skill + paper)

Understand and identify interaction design within a user journey map

Assignment

Integrate interface to design solutions (3 solutions per team)

Reading and resources

- Designing Interactions by Bill Moggridge: http://www.paulos.net/teaching/2009/AE/readings/protected/Designing_Interactions.pdf
- Service Blueprinting: A Practical Technique for Service Innovation: https://doi.org/10.2307/41166446
- Applying Human-Centered System Design to the Development of a Tool for Service Innovation: https://library.oapen.org/handle/20.500.12657/85799

10/16 **7. System: Wholistic Perspective** Rm. 239

How can we uncover implicit individual behaviors, various social norms, and complex cultural layers within the context of a LongevityTech City to inform the design of broader systems for a longevity society? The concept of the urban exposome (Woods et al., 2025) seeks to study, understand, and analyze non-genetic relationships within the cityscape across spatial and temporal dimensions and age ranges. Systems thinking approaches, such as Causal Loop Diagrams (CLD) and Object-Process Methodology (OPM), play a critical role in translating and integrating the urban exposome into actionable design insights.

To-do list

Individual share (skill + paper)

Apply the system-level methods (e.g., CLD and OPM)

Assignment

- Build one CLD per team (Figmaa, Keynote, PowerPoint, or Google Slides)
- Build one OPM per team (https://www.opcloud.tech/)

Reading and resources

Longevity Education Hub Webinar (video): https://youtu.be/VXEFo4MFJHA?si=R_mWJkYLbcwjYmLe

Cities, communities and clinics can be testbeds for human exposome and aging research: https://doi.org/10.1038/s41591-025-03519-8

Macro-Trend Study Under Service System: Preliminary Research in Service Innovation and Emerging Technology: https://link.springer.com/chapter/10.1007/978-3-031-29306-1_4

Design for Longevity: A Relational and Systemic Perspective:
https://doi.org/10.21606/nordes.2025.58

10/23 **8. Communication: Case Study Preparation** Rm. 239

This module helps you document your team project and develop it into an academic design paper format, for example, a submission to the 2026 DRS Conference (Track 7.2).

To-do list
- Individual share (skill + paper)
  Learn how to use citation software (Zotero)
  Work on DRS paper abstract (link)
  Prepare mid-term presentation (10 minutes per team)

Assignment
Present the DRS paper abstract draft (1 abstract per team)

Reading and resources
- Zotero: https://www.zotero.org/
- Design for Longevity Literature Review in Product Lifecycle, Financial Planning, and Gerontology (DRS paper example 1): https://doi.org/10.21606/drs.2024.363
- Enhancing Financial Education for Longevity through Service Design (DRS paper example 2): https://doi.org/10.21606/drs.2024.364

10/30 **9. Storytelling: Purposeful Engagement** Rm. 239

The process is the destination. How can you present your design journey, solutions, and next steps with convincing ethnographic evidence, data, and empirical studies? Storytelling, one of the earliest tools of human communication, empowers designers to present, persuade, and inspire both project stakeholders and fellow team members.

To-do list
Individual share (skill + paper)
Refine DRS paper abstract
Work on the mid-term team project presentation

Assignment
Submit the DRS paper abstract (due date 10/31)
Prepare mid-term team project presentation (11/6, 10 minutes per team)

Reading and resources
Cornell Tech Urban Tech Hub: https://urban.tech.cornell.edu/
University of Michigan Urban Technology:
https://taubmancollege.umich.edu/academics/urban-and-regional-planning/bachelor-of-science-in-urban-technology/
Smart Cities: Big Data, Civic Hackers, and the Quest for a New Utopia:
https://10.0.189.174/bxte-bq78

11/6 **10. Mid-term Presentation** Rm. 239

To-do list

Present mid-term team project presentation (10 minutes per team)

Assignment

Peer review feedback: Each student must provide written feedback for every team. A minimum of 100 words per team is required (link).

11/13 **11. Iteration: Converging and Diverging Process** Rm. 239

The design process is iterative, moving through phases of divergence and convergence (UK Design Council, 2005). A central goal is to integrate user feedback and field data to refine ideas, prototypes, and service models, ultimately strengthening design solutions. This is especially vital in the design and development of a LongevityTech City, where the complexity of challenges makes the refinement phase critical to ensuring solutions are effective, adaptable, and meaningful.

To-do list

Enhance the fidelity of the design prototype

Build the design solutions linking to field studies, interviews, and data

Assignment

Prepare a business strategy for your team's project design solution

Reading and resources

- Design Methods: Seeds of Human Futures: https://archive.org/details/designmethodssee0000jone
- Double Diamond Model: https://www.designcouncil.org.uk/our-resources/the-double-diamond/

11/20 **12. Strategy: Scenario Planning** Rm. 239

As we address complex systemic and socioeconomic challenges for and with LongevityTech City through design strategies and approaches such as scenario planning and speculative design, we need to consider that the design of people's interactions, product interfaces, and environments remains longevity-friendly, inclusive, and adaptable.

Assignment

Prepare final team project presentation (15 minutes per team) (link)

Work on the DRS conference paper and share the editable Google Doc link by 12/11.

Reading and resources

- Scenario Planning for Cities and Regions: Managing and Envisioning Uncertain Futures: https://www.lincolninst.edu/publications/books/scenario-planning-cities-regions/
- Smart cities: moving beyond urban cybernetics to tackle wicked problems: https://doi.org/10.1093/cjres/rsu013
- Sketching and learning: A planning support system field study:

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	https://doi.org/10.1177/0265813515614665	
11/27	**13. Pre-final (Holiday)**	Rm. 239
12/4	**14. Final Presentation** To-do list Present final team project presentation (15 minutes per team) Discussion and next step Assignment - Finalize the DRS conference paper and share the editable Google Doc link by 12/11.	Rm. 239
12/11	**15. Reflection: Urban Future** How do you define interaction design in the context of a LongevityTech City? Looking ahead, what are your next steps, both for this project and for your career journey? To-do list MIT AgeLab tour (1 Amherst St, Cambridge, MA 02142 | Next to MIT Sloan) Publication discussion and sharing (print out each team's conference paper) Discuss and share your course learning Assignment - Post-course survey Reading and resources - Design education is too important to be left to designers: https://doi.org/10.1016/j.destud.2025.101301 - From Design Education to Education Design: https://www.shenghunglee.com/_files/ugd/a1931c_872c9fdc67024c409680c88ba4250ab6.pdf	MIT AgeLab