INFO 7380 User Experience for Healthcare Applications
FALL 2025

Course Information
Course Title: User Experience Design for Healthcare Applications
Course Number: INFO 7380
Term and Year: Fall 2025
Credit Hour: 4
Course Format: ONLINE
Class schedule: Fridays 12noon – 3pm EST

Instructor Information
Full Name: Svetlena Taneva Metzger
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Office Hours: By appointment

Instructor Biography
I am a Professor at Northeastern University's College of Engineering, and previously I've spent over 15 years immersed in the world of user research, cognitive engineering, human factors-informed design, and usability evaluations. My specialty knowledge areas include user research, application of UXD to Healthcare IT, medical device regulation, and AI in UX Design. My international experience spans Canada, the U.S., France, Germany, and Switzerland. I've also had the privilege of being a frequent public speaker at international symposiums.

Course Prerequisites
CSYE7280 or a similar general UX/HCI course; good working knowledge of Design Principles, User Experience Research & Design, and User Experience testing concepts.

Course Description
Health IT presents a very complex systems engineering challenge for environments where some technologies are highly regulated (e.g. medical devices), while other technologies are not (e.g. software). User experience for healthcare applications extends beyond satisfaction and efficiency to include safety - ensuring that people will not die as a result of poor UX design. The UX challenge is to inform design of the needs of a variety of stakeholders in clinical and non-clinical settings: across hospitals, homecare environments and on the move while using mobile healthcare technology. In addition, factors related to regulation, organizational culture and political climate in healthcare, also influence technology implementation and adoption.

This course introduces the unique challenges of UX research, design and evaluation in a complex safety-critical domain, with a systems engineering perspective. Informs of regulations, standards, development processes, implementation and adoption considerations for health technology. This course will prepare students for the challenges UX professionals need to tackle when working on healthcare applications. Offers students an opportunity to build the necessary skill sets to enter the competitive and highly specialized industry of healthcare IT.

Course Learning Outcomes

1. Apply User-Centred design and evaluation methodologies to healthcare UX projects.
2. Differentiate the UX regulatory pathways for various healthcare applications
3. Apply risk-based UX design strategies to engineer use-safety.
4. Identify UX design issues as root causes for use errors.
5. Assess healthcare application environments to inform UX design.
6. Prepare protocols for UX projects in healthcare
7. Develop and display critical thinking and analytical skills through hands-on assignments

Required Tools and Course Textbooks.
The readings associated with each weeks topics are mandatory. Students are expected to read the assigned chapters in articles in advance of each lecture. Students will need access to the full text of the following books:

1. Book 1 - *Fieldwork for Healthcare: Guidance for Investigating Human Factors in Computing Systems*. Morgan & Claypool, 2015, Furniss, Dominic., et al., editors.
2. Book 2 - *Fieldwork for Healthcare: Case Studies Investigating Human Factors in Computing Systems*. Morgan & Claypool, 2014, Furniss, Dominic., et al.
3. Book 3 - *Design for Health: Applications of Human Factors*. Academic Press, 2020, Sethumadhavan, Arathi, and Farzan Sasangohar, editors.
4. Book 4 - *Applied Human Factors in Medical Device Design*. Academic Press, 2019, Privitera, Mary Beth, editor.

Course Schedule/Topics Covered.

This course spans the following UX in Healthcare Applications topics:

- UX Process in healthcare topics:
  - Risk-based UX design
  - The role of UX in Patient safety
  - Human Factors engineering
  - Systems engineering and human error
  - Medical device usability engineering regulations
  - Formative and Validation usability testing

- UX-informed procurement and implementation
- Ethical considerations

- UX Design topics: environmental considerations, persuasive design, software UI design guidelines, anthropometry, design for communication in healthcare; design for critical care, emergencies, collaboration, cognitive support, self-care, older adults, etc.

The Technologies discussed in the context of the above process and design topics include Medical Devices, Computerized Provider Order Entry, Medication Safety technologies, Mobile Health, General Wellness products, etc.

AI use: leveraging AI technologies to bolster completion of assignments and projects is encouraged and specific AI tools will be demoed and recommended. However, students will be assessed on the critical and reflective use of these tools, in the context of the course learning outcomes.

Week	Topics	Readings
WEEK1 Sept 5	Meet and greet the students and professor; overview of course and policies Topics: UX vs. Healthcare UX, Types of Health IT	--------
WEEK 2 Sept 12	Topics: UX methods refresher, Human Factors, Systems thinking, Case study *In-class exercise*	Book 3: Chapter-3 Reading articles (TBA)
WEEK 3 Sept 19	Topics: Patient Safety, EHRs, FMEA *In-class exercise* *Assignment 1 given out*	Book 3: Chapter-1 Book 4: Chapter-12 FMEA Guidance
WEEK 4 Sept 26	Topics: Overview of health IT classification, Software UI design guidelines *In-class exercise*	Reading articles (TBA)
WEEK 5 Oct 3	Topics: UX Regulations for Medical Devices, Environmental design factors, Formative evaluations *In-class exercise* *Assignment 2 given out*	Book 4: Chapter-5 and Chapter-10 Reading articles (TBA)
WEEK 6	Exam 1	--------

Oct 10	*AI Demo*	
WEEK 7 Oct 17	Topics: Computerized Provider Order Entry, Medication safety, Mobile health, Persuasive design *In-class exercise*	Book 3: Chapter-2 and Chapter-5 Book 4: Chapter-11
WEEK 8 Oct 24	Topics: Use errors and Root Cause Analysis; Practical challenges of doing UX engineering in healthcare – Ethics considerations *In-class exercise* *Assignment 3 given out*	Book 1: Chapter 1 Book 2: Chapter 4 Book 4: Chapter-13
WEEK 9 Oct 31	Topics: Validation testing, Communication in healthcare and implications for UX design; Case study *In-class exercise* *Project and topics overview*	Book 3 – Chapter 6 and Chapter 10 Book 4: Chapter 15
WEEK 10 Nov 7	Topics: Reporting, Health IT Procurement; Case studies	Reading articles (TBA) Book 3: Chapter 13 Book 4: Chapter 17
WEEK 11 Nov 14	Exam 2	Book 4: Chapter 14
STUDENT PROJECTS & PRESENTATIONS		
WEEK 12-14 Nov 21	Project presentations: *Initial Research*	
Nov 28 - no class	---------------------------------	
Week 15 Dec 5, 12	Project presentations: *UX Case Study*	

Grading

In-class participation and exercises	35%
Two exams	20%
Assignments	20%
Project	20%

In-class Presentation   5 %

Grading Scale

	87-89.9% B+	77-79.9% C+	
	84-86.9% B	74-76.9% C	
95-100% A			
90-94.9% A-	80-83.9%B-	70-73.9% C-	
			69.9% or below F

Plagiarism Policy

When there is evidence that a student has committed plagiarism, copied the work of others, allowed others to copy their work, cheated on an exam, altered class material or scores, or has inappropriate possession of exams, or sensitive material, the incident will be investigated. The consequences for academic dishonesty are severe and that will include a straight F in the course with the potential for dismissal.

The following rules apply to anything you hand in for a grade:

- You may not copy anyone else's work under any circumstances - this includes online and AI sources.
- You may not use any automated or AI tools to generate your assignments or any other material that you're turning for a grade, in whole or in part, unless an assignment specifically allows you to use these tools.
- You may not permit any other student to see any part of your individual assignments.
- You may not permit yourself to see any part of another student's individual assignment.
- You make use online resources as part of your coursework but you may not copy from online sources. If you get an idea of how to solve a problem from an online source, include a short citation in your submission.
- Use of AI resources and posting on forums is not permitted.
- The only exception to the above rules is that you may collaborate with students in your group for assignments classed as group assignment – almost all labs for example will be completed in groups.

Attendance/Late Work Policy

Attendance Policy

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed **a maximum of 2 absences per course, with 3 or more absences resulting in an automatic 'F' for that course.** Students are expected to inform their instructors of any absences in advance of the class; if a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-mgen-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave in accordance with the

University's academic and global entry expectations. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty prior to the deadline if they anticipate work will be submitted late. Work submitted late without prior communication with faculty will not be graded.

Course Evaluations
Your feedback regarding your educational experience in this class is particularly important to the College of Engineering. Your comments will make a difference in the future planning and presentation of our curriculum.

At the end of this course, please take the time to complete the evaluation survey at **https://neu.evaluationkit.com**. Your survey responses are **completely anonymous and confidential**. For courses 6 weeks in length or shorter, surveys will be open one week prior to the end of the courses; for courses greater than 6 weeks in length, surveys will be open for two weeks. An email will be sent to your Northeastern University Mail account notifying you when surveys are available.

Academic Integrity
A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

Go to http://www.northeastern.edu/osccr/academic-integrity-policy/ to access the full academic integrity policy.

MGEN Student Feedback
Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback regarding their program, may do so using this survey: https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaw0Ki

University Health and Counseling Services

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit https://www.northeastern.edu/uhcs.

Student Accommodations

Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.

For more information, visit https://drc.sites.northeastern.edu.

Library Services

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit https://library.northeastern.edu
Network Campus Library Services: Northeastern University Library Global Campus Portals

24/7 Canvas Technical Help

For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu

Canvas Student Resources: https://canvas.northeastern.edu/student-resources/

For assistance with my Northeastern e-mail, and basic technical support:
Visit ITS at https://its.northeastern.edu
Email: help@northeastern.edu
ITS Customer Service Desk: 617-373-4357

Outreach, Engagement, Belonging

Northeastern University is committed to fostering a community of belonging, which is essential to the advancement of Northeastern University's mission of teaching and research. Our university is stronger as a result of the varied backgrounds, experiences, and perspectives that all members of our global community bring to the pursuit of knowledge. Embracing this pluralism is not the work of one office, department, or academic unit. It is a shared responsibility that spans disciplines and boundaries. By harnessing the power of our differences, we will continue to light the path to bold new ideas and life-changing discoveries.

It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diverse experiences that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and belonging environment for every other member of the class.

Your suggestions are encouraged and appreciated. Please visit Belonging at Northeastern – Northeastern Provost for complete information.

Title IX
Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance. Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty and staff. In case of an emergency, please call 911.

The Office for University Equity and Compliance (OUEC) leads Northeastern University's efforts in maintaining compliance with all federal, state, and provincial civil rights laws and prohibits discrimination within any of its programs, activities, and services. Please visit https://ouec.northeastern.edu/ for more information and for the link to file a report.