RIT - GCCIS SYLLABUS
ISTE.264.01 PROTOTYPING AND USABILITY TESTING
SPRING 2022 (TERM 2215) DRAFT OF JANUARY 8, 2022

DETAILS

Important note: The information presented in this syllabus is subject to expansion, contraction, change, or stasis during the semester. In case of conflict between versions, the copy on myCourses takes precedence.

Course Number. 55942

Prerequisites. ISTE-262

Time. MWF 1100–1150

Place. GOL-3690

Dates. 10 JAN 2021–25 APR 2021

Final Exam. 2022.05.04 08:00–10:30

Instructor. Mick McQuaid

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Office. 70-2675

Office Hours. 1200–1400 M,W

DESCRIPTION

This course will explore how modern human centered computing design and evaluation methodologies can be effectively used to create high-quality and usable technologies for a variety of users. Students will learn how an initial design can be evaluated and improved through the use of prototyping and user evaluations. Students will investigate a variety of high- and low-fidelity prototyping techniques, plan an iterative design process for an application, conduct an evaluation of a pro-

totype, and analyze the results of user testing to drive a design process. Programming is required.

MATERIALS

No single textbook will suffice for such a rapidly changing subject. Instead, many sources must be consulted with the guidance of the instructor. These include Buxton (2007), Cooper et al. (2014), Goodman, Kuniavsky, and Moed (2012), Holtzblatt, Wendell, and Wood (2005), Holtzblatt and Beyer (2016), Lazar, Feng, and Hochheiser (2017), Matsudaira (2019), Rubin and Chisnell (2008), Shneiderman (2017), Spiekermann (2014), and Wixon (2003). Students will need to make extensive use of Google and Wikipedia, as well as popular design websites such as A List Apart, Behance, and dribbble, in addition to readings provided on myCourses.

LEARNING OUTCOMES

By the end of this course, the student should be able to

1. Select the most appropriate fidelity and type of prototype, based on the design problem.
2. Select the most appropriate tools to construct a prototype to evaluate a design.
3. Plan a design process involving prototyping and user testing.
4. Design a usability testing plan utilizing appropriate research methods and techniques.
5. Organize and run a user test that makes use of a prototype you have built.

6. Analyze the results of usability testing and incorporate them into a report.

7. Identify how the results of usability testing inform the redesign process.

SCHEDULE

Following is an approximate schedule. We should expect to spend more than the alloted time on some topics, less on others. Boldface items appeared in the course proposal form that established this course. Italicized items are headings for some following items.

Week 1 starts 10 Jan

Prototyping in the Design Cycle — *prototype purposes* — exploring design problems and solutions — expressing design decisions — focusing on important or difficult issues — gathering improved requirements — evaluating the feasibility of a design — *kinds of prototypes* — paper and pencil prototypes — straw man — experience — wizard of oz prototypes — wireframes — low-fidelity prototypes — high-fidelity prototypes

Week 2 starts 17 Jan

Scenarios and Storyboarding Techniques — narratives — scenarios — use cases — storyboards

Week 3 starts 24 Jan

Interactive Prototyping Methods and Tools — *tools* — Principle for Mac — Sketch — InvisionApp — Framer.js — HW1

Week 4 starts 31 Jan

User Participation and Evaluation in the Design Cycle — *ways to study users* — empirical research — experiments — surveys — diaries — case studies — interviews — ethnography — automated data collection — biometric study

Week 5 starts 7 Feb

Defining Goals for User Evaluation — matching techniques to goals — preparing to use statistics — preparing to use grounded theory — preparing to use content analysis

Week 6 starts 14 Feb

Low Fidelity Prototyping — team skill overlap — suitability of prototyping tools — paper and pencil prototypes — timed sketching — eight-squares sketching

Week 7 starts 21 Feb

Identifying Users for Evaluation — which participants — number of participants — pilot studies — recruiting participants — working with the institutional review board — HW2

Week 8 starts 28 Feb

Teamwork — *teamwork obstacles* — conversation domination — poor listening — *five dysfunctions* — inattention to results — avoidance of accountability — lack of commitment — fear of conflict — absence of trust

Week 9 starts 14 Mar

User Evaluations with Low Fidelity Prototypes — requirements elicitation — formative testing — communication between evaluator and participant — evident low commitment to designs — emphasis on participant perceptions — emphasis on qualitative feedback — observation orientation — problem discovery — HW3

Week 10 starts 21 Mar

High Fidelity Prototyping — responsive design — Buxton's sketch to prototype continuum — *Framer.js* — layers — animation — states — events

Week 11 starts 28 Mar

User Evaluations with High Fidelity Prototypes — summative testing — evaluating specific design choices — task-level measurements — metrics — quantitative measurements

— HW4

Week 12 starts 4 Apr

Analyzing and Communicating the Results from User Evaluation — report writing — using published information — validity — using statistics — using grounded theory — using content analysis

Week 13 starts 11 Apr

Planning Subsequent Designs and Evaluations Based on Results — iterative design cycle — evaluation feeds design

Week 14 starts 18 Apr

Contemporary Aesthetic Practices — industry guidelines revisited — animation — visual hierarchy — HW5

Week 15 starts 25 Apr—one day only

Summary

GRADING

I plan to grade assignments within two weeks of their due date except where circumstances interfere. The grading scale used along with the grade components follow.

- A >= 90.0%
- B >= 80.0% & < 90%
- C >= 70.0% & < 80.0%
- D >= 60.0% & < 70.0%
- F < 60.0%

HW1 15, Design Problem Analysis
HW2 15, Low Fidelity Prototype
HW3 15, Low Fidelity Evaluation
HW4 15, High Fidelity Prototype
HW5 15, High Fidelity Evaluation
Final Exam 25, Questions from learning outcomes

All written assignments must be in plain text format. Use of a word processing format like docx or doc will result in an automatic ten point deduction.

All picture assignments must be in png, jpeg, or pdf format. Use of any other format will result in an automatic ten point deduction.

These requirements streamline hw processing and speed up feedback and grading. Expect no mercy because your failure to follow guidelines will slow down feedback for your peers and experience shows that they want fast feedback more than they want you to get one more chance.

POLICIES

Your familiarity with the following policies, dates, and and parameters will be assumed in this course.

Last day to add/drop. 18 Jan 2021

Last day to withdraw with W. 1 Apr 2021

MyCourses. All project assignments, lecture notes, and other distributable course materials will be available via MyCourses. All student project assignments will be submitted via MyCourses dropboxes. Where the assignment is a website, the URL will be submitted to a myCourses dropbox. Every student will submit every assignment to myCourses, regardless of whether it is a group assignment. Please do not submit any Microsoft Office files in this course ever. If you must use Microsoft Office to complete your assignment, please convert it to pdf.

Grade Challenges. School of Information policy states that a student has one semester to challenge any grade. After that, grades cannot be challenged.

Late Work. Any work not submitted by the final due date receives a grade of zero, unless arrangements are made

previous to the initial due date.

Extra Credit. No extra credit is available in this course.

Accommodations. If you have a "Notice of Accommodation", you must provide your instructor with a copy of it within 1 week of starting this course. You must follow all the rules of the relevant office.

Academic Dishonesty. The policy on dishonesty is simple: Anyone caught cheating receives an "F" as a course grade, is removed from the section and a letter detailing the incident is placed into his or her folder. Any student accused of cheating should realize that the evidence has already been verified by other faculty members and will withstand an appeal. Additionally, please review the institute policy at https://www.rit.edu/studentlife/student-conduct/conduct-process

Acceptable Use. We are bound by the following Acceptable Computer Use policy at https://www.rit.edu/academicaffairs/policiesmanual/c082-code-conduct-computer-use

Student Responsibilities. Please review the general student responsibilities as outlined at https://www.rit.edu/academicaffairs/policiesmanual/policies/student

Policy on Reporting Incidents of Discrimination and Harassment. RIT is committed to providing a safe learning environment, free of harassment and discrimination as articulated in our university policies located on our governance website. RIT's policies ***require faculty to share information*** about incidents of gender based discrimination and harassment with RIT's Title IX coordinator or deputy coordinators, regardless whether the incidents are stated to them in person or shared by students as part of their coursework. RIT Governance website: https://www.rit.edu/academicaf

fairs/policiesmanual/policies/governance

If you have a concern related to gender-based discrimination and/or harassment and prefer to have a ***confidential*** discussion, assistance is available from one of RIT's confidential resources on campus:

1. The Center for Women & Gender: Campus Center Room 1760; 585-475-7464; CARES (available 24 hours/7 days a week) Call or text 585-295-3533.
2. RIT Student Health Center – August Health Center/1st floor; 585-475-2255.
3. RIT Counseling Center - August Health Center /2nd floor - 2100; 585-475-2261.
4. The Ombuds Office – Student Auxiliary Union/Room 1114; 585-475-7200 or 585-475-2876.
5. The Center for Religious Life – Schmitt Interfaith Center / Rm 1400; 585-475-2137.
6. NTID Counseling & Academic Advising Services – 2nd Floor Lyndon B. Johnson; 585-475-6468 (v), 585-286-4070 (vp).

RIT Resilience. Success in this course depends heavily on your personal health and wellbeing. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. Moreover, those with marginalized identities may be faced with additional social stressors. Your other instructors and I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the term, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in this course as soon as it occurs and before it becomes unmanageable. In addition to

your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

REFERENCES

Buxton, Bill. 2007. *Sketching User Experiences: Getting the Design Right and the Right Design*. San Francisco: Morgan Kaufman.

Cooper, Alan, Robert Reimann, David Cronin, and Christopher Noessel. 2014. *About Face 4.0: The Essentials of Interaction Design*. Indianapolis, IN: Wiley.

Goodman, Elizabeth, Mike Kuniavsky, and Andrea Moed. 2012. *Observing the User Experience: A Practitioner's Guide to User Research*. Waltham, MA: Morgan Kaufman.

Holtzblatt, Karen, and Hugh Beyer. 2016. *Contextual Design, Second Edition: Design for Life*. San Francisco, CA: Morgan Kaufmann.

Holtzblatt, Karen, Jessamyn Burns Wendell, and Shelley Wood. 2005. *Rapid Contextual Design: A How-to Guide to Key Techniques for User-Centered Design*. San Francisco, CA: Morgan Kaufmann.

Lazar, Jonathan, Jinjuan Heidi Feng, and Harry Hochheiser. 2017. *Research Methods in Human-Computer Interaction, 2nd Ed.* West Sussex, UK: Wiley.

Matsudaira, Kate. 2019. "Design Patterns for Managing Up." *Commun. ACM* 62 (3): 43–45. https://doi.org/10.1145/3303878.

Rubin, Jeffrey, and Dana Chisnell. 2008. *Handbook of Usability Testing: How to Plan, Design, and Conduct Effective Tests*. Wiley. https://books.google.com/books?id=l/_e1MmVzMb0C.

Shneiderman, Ben. 2017. "Revisiting the Astonishing Growth of Human–Computer Interaction Research." *Computer*, no. 10: 8–11.

Spiekermann, Erik. 2014. *Stop Stealing Sheep, 3rd Edition*. San Jose, CA: Adobe Press.

Wixon, Dennis. 2003. "Evaluating Usability Methods: Why the Current Literature Fails the Practitioner." *Interactions* 10 (4): 28–34. https://doi.org/10.1145/838830.838870.