CPSC 311
Human-Computer Interaction (UI/UX)
Syllabus

Last Updated 5 January 2022

(Note: syllabus subject to change, your instructor will make an announcement if changes occur)

Instructor: Daniel Olivares, PhD
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BC/ISE 011
Office Hours: Wednesdays 1:00PM – 5:00PM

Meeting time/place: Section 1: MWF 10:00am-10:50am –Paccar 105
Section 2: MWF 11:00am-11:50am – Paccar 105

Online: Course website hosted on Canvas: https://canvas.instructure.com/

Note: *please do not search for "canvas" and use the first link! It is very likely that the first link is NOT the above URL and you will not be attempting to log into our course site.*

Textbooks:

Norman, D (2013). *The Design of Everyday Things* (Revised and expanded ed.) New York: Basic Books (ISBN: 978-0465-050659). (**Required**)

Johnson, J. (2014). *Designing with the Mind in Mind: Simple Guide to Understanding User Interface Design Rules* (3rd ed.). Burlington, MA: Morgan Kaufman (ISBN: 978-0128182024). (**Required**)

Barnum, C. (2010). Usability Testing Essentials: Ready, Set…Test! Burlington, MA: Morgan Kaufman (ISBN: 978-0123750921) (**required**)

(***OPTIONAL***) Greenberg, S., Carpendale, S., Marquardt, N., & Buxton, B. (2012). Sketching User Experiences: The Workbook. San Francisco: Elsevier. (ISBN: 9780123819598).

(***OPTIONAL***) Norman, D (2005). Emotional Design: Why We Love (or Hate) Everyday Things. Perseus Books Group. (ISBN: 978-0465051366).

Other Useful items:

- A digital camera for photographing objects in the world.
- A scanner/good camera for converting sketches to PDF documents.

NOTE: You are expected to bring your laptop to class regularly to complete and participate in in-class activities and assignments.

Using Devices in Class We will use smartphones and laptops throughout the semester to facilitate class activities. However, research and student feedback clearly show that using devices for non-class related activities harms not only your own learning, but other students' learning as well. Please use devices for classroom activities and note-taking only!

Description

Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers. While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology design. HCI is a broad field which overlaps with areas such as user-centered design (UCD), user interface (UI) design and user experience (UX) design. In many ways, HCI was the forerunner to UX design.[1]

User experience (UX) design is the process design teams use to create products that provide meaningful and relevant experiences to users. This involves the design of the entire process of acquiring and integrating the product, including aspects of branding, design, usability and function.[2]

HCI incorporates principles and theories from such diverse areas as engineering, computer science, and the social sciences. Its main goals are (1) to explore theories and principles of human computer use and human-computer communication; and (2) to develop techniques and practices for designing and evaluating humanly-usable software.

This course is designed as an introduction to the theory and practice of human-computer interaction, i.e., user interface and user experience design using human-centered methodologies. Through readings, discussions, hands-on activities, peer-reviews, and user interface design and evaluation projects, you will explore the key concepts, theories and methods of the area, including

- Key principles and concepts for designing human-computer interfaces, along with the theories of human perception, cognition and learning that underlie them.
- Human-centered (or user-centered) software design processes;
- Early data gathering methods (field studies, questionnaires, interviews, contextual inquiry) for human-centered design;
- Low and high-fidelity prototyping techniques;
- Empirical methods for evaluating software (usability testing, controlled experiments); and
- Analytical methods for evaluating software (heuristic evaluation, cognitive walkthrough, KLM, GOMS).

[1] https://www.interaction-design.org/literature/topics/human-computer-interaction
[2] https://www.interaction-design.org/literature/topics/ux-design

Learning Objectives

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

- Design and evaluate interactive software by applying appropriate design principles and concepts;
- Employ user-centered design methods in the design and implementation[3] of interactive software;
- Design, conduct, and analyze empirical studies that inform the design of interactive software;
- Apply analytical methods to the evaluation of interactive software;
- Communicate about, reason about, and critically review user interface designs through sketching, oral discussions, peer reviews, and well-written documents[4]

Course Activities and Structure

Class Meetings. Class meetings will typically contain a mix of lectures, interactive examples, interactive group activities, and small and large group discussions. You are expected to read the assigned material ***before* class**, and you are required to bring your laptop to every class, as you will use it to engage actively in course activities. Note that, in some cases, a Wi-Fi enabled smart device (phone, tablet) may be used to submit in-class participation responses hence the requirement to bring your laptop to every class. Additionally, you will be expected to bring your laptop to class in order to take in-class exams.

In some class meetings, you will engage in **studio activities** in which you (a) work on design sketches and/or present sketches to your peers for feedback and discussion[5]; or (b) perform design and problem-solving tasks in teams, and then present your progress to the class for feedback and discussion, These studio activities will provide opportunities to apply the theories, concepts, principles and methods being explored in the class.

Canvas is the online presence for this course. You can access it at https://canvas.instructure.com/. Once you log on to our course site, you can read course announcements, participate in online discussions, send e-mail to course participants, access course materials, hand in course deliverables, review peers' work, and access your grades.

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[3] No specific implementation technology will be taught in this course; it is assumed that your programming background will enable you to implement a software prototype in a language or technology of your choice.

[4] This course seeks to prepare you for an aspect of your future career that is not emphasized in other computer science courses: namely, designing software artifacts to function well as components of human and social systems. Oral and written communication skills are an important part of this kind of work. UI/UX designers need to communicate effectively with customers and design team members!

[5] An important aspect of this course is both giving and receiving design feedback based on theories, concepts, principles, and methods explored in the class. Feedback will be given/received individually, in small group activities, and in front of the class during in-class activities and presentations.

Communication

We will use Canvas to communicate, submit assignments, and view grades. A URL invitation link will be sent to your official @zagmail.gonzaga.edu email to provide course access. I will not be using Blackboard beyond the initial announcement post with the Canvas invite URL. **Please do not send Blackboard messages as I will likely not see them within a reasonable timeframe.**

Note: Please use Canvas as the primary communication method for course-related messages. I will monitor email as well but using Canvas is the preferred communication method. This will increase your message visibility and reduce likelihood of emails getting flagged as spam or getting lost in transit. Further, ***any course-related emails should be sent from your official @zagmail.gonzaga.edu student email****.*

Additionally, Discord (free to use) will be used to augment class communication and facilitate digital office hours–ask questions and discuss topics with other students in the class, TAs, and the instructor. Discord supports voice and text communication as well as screen sharing capabilities (*see Canvas for server invite URL*).

Finally, I will also be using Zoom to augment office hours and to teach remote lectures as necessary. You will find the Zoom URL details (lecture and office hours) on the Canvas home page for the course.

Grading[6]

Your grade for the course will be based on the following items (weights are in parentheses):

- **Class Participation (10%).** Because this course depends heavily on in-class activities, you are expected to attend class meetings and to participate actively. I understand that you may need to miss class occasionally for valid reasons. For this reason, your **three lowest class participation scores will be discarded—that is, you will receive three free attendance/participation credits.** Any discrepancies in participation need to be brought to my attention within a week of the posted grade.

  In-class participation credit will be given based on submission of in-class activity artifacts (i.e. work done during class) via paper and/or Canvas assignment/quiz submissions. Note that you will need to be on a Wi-Fi enabled device connected to the Gonzaga Wi-Fi in order to access in-class participation assignments/quizzes for in-person lectures.

- **Individual Assignments (25%).** Through a series of individual assignments, you will practice the key design, analysis, and evaluation skills being taught in the course. **Note that these assignments are due BEFORE class** – we will be discussing each of these in small groups and as a

[6] Note that I will try my best to stick with the original grade distribution and weights. With that said, adjustments to grade distribution and/or weights may happen. Any changes to this syllabus will be followed by an appropriate announcement.

class on the days they are due and therefore you are required to have them completed prior to that lecture period.

- **Exams (15%). One** midterm exam will cover the concepts from the first two thirds of the course (principles, theory, and the iterative design process).
- **Team Project (50%).** Teams of three to four students (***maximum to 9 teams per section***) will engage in a project with four components:
    - *Early design study (10%)*. Teams will choose a design problem from a set of suitable problems provided by the instructor or an **approved** design problem submitted by the team. Teams will apply two data gathering techniques—a contextual inquiry and market research—in order to establish requirements and formulate user personas. They will present their results in an early data gathering report.
    - *Low fidelity prototype study (10%)*. Based on their early data gathering results, teams will construct a low fidelity (paper) prototype of their proposed design, and iteratively test the design through a "wizard of Oz" study involving at least three prospective users. They will construct a demo video of their low fidelity prototype, and provide a link to that video in a report that presents the results of their iterative testing.
    - *Analytic evaluation (5%*). Using the low-fidelity prototype, teams will use either the cognitive walkthrough or heuristic evaluation technique to conduct an analytic evaluation of the application and present their results in a report.
    - *Usability Study (25%).* Teams will design a formal study to test the usability of the real-world software application under closed laboratory conditions. They will recruit at least three suitable users to participate in the study, which they will video record. They will analyze participants' interactions with the interface. They will present their results in both a formal written report (worth 15%), and a class presentation (worth 10%) that uses actual video clips to illustrate and corroborate the findings.

Grading Scale

The following scale will be used to convert your course percentage into a grade.

100-90	A	75-77.99	C+
88-89.99	A-	70-74.99	C
85-87.99	B+	68-69.99	C-
80-84.99	B	65-67.99	D+
78-79.99	B-	60-64.99	D
		<60	F

Suggestions for Getting the Most out of This Course

- **Adopt a growth mindset.** On the first day of class, I introduced the concept of a "growth" vs. a "fixed" mindset, and cited research a legacy of research that demonstrates the positive impact a "growth" mindset can have on learning and success. Revisit those slides and/or view Carol Dweck's Ted Talk on the power of the growth mindset. The structure of this course, and my approach to teaching, aim to create a learning environment that promotes a growth mindset. By being aware of the concept and principles, you can positively contribute to that environment.
- **Attend class.** You can only benefit from this course if you show up! This is especially true of the group activities. Therefore, you are expected to attend every class session. In addition, I expect you to participate actively in class by asking questions, answering questions, and engaging in the collaborative design and problem-solving activities. Remember, part of your grade is based on attendance and participation (see above).
- **Put in enough time.** My rule of thumb is that students need to put in 3-4 hours of work outside of class for every hour they spend in class. This translates to roughly **6-8 hours per week.** You may need to put in only a fraction of 6 hours during some weeks, while you will find yourself putting in more than 6 hours during other weeks—especially during weeks in which pieces of your final design project are due.
- **Take initiative to get help**. You cannot get help if you do not ask for it! You can do this in two ways. First, I recommend that you find students in the course with whom to meet and discuss course material. Second, take the initiative to contact myself or other students if you begin to struggle. The sooner you ask for help, the better! Please do not wait until it is "too late" before asking for help.
- **Have reasonable expectations**. You get what you put into this course! Your success is dependent upon your own efforts (growth mindset!). If you take an active role in your own learning, you will excel in this course, and have fun doing so. If, in contrast, you expect to show up to lectures and your effort ends there you will likely not get much out of the course, and your grade will suffer.

Policies

Please familiarize yourself with the following course policies. By following them, you will get the most out of this course, and you will not encounter any unwelcome surprises down the road.

- **Attendance**: The Gonzaga attendance policy on absences stipulates that the maximum allowable absence is two class hours (100 minutes) for each class credit. For three-credit classes, the maximum absence is, therefore, six class hours (300 minutes). Classes scheduled to meet for more than 50 minutes have more than one class hour for each meeting; for example, a class which meets for 75 minutes has one and one-half class hours for each scheduled meeting. Instructors may report

absences to the Registrar's Office, which will in turn notify the students. **The grade given for excessive absences is a "V," which has the same effect as "F" (Fail) and is counted in the GPA.** This outcome can be appealed to the Dean of the College/School in which the course is offered.
What does this mean for you?
If you miss six (6) 50-minute class periods over the course of the semester you can be given a "V" grade which will appear on your transcript as an "F."

- **Add a profile picture to Canvas**. Uploading a recent picture of yourself to Canvas will help me, the TA, and other students in the class to associate your name with your face. I would greatly appreciate it if you would do this, as it will help me to learn your name more quickly.
- **Corresponding with the instructor via e-mail**. Please message me through Canvas; please only use direct e-mail if you are unable to access you Canvas account. This helps me keep course-related conversations together, will not accidently be flagged as spam mail (yes, it does happen!), and will ensure that I respond to your questions more promptly (i.e., It is not competing for my attention alongside the numerous other emails I receive!)
- **Accessing course materials**. Canvas is the online presence for this course. **Log in regularly (every day)** to view course announcements, view the course calendar schedule, access course materials, access your grades, and submit assignments. "I didn't know assignment X was due at this date/time" is not an acceptable excuse! It is your responsibility to keep on top of course tasks.
- **Checking your grades**. To view your current grades, click on the Grades tab in Canvas. My goal is to have work graded within one week of the final deadline, but this may not always be possible. Please check your grades regularly to ensure that your grades have been entered properly, and please let your instructor or the TA know as soon as possible if you detect an error.
- **Challenging a grade**. If you believe that I have made a mistake in grading an assignment, you have ***one week*** **(from the time your grade is first posted to the gradebook)** to discuss the matter. Such discussions should take place through Canvas—never in class (see point above). Please discuss grading issues as soon as possible. Students have often attempted to bargain for points well after their grades have been posted—often near the end of the semester when they have realized that they needed more points to obtain a certain grade. Please do not attempt to do this!
- **Exams**. You will be allowed a **hand-written** "cheat sheet": one side of half of an 8-1/2" by 11" sheet of paper. In general, I will not allow you to make up the exam unless you (a) have a legitimate excuse and (b) make other arrangements with me at least one week in advance of the exam. If you have a **genuine emergency** and you cannot give proper notice, I will accept make-up requests after the fact, provided that (a) they are in writing, with supporting, signed documents, and (b) they are submitted to me no later than 24 hours after the starting time of the exam you missed. I will review each case on an individual basis, and I will let you know if your request is granted no later than 24 hours after it is submitted. **Travel plans are not a valid excuse to miss an exam!**

- **Late policy for assignments**. **Deadline reminders are a courtesy, not a requirement. You are responsible to follow the course calendar and be aware of provided due dates!** Course assignments are due by the stated due dates and times. See each assignment on Canvas for their deadline and late policy. **Note that some assignments may be time sensitive and will not allow for late submissions.** In cases of illness and extenuating personal circumstances, you may request in writing that an exception be granted to this policy, but your request must be issued in a timely manner (preferably in advance of the due date), and there is no guarantee that it will be granted.
- **Academic integrity:** You are expected to follow the university policy on academic honesty. Academic honesty is expected of all Gonzaga University students. Academic dishonesty includes, but is not limited to cheating, plagiarism, and theft. Any student found guilty of academic dishonesty is subject to disciplinary action, which may include, but is not limited to, (1) a failing grade for the test or assignment in question, (2) a failing grade for the course, or (3) a recommendation for dismissal from the University. A complete copy of Gonzaga's Academic Honesty policy can be found at course catalog.

Gonzaga University-Wide Policies

University Academic Policy Statements	Associated Links
Support Links	Blackboard Link to Support Links
Diversity, Equity and Inclusion	Office of Diversity, Equity and Inclusion Bias Incident Assessment and Support (BIAS) Team
Harassment, Discrimination and Sexual Misconduct Policies	Harassment and Non-Discrimination Policy Title IX
Academic Integrity Policy	Academic Integrity Policy
Students with Disabilities/Medical Conditions and accessible Documents (EITA)	Disability Access and Resources Office Electronic Information Technology Accessibility (EITA)
Religious Accommodations for Students	Religious Accommodations for Students Policy
FERPA and Privacy	FERPA
Class Attendance Policy	Class Attendance Policy
Notice to Students of COVID-19 Expectations	Student Arrival & Return to Gonzaga Guides
Notice to Students about Class Recordings (audio, video and photos)	Zoom sessions might be recorded
Student Conduct	Gonzaga University's Student Code of Conduct
Course Evaluations	Course Evaluations