

San José State University
Department of Computer Science
CS235, USER INTERFACE DESIGN, Section 1

Spring Semester, 2018

Course and Contact Information

Instructor:	Kevin Smith
Office Location:	DH 282
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Office Hours:	TR 1300-1400 or by appointment
Class Days/Time:	TR 1500-1615
Classroom:	MH 222
Prerequisites:	CS 130 or CS 116A, or instructor consent

Catalogue Description

Human-computer interaction principles. Direct manipulation, focus plus context, interaction history; interfaces for websites and website collections; usability testing; role of metaphors; case studies; advanced topics include information visualization, interfaces for collaboration, intelligent interfaces, and software agents. Prerequisite: CS 130 or CS 116A, or instructor consent.

Course Description

In this course, you will learn the critical elements in the design and implementation of user interfaces for a wide variety of applications. The course will cover combine the modern theory and practice of human-computer interface design with lecture material, case studies, research topics presented in papers and practical experience with a term project. The field is rapidly evolving and there will be special emphasis placed on the design of both 2D and 3D interfaces and case studies will be presented in the fields of design, engineering, entertainment and virtual/augmented reality.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

- 1: Understand the process of user interface design and how to use it to design high performance applications.
- 2: Gain an understanding current research in the field through selected readings and presentations.
- 3: Employ some of the current state-of-the art UI design tools and technologies.
- 4: Ability to complete a larger scale project leveraging the design process learned.
- 5: Understand the important elements of design for both 2D and 3D interfaces.

Required Texts/Readings

Textbook

There is no required textbook purchase for this class. Material in lectures will be presented in an interactive format and the presentation for the class will be available on Canvas after the class is held. In addition, required supplemental material (research papers, articles, videos etc.) will be placed on Canvas when they are assigned.

Even though no textbook is required, I do highly recommend the following books for supplemental reading (alphabetical order):

Recommended Books

Casey Fictum, *VR UX, 100 pages of VRUX, Design, Sound, Storytelling, Movement and Controls*

Donald Norman, *The Psychology of Everyday Things*

Jaime Levy, *UX Strategy*

Jennifer Tidwell, *Designing Interfaces*

LaViola, Kruijff, McMahan, Bowman, Poupyrev, *3D User Interfaces, Theory and Practice (2nd Edition)*

Software and Computer

Students will be required to have access to a modern capable laptop or desktop computer running recent version of Windows or macOS. In addition to a computer, a three-button mouse is required for the programming assignments. The track pad on the laptop is not sufficient for this purpose. The development projects for this class will be done in C++. Students will be required to download and install a development framework for their particular operating system.

Course Requirements and Assignments

It is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

1. Development Projects and Assignments (80%)

Assignments will be given in the form of (1) readings or research where student is required to provide a review or answer questions on a research paper or article. (2) short-term implementation projects or problems where the student will be required to solve a problem on the computer and hand-in the results (3) informal presentations reporting on results from (1) and (2). The assignments will be posted on Canvas when they are assigned.

2. Mid-Term Exam (10%)

The student will be required to take a closed book mid-term exam which will cover material presented in class and the reading material assigned. The mid-term may also include problems to be solved.

3. Final Exam (10%)

The student will be required to take a closed book final exam which will cover material presented in class and the reading material assigned. The exam will cover material covered in the entire course. The final may also

include problems to be solved. The instructor has the option to make the final exam a “take-home” exam.

Projects

For “Development Projects” specified in (1) above, students will complete a series of approximately six (6) sequential programming projects that will be assigned during the semester. Most of the projects will be dependent on the previous and the final project will be the culmination of the previous projects, therefore, it is required that all projects be completed to be successful in the course. One of the projects will be a “team” project where students can work together and present their results.

Gallery

A Google Community will be provided for the course where students will be required post a movie of their assignments in a Gallery. Previous class submissions will be visible in the Galley for show.

Engagement

This is an interactive class and students are expected to be fully engaged and participating in class discussions and Q/A sessions.

Grading Policy

No make-up tests will be given and no late homework (or other work) will be accepted. If you are in doubt about the submission time for an assignment, it is better to submit it early.

The following grading scale will be used:

Range	Grade
90-100	A
88-89	A-
86-87	B+
80-85	B
75-79	B-
70-74	C+
65-69	C
60-64	C-
Below 60	F

Note that “All students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1.pdf) at <http://www.sjsu.edu/senate/docs/F13-1.pdf> for more details.

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24.pdf) at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

Classroom Protocol

Class attendance is required to gain maximum benefit from the presented materials, presentations and discussion.

Laptop or tablet use is encouraged for taking notes during the class. Students should practice common courtesies and refrain from using laptops for email, messaging or social media during class.

Cell phones are generally not permitted to be used in class (including text messaging). For extenuating circumstances, please let the instructor know before class.

Since the material presented in class is copyrighted, there is no photography (including phone cameras) is allowed.

University Policies

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

CS235 User Interface Design, Spring 2018, Course Schedule

This schedule is tentative and is subject to change. Due dates for assignments will be posted in Canvas and are generally due the following week after are assigned.

Course Schedule

Week	Date	Topics, Readings, Assignments, Deadlines
1	Jan 25	Introduction
2	Jan 30, Feb 1	Historical Context Human factors – Perception, Cognition and Ergonomics
3	Feb 6, 8	General Principles of HCI Design - I Interaction Design/Direct Manipulation (2D), Frameworks, Live Coding
4	Feb 13,15	General Principles of HCI Design – II Interaction Design/Direct Manipulation (2D) Design Process
5	Feb 20,22	User Interface for the Web and Case Studies I Data Visualization I
6	Feb 27, Mar 1	User Interface for the Web and Case Studies II Data Visualization II
7	Mar 6, 8	User Interface for the Web and Case Studies II (continued)

Week	Date	Topics, Readings, Assignments, Deadlines
		Web Development Environment and Examples
8	Mar 13,15	Introduction to 3D User Interface – Applications and Terminology
9	Mar 20,22	Midterm Exam (Tuesday, March 20) 3D Interface – Human factors and Design Considerations
10	Mar 26-30	Spring Recess
11	April 3,5	3D Navigation and Direct Manipulation Project Team Presentations
12	April 10,12	Virtual Reality User Interface I Navigation, Combining 2D/3D Interfaces, Human Factors
13	April 17,19	Virtual Reality User Interface II Sound, Augmented Reality, Advanced Topics
14	April 24,26	Advanced Topics in UI
15	May 1, 3	Flexible Topic or Guest Speaker
15	May 8, 10	Flexible Topic or Guest Speaker Course Review
16/17	May 16-22	Final Exam (Final will be given at normal University-scheduled time)