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

Spring Semester, 2019

Course and Contact Information

Instructor:	Kevin Smith
Office Location:	DH 282
Email:	kevin.smith@sjsu.edu
Office Hours:	Tuesday 15:00-16:00 or by appointment
Class Days/Time:	TR 13:30-14:45
Classroom:	MH 233
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)*

Required 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 development projects for this class will be done in C++ and JavaScript. Students will be required to download and install a development framework for their particular operating system.

In addition to the downloadable opensource development software required for the course, students will be required to make their own movies which demonstrate their work using screen capture software. The recommended software for this purpose is *Camtasia*. There is a reduced functionality version available for screen capturing only (does not include video editing).

As part of the course, we will also be referring to case studies using other 3rd party 2D and 3D software such as Autodesk Maya. Students will be expected to install and learn the basic operation of the software (will be given as a class assignment) and have a capable laptop (Windows PC or Mac) that can run the software.

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 at http://www.sjsu.edu/senate/docs/S12-3.pdf.

1. Development Projects (50%)
There will three (3) development projects assigned during the semester. Development projects may be broken down into smaller lead-up assignments which are completed sequentially before

2. Engagement: Quizzes and In-Class Exercises (10%)
In this class, students are expected to take short quizzes which will test your knowledge of current material.

There will also be in-class exercises which will include short programming exercises, team exercises and discussions around assigned reading material.

3. Mid-Term Exam (15%)
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 a take-home problem to be solved.

4. Final Project (25%)
The final project will be a comprehensive research and implementation project chosen by the students from a list of possible topics. Students will work in groups of two or three. A final presentation will be required to present the project and all students must participate in the presentation session(s) to receive a grade. **There is no final exam.**

Projects

For "Development Projects"" specified in (1) above, students will complete a series of approximately three (3) 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. There will be suggested ungraded exercises to help the student gain the knowledge required to complete the projects.

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 (exams and quizzes) will be given and ***no* late work will be accepted**. This includes: homework, projects, videos, in-class exercises or any other work related to the class. If an exam or work is missed or late, it will be graded as a "0". 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 at http://www.sjsu.edu/senate/docs/F13-1.pdf for more details.

NOTE that University policy F69-24 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."

Dropping the Class

To see drop deadlines for this semester, see the SJSU calendar
http://www.sjsu.edu/registrar/calendar/2192/index.html

Classroom Protocol

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

Laptops are permitted to be used in class only for CS235 activities (this can include taking notes).

Cell phones are not permitted to be used in class.

Please be courteous and minimize any classroom distractions which may affect the learning environment including conversation, eating, taking unnecessary breaks and coming to class late.

Students with special requirements should notify the instructor or contact the Accessible Education Department.

Since the material presented in class is copyrighted, there is no photography (including phone cameras) is allowed. Class materials cannot be redistributed without permission of the instructor.

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 at http://www.sjsu.edu/gup/syllabusinfo/

CS235 User Interface Design, Spring 2019, 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 24	Introduction
2	Jan 29, 31	Historical Context Human factors – Perception, Cognition and Ergonomics
3	Feb 5, 7	General Principles of HCI Design - I Interaction Design/Direct Manipulation (2D), Frameworks, Live Coding
4	Feb 12,14	General Principles of HCI Design – II Interaction Design/Direct Manipulation (2D) Design Process
5	Feb 19,21	User Interface for the Web and Case Studies I Data Visualization I
6	Feb 26, 28	User Interface for the Web and Case Studies II Data Visualization II
7	Mar 5, 7	User Interface for the Web and Case Studies II (continued) Web Development Environment and Examples
8	Mar 12,14	Introduction to 3D User Interface – Applications and Terminology
9	Mar 19,21	**Midterm Exam (Tuesday, March 19)** 3D Interface – Human factors and Design Considerations
10	Mar 26-30	3D User Interface – Design and Implementation
11	April 2,4	**Spring Recess**
12	April 9,11	3D User Interface – Design and Implementation
13	April 16,18	Virtual Reality User Interface Sound, Augmented Reality, Advanced Topics
14	April 23,25	Advanced Topics in UI
15	April 30, May 2	Flexible Topic

Week	Date	Topics, Readings, Assignments, Deadlines
15	May 7, 9	Flexible Topic or Guest Speaker Course Review
16	May 16	**Final Project Presentation (1215-1430)**