

**CS 55.14 Course Outline as of Fall 2020****CATALOG INFORMATION**

Dept and Nbr: CS 55.14 Title: MOBILE HYBRID APP DESIGN

Full Title: Mobile Hybrid Application and Interaction Design

Last Reviewed: 2/10/2020

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly: CS 157.12

**Catalog Description:**

This course introduces core principles and techniques essential to building interactive applications for mobile devices. It includes units on content adaptation strategies, designing for mobile devices, detecting device capabilities, viewing and testing with emulators, and creating web-based mobile applications. Web technologies covered include Asynchronous JavaScript and XML (AJAX), mobile web frameworks, and other current industry standard platforms.

**Prerequisites/Corequisites:**

Course Completion of CS 50C OR CS 55.13

**Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100 or equivalent

**Limits on Enrollment:****Schedule of Classes Information:**

Description: This course introduces core principles and techniques essential to building interactive applications for mobile devices. It includes units on content adaptation strategies, designing for mobile devices, detecting device capabilities, viewing and testing with emulators, and creating web-based mobile applications. Web technologies covered include Asynchronous

JavaScript and Extensible Markup Language (XML) (AJAX), mobile web frameworks, and other current industry standard platforms. (Grade or P/NP)

Prerequisites/Corequisites: Course Completion of CS 50C OR CS 55.13

Recommended: Eligibility for ENGL 100 or ESL 100 or equivalent

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b> Transferable	Effective:	Fall 2020	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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### **CID:**

### **Certificate/Major Applicable:**

Not Certificate/Major Applicable

## **Approval and Dates**

Version:	02	Course Created/Approved:	2/25/2013
Version Created:	3/8/2019	Course Last Modified:	11/14/2023
Submitter:	Ethan Wilde	Course last full review:	2/10/2020
Version Status:	Approved (Changed Course)	Prereq Created/Approved:	2/10/2020
Version Status Date:	2/10/2020	Semester Last Taught:	
Version Term Effective:	Fall 2020	Term Inactive:	Fall 2024

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Identify the core principles and techniques essential to building interactive web-based applications for mobile devices and apply appropriate terminology to describe these practices.
2. Demonstrate the ability to create user experiences that adhere to current mobile and responsive design standards and best practices.
3. Create web-based mobile applications using frameworks that yield a native application for platforms such as Android and iOS.

### **Objectives:**

Students will be able to:

1. Explain the mobile web.
2. Identify content adaptation strategies.
3. Set up a development environment.
4. Implement well-defined web standards.
5. Apply a web-based framework to build an app.

6. Describe the role of JavaScript for mobile devices.
7. Design forms for mobile devices.
8. Use device detection.
9. Work with mobile browser capabilities.
10. Create web-based apps for various devices.
11. Explain geolocation as part of the mobile experience.

## **Topics and Scope:**

### I. Understand the Mobile Web

- A. Emerging trends
- B. Variety of devices
- C. Wireless vs. Cellular Network

### II. Understand Content Adaptation Strategies

- A. Handheld device user experience
- B. Compare and contrast desktop, tablet, and handheld user expectations

### III. Set up a Development Environment

- A. View and test the mobile site on device emulators
- B. Set up testing servers and emulators

### IV. Implement Well-Defined Web Standards

- A. Define Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS) standards
- B. Examine browser choices
- C. Work with various boilerplate templates
- D. Use CSS Media Queries

### V. Apply a Mobile/Web Framework to Create an App

- A. Webpages vs. Apps
- B. Build a first mobile web page
- C. Create style sheets
- D. Load external data with AJAX

### VI. Understand the Role of JavaScript for Mobile Devices

- A. Work with JavaScript to utilize mobile/web framework
- B. Create interactive interfaces using JavaScript
- C. Use JavaScript to deal with device capabilities and orientation changes

### VII. Design Forms for Mobile - Compare and Contrast Purpose and Function of Forms Across Devices

### VIII. Use Device Detection

### IX. Work with Mobile Browser Capabilities - Examine Default Browsers for Different Devices

### X. Test and Iterate Web-Based Apps for Various Devices

- A. Specify Android settings
- B. Simulate the iPhone

### XI. Examine Geolocation as Part of the Mobile Experience

- A. Explore how geolocation is used
- B. Integrate geolocation data with Google Maps

## **Assignment:**

1. Textbook reading per week (25 to 60 pages)
2. Quizzes and exams
3. Preview, critique and review the mobile aspects of various websites
4. Weekly homework assignments and projects that incorporate site analysis and content development including:
  - a. Using well-defined web standards, build content for typical form factors

- b. Set up a development environment by installing the necessary tools, installing and using device emulators, and build a first mobile web app using a mobile/web framework
  - c. Adapt desktop sites for mobile devices by understanding content adaptation approaches and using media queries
  - d. Create mobile-optimized pages by detecting client capabilities
  - e. Create and format a mobile site using responsive templates
  - f. Build interactivity for mobile screens using JavaScript and jQuery
5. Mid-term project and final project

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Homework assignments	Writing 5 - 10%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework assignments	Problem solving 10 - 30%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Mid-term project and final project	Skill Demonstrations 30 - 40%
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**Exams:** All forms of formal testing, other than skill performance exams.

Quizzes and exams	Exams 30 - 40%
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**Other:** Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation	Other Category 0 - 10%
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**Representative Textbooks and Materials:**

High Performance Mobile Web: Best Practices for Optimizing Mobile Web Apps. Firtman, Maximiliano. O'Reilly Media. 2016  
 Designing Interfaces: Patterns for Effective Interaction Design. 2nd ed. Tidwell, Jennifer. O'Reilly Media. 2011 (classic)

## **OTHER REQUIRED ELEMENTS**

### **STUDENT PREPARATION**

Matric Assessment Required:	E	Requires English Assessment
Prerequisites-generate description:	U	User Generated Text
Advisories-generate description:	A	Auto-Generated Text
Prereq-provisional:	N	NO
Prereq/coreq-registration check:	Y	Prerequisite Rules Exist
Requires instructor signature:	N	Instructor's Signature Not Required

### **BASIC INFORMATION, HOURS/UNITS & REPEATABILITY**

Method of instruction:	02	Lecture
Area department:	CS	Computer Studies
Division:	72	Arts & Humanities
Special topic course:	N	Not a Special Topic Course
Program status:	2	Not Certificate/Major Applicable
Repeatability:	00	Two Repeats if Grade was D, F, NC, or NP
Repeat group id:		

### **SCHEDULING**

Audit allowed:	N	Not Auditable
Open entry/exit:	N	Not Open Entry/Open Exit
Credit by exam:	N	Credit by examination not allowed
Budget code: Program:	0000	Unrestricted
Budget code: Activity:	0701	Computer & Information Science

### **OTHER CODES**

Discipline:	Computer Information Systems	
Basic skills:	N	Not a Basic Skills Course
Level below transfer:	Y	Not Applicable
CVU/CVC status:	N	Not Distance Ed
Distance Ed Approved:	N	
Emergency Distance Ed Approved:	N	None
Credit for Prior Learning:	N	Agency Exam
	N	CBE
	N	Industry Credentials
	N	Portfolio
Non-credit category:	Y	Not Applicable, Credit Course
Classification:	Y	Career-Technical Education
SAM classification:	C	Clearly Occupational
TOP code:	0707.10	Computer Programming
Work-based learning:	N	Does Not Include Work-Based Learning
DSPS course:	N	Not a DSPS Course
In-service:	N	Not an in-Service Course