COLUMBUS STATE
COMMUNITY COLLEGE

Hybrid App Development Using React Native

Summer Working Connections 2020

Strengthening Mobile Application Resources and Technician Training (SMARTT)

Principal Investigators: Jon Lundquist and Peter Carswell

Contents

This material is based upon work supported by the National Science Foundation under Grant No. 1700519. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Hybrid App Development Using React Native

Registration for this track is now CLOSED, but you can be added to the “wait list” and be notified if and when space opens up. Simply make the “wait list” option your primary choice. While you are on the “wait list,” you will be registered into your alternate track choice.

Description
Mobile apps have become an important way of how consumers interact with digital products, and more frequently, offer a better user experience over web apps or desktop apps. Traditionally, development of native iOS and Android mobile apps is a complex and expensive endeavor for companies, further complicated by a still resource-constrained job market.
React Native, a framework developed by Facebook, leverages widely available skillsets (ie. HTML, CSS, Javascript) to develop full-fledged native mobile applications. A single codebase can produce both Android and iOS mobile apps which accelerate development while eliminating the need for platform-specific resources.

Textbook
Mastering React Native (paperback) Author: Eric Masiello ISBN-10: 1785885782; ISBN-13: 978-1785885785
NOTE: we are working with the publisher to provide all attendees with a free e-book “review copy.”

Prerequisites
To understand the content and successfully complete this course, you should have knowledge and skills associated with the following:

- Javascript (ES6+)
- JSX
- CSS
- Working knowledge of mobile apps

At-Home Computer Requirements

- Good internet connection
- Latest Chrome version
- Also be ready and able to download apps from Google Play or the Apple App store
- Dial-up and log-on details for the online sharing platform will be provided

Instructors

Jon Lundquist
Experienced Professor / Program Coordinator (Columbus State Community College) with a demonstrated history of working in the higher education industry for over 20 years. Strong media and communication professional skilled in Graphics, User Experience, WordPress, User Interface Design, Mobile Design and Interactive Media.

Jon is a Lead Faculty Expert for the Visual Design and Imaging curriculum area for the Ohio Board of Regents since 2011.

Jon has freelanced and consulted for more than a dozen companies over the past decade on web, marketing and media related project**.**

Peter Carswell
Associate Professor in Computer Science; Coordinator for the Game Developer Track (Columbus State Community College).

Peter was bitten by the computer graphics bug while an undergrad at Ohio State University and joined the company Cranston/Csuri Productions in 1983. While working there, he was an animator and developed software to extend the capabilities of the animation staff.

Peter has held positions at the Ohio Supercomputer Center and the Advanced Computing Center for Art and Design at OSU. He focused on Scientific Data Visualization, where he was a member of a team of programmers to create an application called apE, animation production environment. This was an early application for Ohio Supercomputer researchers could to visualize their simulations, i.e. tornadoes, colliding galaxies, heat flow in commercial kitchens.

Zak Dziczkowski
Zak is a senior engineer with over 18 years of hardware and software development experience. He has brought a number of technology products to market, and loves to create new products.

As a startup addict, Zak has been a founding member of several, including Garageio, Glacir, Proximity, ARMA and Active Threat Alert. Because of his engineering background, he usually serves a lead technical role.

Zak has served as an advisor and lecturer at Columbus State Community College since 2010 and currently teaches a course on hybrid app development.

Track Objectives
At the completion of this track, the participants will be able to…

- Compare and contrast the pros/cons of hybrid app development
- Design a successful hybrid mobile app course
- Understand the key features of React Native framework
- Deconstruct core capabilities through code examples
- Develop a complete, functional hybrid mobile app

Agenda
The five-day track will cover 4 main segments, which can map to 16 weeks of instruction in a semester long course. Each module will cover a programming topic and contain a guided and unguided lab.

Day 1 – Intro and basic setup
1. History of hybrid app development
2. Required hardware/software
3. Set up Expo account

Day 2 – Crash course on coding / begin App project
1. JavaScript / ES6
2. New Expo project
3. Introduce XD wireframe (6 page app)
4. Introduce syntax and layout
5. Build out splash page
6. Constructing and applying styles (text,image)

Day 3 – Adding navigation and events
1. Build out 2 interior pages (main and int. 1)
2. Link pages using navigation and buttons
3. Preview layouts on phone emulator/simulator
4. Prepare for testing and code issues

Day 4 – Animation and gestures
1. Build out 2 more interior pages (int. 2 and int. 3)
2. Link pages using navigation and buttons
3. Adding layout animation

Day 5 – Completing total app / completing production
1. Preparing for production
2. Introduce testing/performance
3. Running on physical devices

4. Understanding deployment (IOS / Android)
5. Overall summary and resources

Please note the schedule is subject to change or be modified based on the needs of the boot camp participants.

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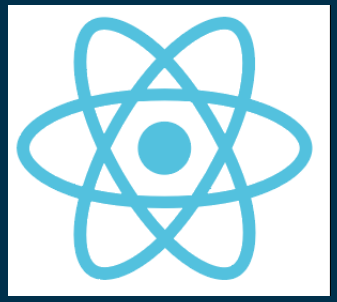
Working Connections 2020

Hybrid App Development using React Native

Instructors:
Jon Lundquist, Peter Carswell, Zak Dziizcomski

July 13-17 2020



Welcome

Introductions

- Project Team / Instructors
- Participants

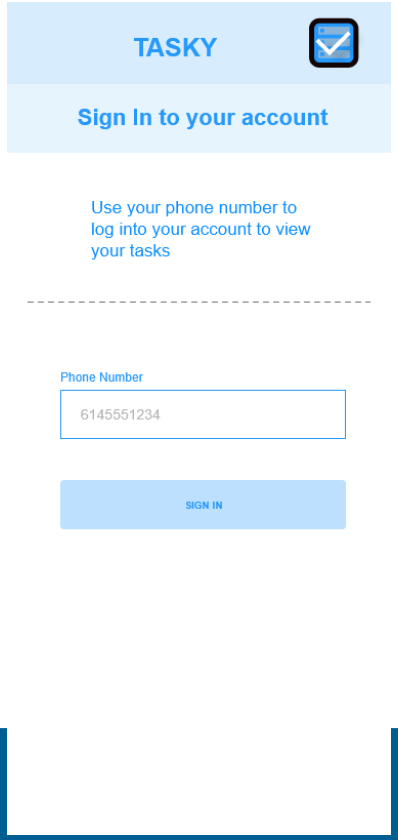
General concepts and overview for session

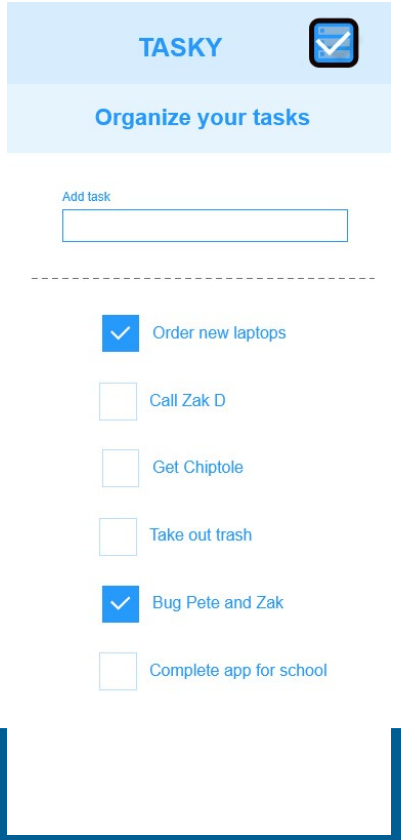
Agenda – Overview- July 13-17

Day 1- Monday, July 13	Introductions, React Native History, RN Intro, Mobile Dev overview, intro to expo	Jon Lundquist, Peter Carswell, Zak Dziczkowski
Day 2- Tuesday, July 14	JavaScript Review, CSS Review, Interface Review (JSK), build app splash page	Zak Dziczkowski Jon Lundquist, Peter Carswell
Day 3- Wed. , July 15	Navigation, Event Listeners, build login and main page	Zak Dziczkowski Jon Lundquist, Peter Carswell
Day 4- Thurs., July 16	Networking , API, add functionality to login and main page	Zak Dziczkowski Jon Lundquist, Peter Carswell
Day 5- Friday, July 17	Review using RN tools, Preparing for Production (IOS/Android)	Zak Dziczkowski Jon Lundquist, Peter Carswell

Tasky App prototype

Build three pages – splash, log in and main





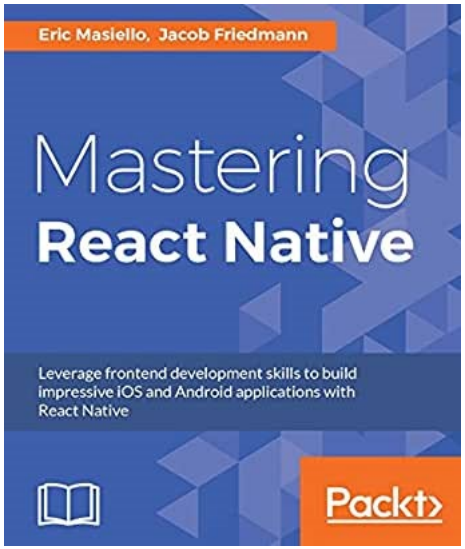
Agenda – Monday, July 13

8:30am-8:45am	Welcome & Introductions	Jon L., Pete C., Zak D.
8:45am-10:15am	Lecture: Purpose of Session	Jon L., Pete C
10:15-10:30am	Break	
10:30am-Noon	Plans of Studies (Dev/Design)	Jon L., Pete C
Noon-1:00pm	Lunch	
1:00pm-3:15pm	Setting up of dev. tools	Jon L., Pete C
3:15pm-3:30pm	Break	
3:30pm-5:00pm	Guided lab – using Expo	Jon L., Pete C

Lecture – 8:45am-10:15am

History and basic concepts

- Purpose of session – goals
- Textbook
- About app development
- Intro to React Native
- Examples of existing React Native Apps



Break: 10:15am-10:30am

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Web, Native, Hybrid apps?

Question businesses have when getting into market

- Cost
- Timeframe
- Project team

Web app: accessed via a browser (less expensive, less build time)

Native app: build for specific platform: Android or IOS

Hybrid app: combines elements of both native and web applications - build for IOS / Android /Web

Who started it?

React Native is an open-source mobile application framework created by Facebook -2015

Other hybrid development tools:

- Ionic
- Adobe PhoneGap
- NativeScript
- Xamarin

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Intro

React vs React Native

- React = Web
- React Native = building mobile applications

React Native is a library for creating native mobile applications using familiar web technologies on top of React

Major parts of RN

Components:

- Composable modular sections

Props:

- Making components dynamic

Event handlers:

- Functions that respond to user events

States:

- Tied to some visual display option of a component

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Required skills: HTML, CSS, Javascript (ES5/6/7)

Hybrid App Development using React Native

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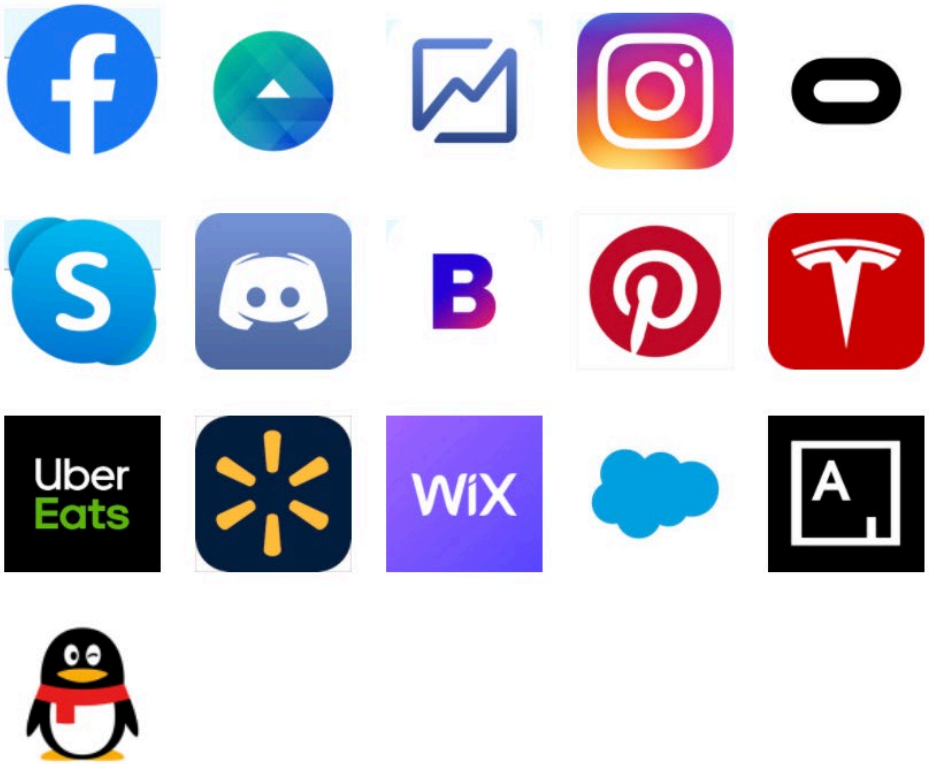
Used in thousands of apps



Lecture – 10:30am-Noon

Plans of Studies / Curriculum

- Grant overview
- Where does the hybrid app course fit in?
- Plans of studies (Design and Development)
- Mobile Device Lab

Lunch: Noon-1:00pm

NSF ATE Strengthening Mobile Application Resources and Technician Training (SMARTT)

Grant Overview

Total Award:

$680,187

Award Dates:

08/01/2017 – 07/31/2020*

Funder:

National Science Foundation

Columbus State Community College Project Team

PI: Jon Lundquist

Co-PI: Peter Carswell

Co-PI: Zachary Dziczkowski

Project Manager: Stephanie Schuler

Data and Reporting Coordinator: Nicholas Grimmer

Outreach Coordinator: Emily Thompson

Participant Program Coordinator: Alli Dayhuff

External Project Team

Co-PI: Ann Beheler, Collin College

Evaluator: Edith Morris, U. of Cincinnati

Evaluator: Jacinda Dariotis, U. of Cincinnati

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Plans of Studies

Mobile App Development and Design

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CAREER AND TECHNICAL PROGRAMS

2 Year Plan of Study

Computer Science

MOBILE APP DEVELOPMENT

Name _____
Student # _____
Date Entered _____
Advisor _____

FIRST SEMESTER	G/T/B	CR	
CSCI1101 Computer Concepts & Applications	T	3	
CSCI 1103 Intro to Prog Logic	T	3	
MATH 1111 Discrete Mathematics for Computing	G	3	
ENGL 1100 Composition I	G	3	
COLS 1100 First Year Experience Seminar	B	1	
		13	

SECOND SEMESTER	G/T/B	CR	
ITST 1101 Ind. Applications and Software	B	2	
IMM 1101 Mobile App Design I	B	3	
CSCI 1275 Bus Analysis & Agile	T	3	
SBS XXXX SBS (select from list)	G	3	
CSCI 1145 HTML	T	3	
		14	

SUMMER SEMESTER	G/T/B	CR	
NAT XXXX Natural Sciences	G	3	
HUM XXXX Humanities	G	3	
IMM 1210 Mobile Inter /Usability	B	3	
		9	

THIRD SEMESTER	G/T/B	CR	
CSCI 1660 Prog Fund for Android	T	3	
CSCI 2660 Android Mobile Apps Dev	T	3	
CSCI 2447 Javascript	T	3	
CSCI 2221 Agile Soft Dev and Testing	T	3	
IMM 2210 - Mobile Analytics	B	3	
		15	

FOURTH SEMESTER	G/T/B	CR	
CSCI 1650 Prog Fund for iOS	T	3	
CSCI 2650 iOS Mobile Apps Dev	T	3	
CSCI 2999 Mobile Capstone	T	3	
IMM 2372 Hybrid App Development	B	3	
		12	

GRADUATION REQUIREMENTS

G = General Education
B = Basic Education
T = Technical Education

Total General Ed.	15
Total Basic	15
Total Non-Technical	30
Total Tech. Ed.	33
TOTAL CREDITS	63

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2 Year Plan of Study

Art, Media & Design

MOBILE APP DESIGN

CAREER AND TECHNICAL PROGRAMS

Name _____
Student # _____
Date Entered _____
Advisor _____

FIRST SEMESTER	G/T/B	CR	
IMM 1101- Mobile App Design I	T	3	
IMM 1210- Mobile Inter /Usability	T	3	
COLS 1100- Freshman Seminar	B	1	
CSCI 1103- Intro to Program Logic	B	3	
CSCI 1150- Networking Term.	B	1	
ENGL 1100- Composition I	G	3	
		14	

SECOND SEMESTER	G/T/B	CR	
DDG 1525 - Storyboarding	B	3	
CSCI 1145 - HTML	B	3	
IMM 1110- Mobile App Design II	T	3	
MATH 1104 - Math for Business	G	3	
CSCI 1320 - Database Fund.	B	3	
		15	

SUMMER SEMESTER	G/T/B	CR	
NAT XXXX Natural Sciences	G	3	
HUM XXXX Humanities	G	3	
		6	

THIRD SEMESTER	G/T/B	CR	
IMM 1140- CSS	T	3	
CSCI 2447- JavaScript Fundamentals	B	3	
IMM 2010- Mobile User Interface	T	3	
SBS XXXX	G	3	
IMM 2110 Project Manage Assets	T	3	
		15	

FOURTH SEMESTER	G/T/B	CR	
IMM 2372- Adobe PhoneGap	T	3	
IMM 2210- Mobile Analytics	T	3	
IMM 2710 - Interactive Portfolio	T	3	
IMM 2999 Mobile Capstone	T	3	
		12	

GRADUATION REQUIREMENTS	
G = General Education	
B = Basic Education	
T = Technical Education	
Total General Ed.	15
Total Basic	17
Total Non-Technical	32
Total Tech. Ed.	30
TOTAL CREDITS	62

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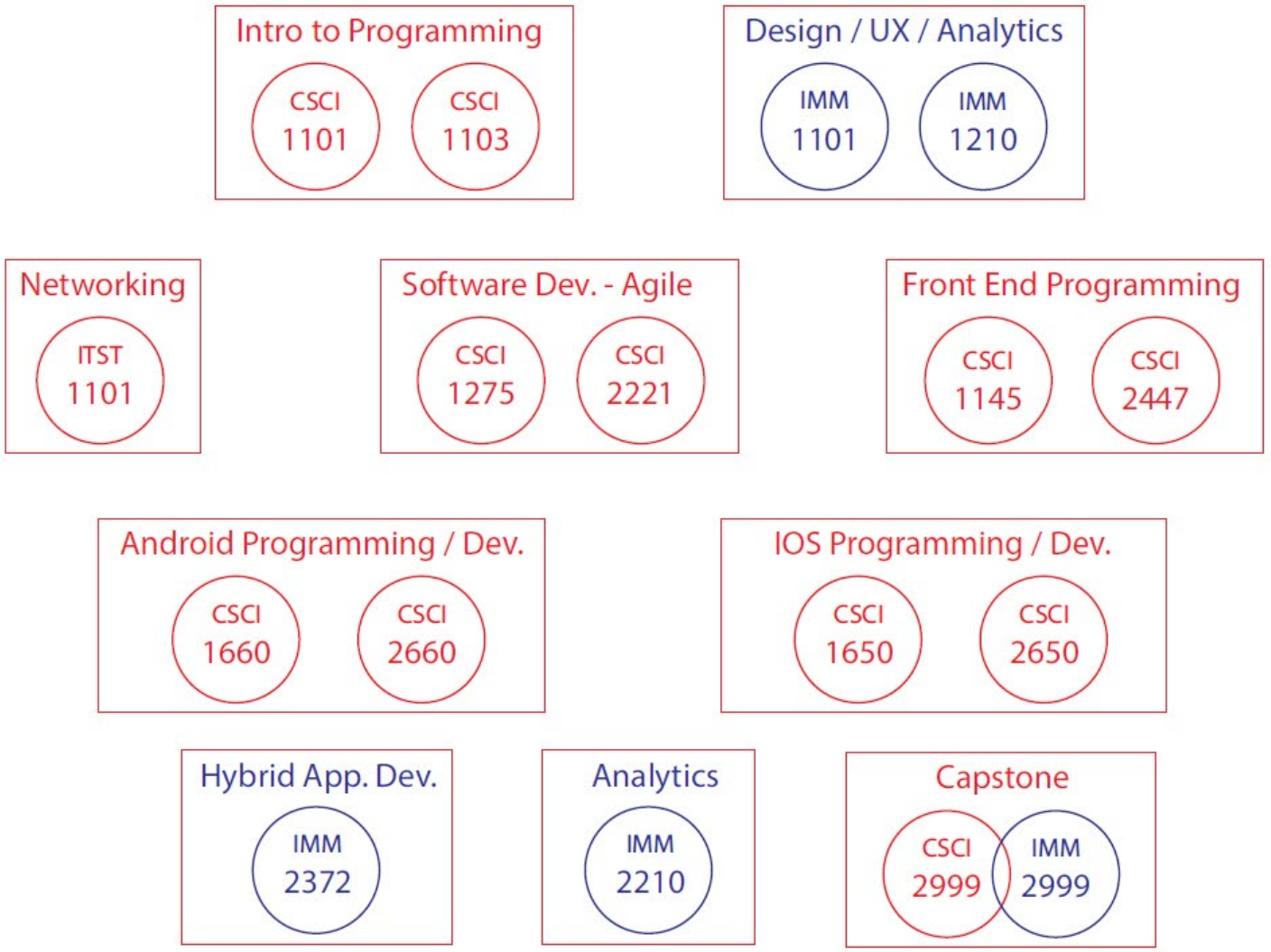
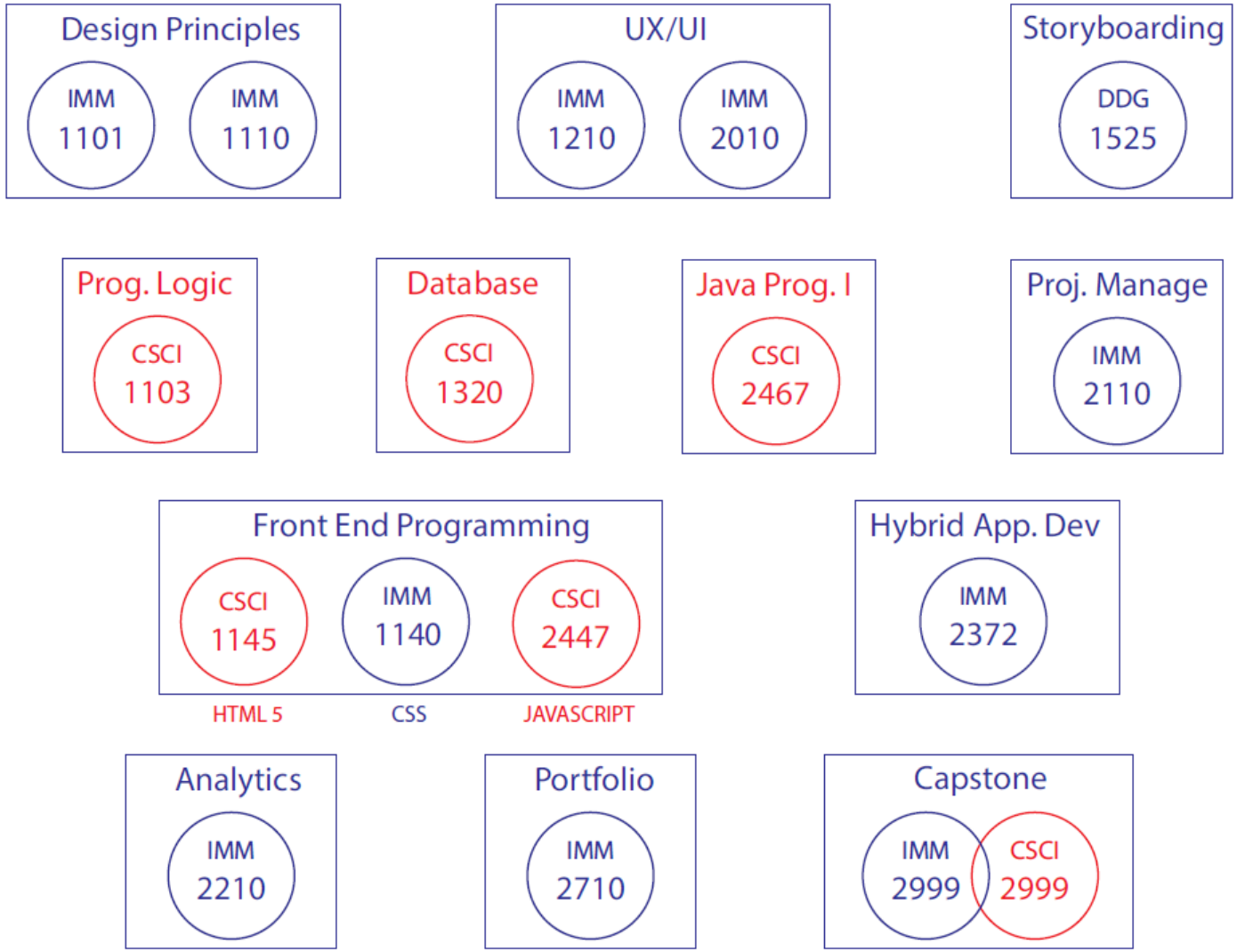
CSCI - Mobile App Development

Knowledge and Skills learned - Courses



IMM - Mobile App Design

Knowledge and Skills learned - Courses



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Mobile Device Lab Tour

Purpose of the device lab:

- Students (Designers and Developers) gain a better understanding of what users experience when they visit mobile app.
- Empower teamwork and collaboration to test own work
- Not like traditional computer labs or layouts

Main details needed to focus on in design and construction: preparations began in late 2018

1. The right space/room: size, lighting, accessibility
2. Power: Laptops and mobile devices
   The amount of plug ins were critical
3. Networking: - Wi/Fi – Accessibility
4. Collaborative environment- as a whole – for lecture/teaching as well as separate into 4 groups
5. Instructor controlled environment (monitors)
   Use of touch pad control panel

December 2019

January 2020

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February 2020

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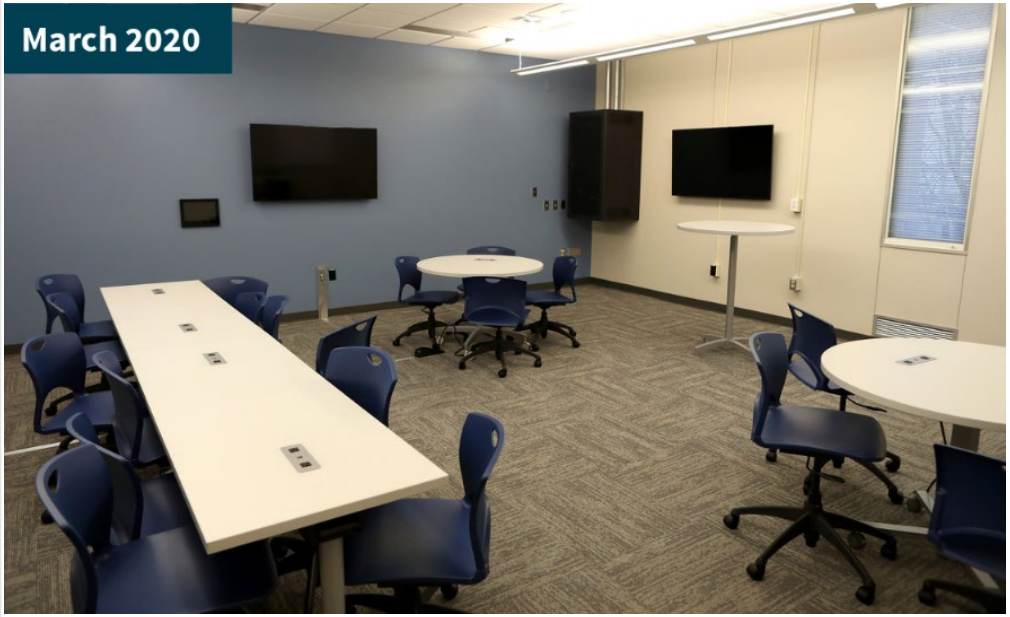
March 2020



March 2020

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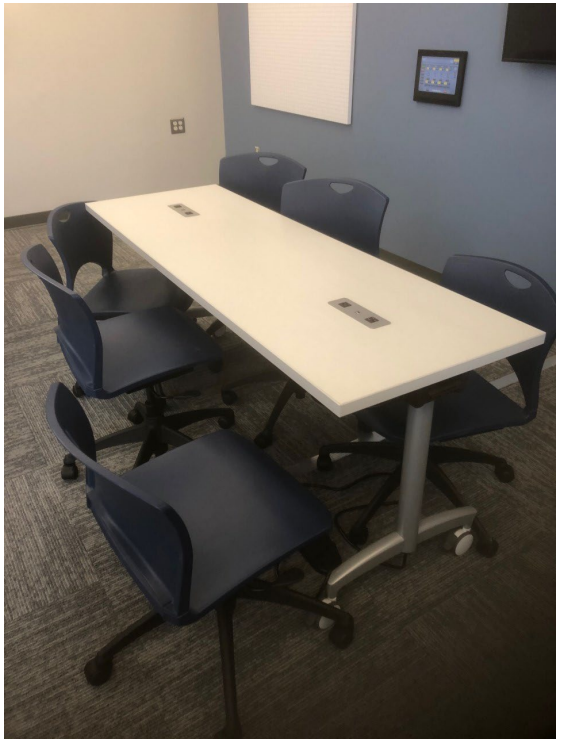
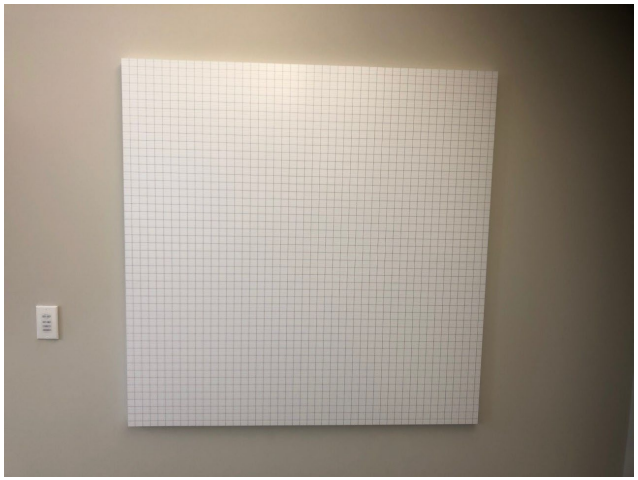
Added features to the device lab:

- Gridded whiteboards

- Dedicated control panels

- Tables with plug in capabilities





Mobile Device Lab

Lecture – 1:00pm-3:15pm

Understanding and setting up Expo

- Why are we using this tool?
- Set up your account
- Download Expo App on Phone
- Pairing up
- Getting familiar with interface – view modes
- Saving your file

Break: 3:15pm-3:30pm

Lecture – 3:30pm-5:00pm

Use of dev. Tool- Expo

- Changing state of main page
- Using CSS to alter:
- Top paragraph text
- Change background
- Component text
- Image change

End Monday session: 5:00pm

What's next?

Tuesday: Preparation for creating new Tasky app

- Build out starting from scratch
- Create entire splash page
- See you at 8:30am.