

The First Step Toward Digital Workforce Transformation: App Development with Swift

*“There is more than one next big thing – augmented reality, cognitive capabilities, digital platforms, blockchain – that redefines IT, business, and society as whole.
Everything requires mobile capabilities!” (Deloitte CIO)¹³*

ABSTRACT

Preparing our students for the digital workforce transformation is the catalyst driving our innovative curricular enhancements in our Information Systems Management Program at the Mike Ilitch School of Business. We are championing initiatives that will provide students with opportunities to enhance their mobile app development skills to meet the increased demand in the digital workforce of today and tomorrow. A key component of this initiative is our ‘*App Development with Swift*’ Course designed to enhance undergraduate and graduate student critical thinking skills, problem-solving abilities, and coding knowledge and ultimately provide students with nationally recognized digital badges.

OVERVIEW

The strategic plan of the Information Systems Management (ISM) program focuses on enhancing our ability to develop and supply workforce-ready talent that meets the needs of job providers in our area who are experiencing a “skills gap.” Key to achieving this plan is the engagement of our stakeholders who can provide insights to shape our curriculum, which in turn support the skills required to build a “*mobile digital presence toolkit*.” Consequently, Table 1 provides the results of a survey of employers to better understand the perception of the importance of various skills, the difficulty in finding talent with those skills, and understanding the competence level hiring managers require.

The survey results suggest that to remain competitive, it is imperative that businesses emphasize a mobile-first strategy. To achieve that, employers must find workers that possess the right mix of technical skills, business acumen, and innovation to create compelling mobile apps that can expand the businesses’ digital presence, and increase the demand for accessible and interactive mobile browsing.

Thus, we believe the key to the future of our Information Systems program is the unrelenting focus on the development and delivery of the ‘digital presence skills toolkit’ in support of the mobile first strategies. Further, the three key components of this “mobile digital presence toolkit” (i.e. analytics, apps, augmented reality, bots, chat, location, machine learning, and natural language query) include 1) an introduction to Swift, 2) targeted apps (e.g. maps and iBeacon), and 3) Machine Learning applications

The First Step Toward Digital Workforce Transformation: App Development with Swift

which will provide students with the foundation to understand the value of mobile applications and how to design, create, and publish them using Swift and Xcode.

Specifically, the toolkit makes use of coding – an essential skill that teaches students how to solve problems and work together in creative ways. In ‘Coding Literacy’, Vee argues coding is a literacy skill that provides new ways of thinking about technology’s role in society.²² With that in mind, we developed the *App Development with Swift* Course to help students become more effective participants in the app development process and better consumers and creators of digital content.

Benefits of the App Development with Swift Course

Businesses are implementing mobile-first strategies precipitated by the rapid growth in smart phone purchases and mobile web browsing by consumers, by the need to expand the businesses’ digital presence, and by the demand for accessible and interactive mobile browsing. It is estimated that 70% of the world’s population (~ 6.1 billion) will have a smartphone by 2020 with more than $\frac{3}{4}$ of adults in the U.S. using a smartphone. However, research highlights that the U.S. lags the rest of the world in the adoption and use of mobile technology. Thus, to remain competitive, it is imperative that businesses emphasize a mobile-first strategy. To achieve that, businesses seek future employees that possess the right mix of technical skills, business acumen, and creativity to create compelling mobile apps.

In this course, students learn about the application lifecycle, how to deal with hardware, programming devices, and a complicated Integrated Development Environment (IDE). Students gain knowledge of the Swift language as they explore fundamental building blocks including syntax, logic, structures, and functions. Continual quizzes reinforce the course material. Students learn the Apple Software Development Kit (SDK), use tools such as Xcode, Simulator, and Interface Builder, build and run iOS apps for the iPhone and iPad, and learn iOS frameworks in hands-on app development projects.¹⁸ The Certiport *App Development with Swift* Certification is used to provide those students who pass with a digital badge to use on their resumes highlighting their achievement.¹

This experiential hands-on course is a significant resume-builder for students, as businesses are

The First Step Toward Digital Workforce Transformation: App Development with Swift

implementing mobile-first strategies. Thus, students can use the tools to develop and demonstrate their competence in skills required for the world of work. Learning the fundamentals of programming will help our students become more adaptable to future disruption, allowing them to gain a deeper understanding of how computer programs work and increasing their long-term career prospects.

Marketable Skills and Higher Salaries

Salaries for Information Systems graduates are higher than other business majors (Tables 3 & 4). According to Monster.com, app development is one of the top skills job seekers can have with the Bureau of Labor Statistics projecting growth of 22% (Table 6). Indeed.com highlights that the average salary for iOS developers in various states exceeds \$90,000 (Table 4). Foote Partners states that app development skills are the 3rd most demanded skillset with Forbes stating that successful app developers be fluent in Swift. Burning Glass Technologies reports that ½ of the jobs in the top income quartile (more than \$58,000/year) are in occupations which commonly require coding skills and emphasizes that these skills are demanded of all individuals who work with data, of marketers who create websites, of engineers who build products, and of those who conduct research.¹¹ Through 2030, advanced technological skills will increase by 50% in the U.S. with the fastest rise in the need for programming skills. Yet there is also a significant need for basic digital skills in this new age of automation. What you may not know is that IBM is the largest developer of Swift apps in the world;²³ that Deloitte has a dedicated Apple practice providing businesses the expertise and resources to empower their mobile workforce with iPhones and iPads.²

Transferability: University Initiatives

The Mike Ilitch School of Business is a founding member of the AACSB/Apple initiative to explore incorporating Swift app development in the undergraduate business curriculum. These business schools collaborate on the development and evaluation of new exercises, materials, and case studies. The initiative focuses on the critical learning skills of problem solving and critical thinking as well as various methods to scaffold learning from foundational concepts to applied problem-solving using current analytics platforms that can utilize Apple's playground books for the iPad. AACSB has stated that

The First Step Toward Digital Workforce Transformation: App Development with Swift

business schools should have a high level of interaction across disciplines and should offer app prototyping as part of the core business curriculum. Meanwhile, AACSB believes having a core understanding of app development is an essential skill for future leaders across all disciplines.

The recent Philadelphia AACSB conference highlighted this transferability in the ‘Coding and App Development in Business Education’ session which focused on the role of app development in business education teaching students about aspects of the digital economy.⁵ The digital economy⁴ is at the intersection of mega trends (big data to machine learning) that are transforming business models.

CONCLUSION

The goal of this unique educational offering (Table 7) is to provide students with leading-edge, in-demand skills that match the demands of businesses. The increasing importance of skills such as technology design and programming highlight the growing demand for various forms of technology competency.¹¹ Hiring managers are seeking workers with new skills such as artificial intelligence, augmented reality, internet of things, machine learning, and mobile devices to create and retain a competitive edge.¹¹ There are substantial benefits for society, business, and students as it has been highlighted that there is a significant economic impact on the state’s economy (Table 5) and that prepared students have an opportunity to enter a rapidly growing field and develop a well-paying career (Table 6).

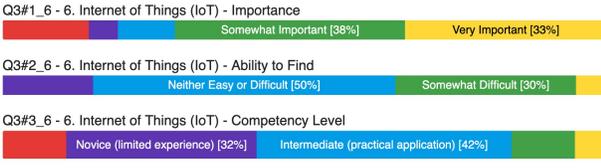
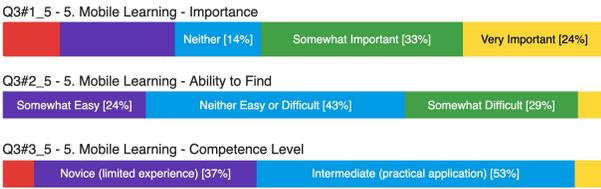
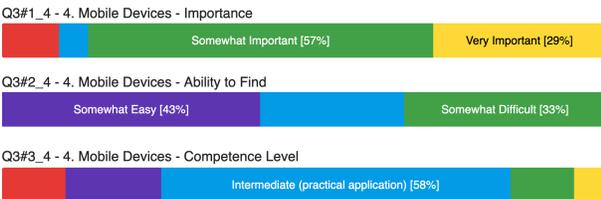
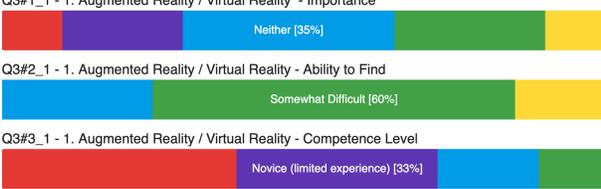
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Table 1: Skills/Competence Survey Results

<p>1. As you are evaluating job candidates, rate the (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Having knowledge on programming tools</i> 	<p>Q8#1_3 - 3. Having knowledge on programming tools - Importance </p> <p>Q8#2_3 - 3. Having knowledge on programming tools - Ability to Find </p> <p>Q8#3_3 - 3. Having knowledge on programming tools - Competence Level </p>
<p>2. As you are evaluating job candidates, rate the (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Ability to develop/program software applications</i> 	<p>Q8#1_2 - 2. Ability to develop/program software applications - Importance </p> <p>Q8#2_2 - 2. Ability to develop/program software applications - Ability to Find </p> <p>Q8#3_2 - 2. Ability to develop/program software applications - Competence Level </p>
<p>3. As you are evaluating job candidates, rate the (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Ability to interpret business problems and offer appropriate technical solutions</i> 	<p>Q7 - 1. Ability to interpret business problems & offer appropriate technical solutions - Importance </p> <p>Q7 - 1. Ability to interpret business problems & offer appropriate technical solutions - Ability to Find </p> <p>Q7 - 1. Ability to interpret business problems & offer appropriate tech solutions-Competence Level </p>
<p>4. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Machine Learning (the development of programs that can access data & use that data to learn)</i> 	<p>Q3#1_14 - 12. Machine Learning - Importance </p> <p>Q3#2_14 - 12. Machine Learning - Ability to Find </p> <p>Q3#3_14 - 12. Machine Learning - Competence Level </p>
<p>5. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Artificial Intelligence (AI) (computer systems able to perform tasks that normally require human intelligence)</i> 	<p>Q3#1_7 - 7. Artificial Intelligence (AI) - Importance </p> <p>Q3#2_7 - 7. Artificial Intelligence (AI) - Ability to Find </p> <p>Q3#3_7 - 7. Artificial Intelligence (AI) - Competence Level </p>
<p>6. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <i>Digital Presence (how your business appears online)</i> 	<p>Q3#1_8 - 8. Digital Presence - Importance </p> <p>Q3#2_8 - 8. Digital Presence - Ability to Find </p> <p>Q3#3_8 - 8. Digital Presence - Competence Level </p>

<p>7. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <u>Internet of Things (IoT)</u> (network of Internet connected objects able to collect/exchange data) 	 <p>Q3#1_6 - 6. Internet of Things (IoT) - Importance Somewhat Important [38%] Very Important [33%]</p> <p>Q3#2_6 - 6. Internet of Things (IoT) - Ability to Find Neither Easy or Difficult [50%] Somewhat Difficult [30%]</p> <p>Q3#3_6 - 6. Internet of Things (IoT) - Competence Level Novice (limited experience) [32%] Intermediate (practical application) [42%]</p>
<p>8. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <u>Mobile Learning</u> (education conducted by means of portable computing devices such as smartphones/tablets) 	 <p>Q3#1_5 - 5. Mobile Learning - Importance Neither [14%] Somewhat Important [33%] Very Important [24%]</p> <p>Q3#2_5 - 5. Mobile Learning - Ability to Find Somewhat Easy [24%] Neither Easy or Difficult [43%] Somewhat Difficult [29%]</p> <p>Q3#3_5 - 5. Mobile Learning - Competence Level Novice (limited experience) [37%] Intermediate (practical application) [53%]</p>
<p>9. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <u>Mobile Devices</u> (a portable computing device such as a smartphone) 	 <p>Q3#1_4 - 4. Mobile Devices - Importance Somewhat Important [57%] Very Important [29%]</p> <p>Q3#2_4 - 4. Mobile Devices - Ability to Find Somewhat Easy [43%] Somewhat Difficult [33%]</p> <p>Q3#3_4 - 4. Mobile Devices - Competence Level Intermediate (practical application) [58%]</p>
<p>10. These items focus on the Top 12 Information Technology trends with regard to their impact on your firm/industry. As you are evaluating job candidates ... (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <u>Augmented Reality / Virtual Reality</u> (AR/VR) (computer-generated simulations that integrate the real world or are entirely self-contained) 	 <p>Q3#1_1 - 1. Augmented Reality / Virtual Reality - Importance Neither [35%]</p> <p>Q3#2_1 - 1. Augmented Reality / Virtual Reality - Ability to Find Somewhat Difficult [60%]</p> <p>Q3#3_1 - 1. Augmented Reality / Virtual Reality - Competence Level Novice (limited experience) [33%]</p>
<p>11. These items focus on various technical skills used in your firm/industry. So, as you are evaluating job candidates ... rate the (Importance, Ability to Find, Competence Level) of these desired skills/competences</p> <ul style="list-style-type: none"> • <u>Programming / Coding</u> (such as Python, C#, Swift, HTML, Java, JavaScript, ASP.NET, CSS) 	 <p>Q2#2_3 - 3. Programming / Coding - Importance Somewhat Important [57%] Very Important [24%]</p> <p>Q2#1_3 - 3. Programming / Coding - Ability to Find Neither Easy or Difficult [29%] Somewhat Difficult [29%] Very Difficult [24%]</p> <p>Q2#3_3 - 3. Programming / Coding - Competence Level</p>

The First Step Toward Digital Workforce Transformation: App Development with Swift

Table 2: Mobile Operating System / Vendor Market Share in the USA^{8&9}

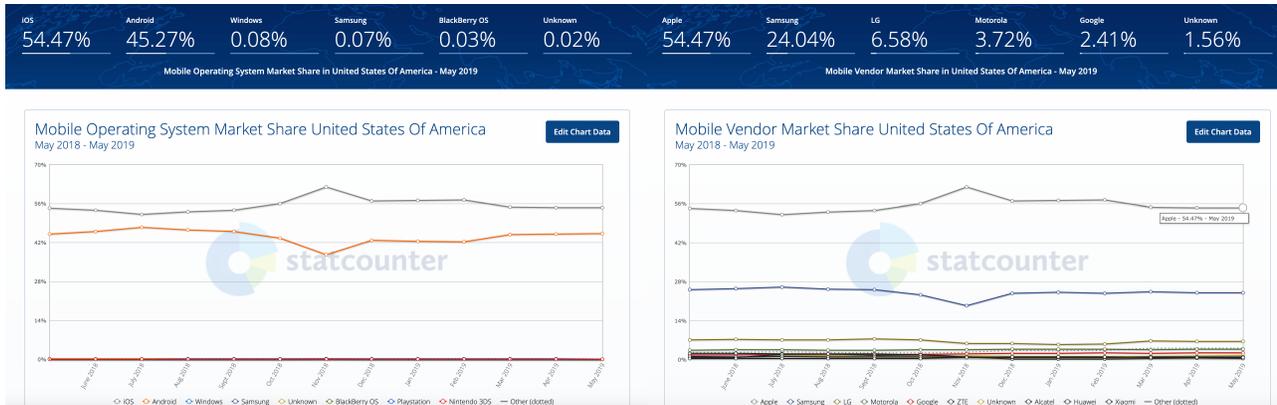


Table 3: Information System Salaries^{3&11}

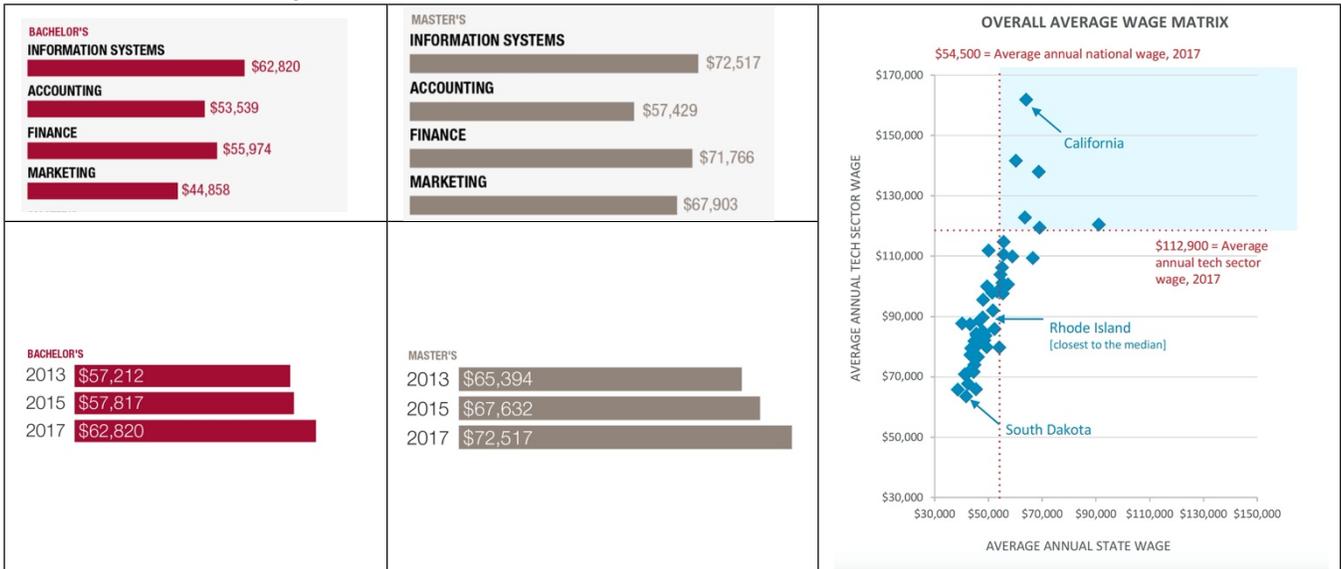
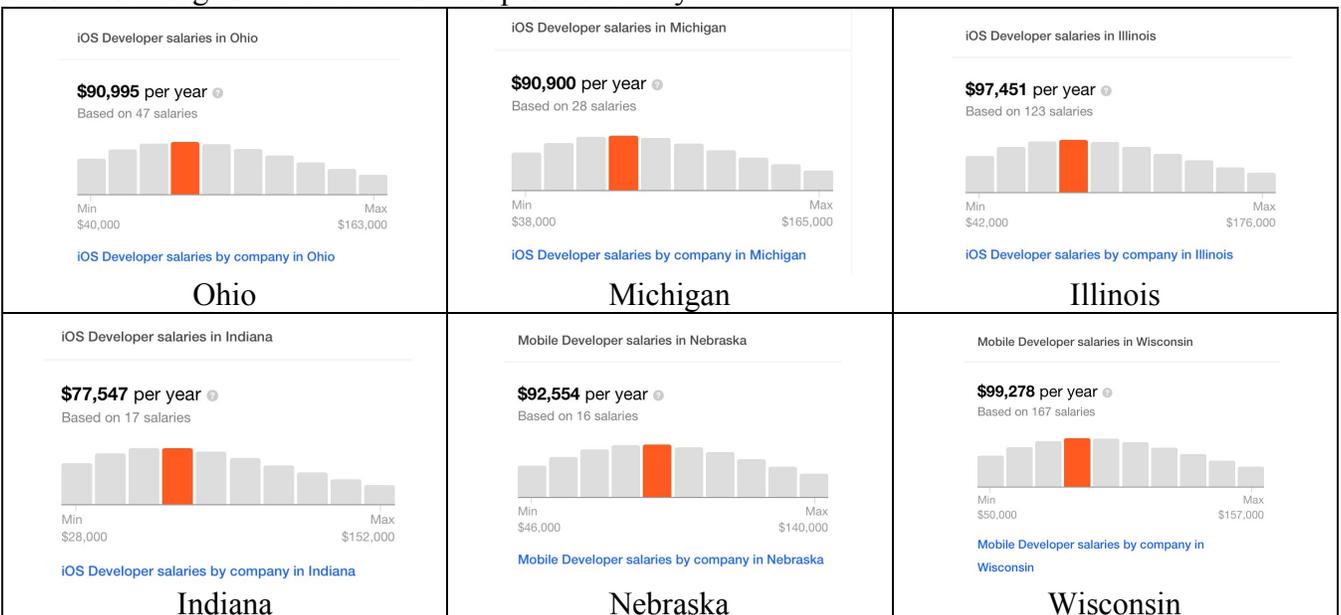


Table 4: Average Potential iOS Developer Salaries by State⁹



The First Step Toward Digital Workforce Transformation: App Development with Swift

Table 5: Economic Impact of Technology by State¹¹

<p>ECONOMIC IMPACT</p>  <p>5.8% Estimated direct contribution of the tech sector to the Ohio economy: \$34.5 billion</p> <p>Ohio</p>	<p>ECONOMIC IMPACT</p>  <p>7.8% Estimated direct contribution of the tech sector to the Michigan economy: \$37.4 billion</p> <p>Michigan</p>	<p>ECONOMIC IMPACT</p>  <p>7.3% Estimated direct contribution of the tech sector to the Illinois economy: \$55.5 billion</p> <p>Illinois</p>
<p>ECONOMIC IMPACT</p>  <p>4.9% Estimated direct contribution of the tech sector to the Indiana economy: \$16.0 billion</p> <p>Indiana</p>	<p>ECONOMIC IMPACT</p>  <p>6.4% Estimated direct contribution of the tech sector to the Nebraska economy: \$7.0 billion</p> <p>Nebraska</p>	<p>ECONOMIC IMPACT</p>  <p>7.2% Estimated direct contribution of the tech sector to the Wisconsin economy: \$21.5 billion</p> <p>Wisconsin</p>
<p>ECONOMIC IMPACT: GROSS STATE PRODUCT (GSP)</p> <p>To calculate the percent of each state's or each metropolitan area's economy that is attributable to the tech industry, regional economic accounts from the U.S. Bureau of Economic Analysis was used, which provides gross domestic product by state for many top level NAICS sectors.</p> <p>The most recent data for this indicator are for 2017, as estimated by EMSI. GDP by state is the value added in production by the labor and capital located in a state. GDP for a state is derived as the sum of the GDP originating in all industries in the state.</p>		

Table 6: Occupation Change Index¹¹

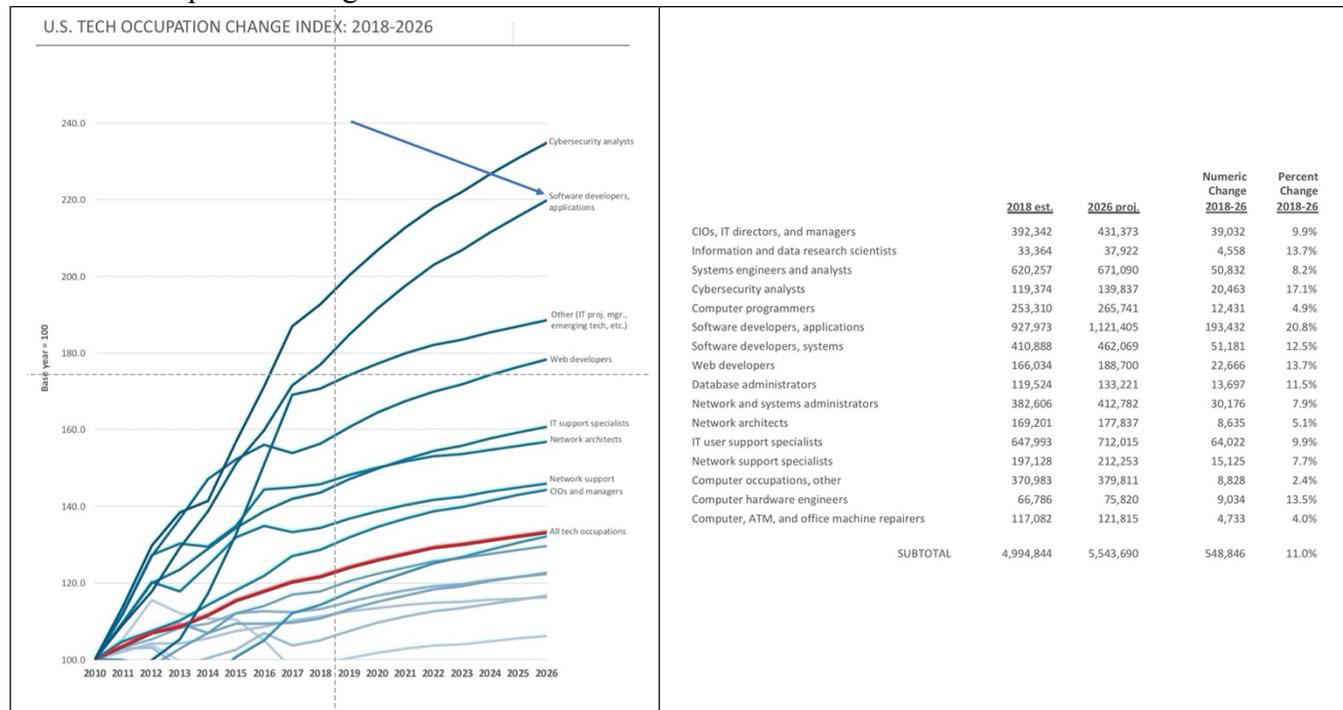


Table 7: Course Syllabus



ISM 5670 – ST: Application Development with Swift / CRN: 29207/ Section: 002
ISM 8000 – Smr: Application Development with Swift / CRN: 25021/ Section: 001
Winter 2020

INSTRUCTOR: John Heinrichs
OFFICE: Room 465, 2771 Woodward Ave.
PHONE: (313) 577-4542
EMAIL ADDRESS: ai2824@wayne.edu
COURSE DATES: 2 weekends: Fri, Sat, Sun starts ... Fri. Feb. 7 – Sun. Feb. 23
ONLINE RESOURCE: Canvas is used to store course presentations, resource material and for submission of assignments.
OFFICE HOURS: Available by appointment
SYLLABUS CHANGES: *This schedule is subject to change and will be adapted to our active learning process. Students will be informed, prior to any changes.*

REQUIRED TEXTBOOKS:
 iOS Programming: The Big Nerd Ranch Guide (6th Edition) – <https://www.bignerdranch.com/books/ios-programming-the-big-nerd-ranch-guide-sixth-edition/>
 100 Days of Swift (Free Resource) <https://www.hackingwithswift.com/100>
 100 Days of SwiftUI (Free Resource) <https://www.hackingwithswift.com/100/swiftui>
 Learn to Make Apps with SwiftUI (From Apple) <https://developer.apple.com/tutorials/swiftui/tutorials>
 Learn Swift on the Move – Unwrap (Extra Credit) <https://www.hackingwithswift.com/unwrap>
100% OPTIONAL TEXTBOOKS:
 App Development with Swift (2019) – <https://books.apple.com/us/book/app-development-with-swift/id1465002990>
 App Development with Swift Teacher Guide (2019) – <https://books.apple.com/us/book/app-development-with-swift-teacher-guide/id1465003285>

E-LEARNING INFORMATION:

This course includes online components. You need access to the internet and various computer resources:

Hardware/Software

- ☐ Access to an Apple computer (MISB Lab has multiple Apple machines)
- ☐ Access to a memory stick – backup your homework!
- ☐ Basic broadband internet connection
- ☐ Microsoft Office (available for free to WSU students)
- ☐ An updated browser such as Safari, Firefox or Chrome
- ☐ A WSU Canvas and e-Mail account |
- ☐ Ability to view online video content including Wistia, YouTube, and Adobe Flash
- ☐ Ability to view PDF files

INTRODUCTION:

“Smartphone apps have dramatically changed how individuals engage in their professional and personal lives. Apps have become the catalyst for converting a phone into a tool that can transform how a business operates, how consumers engage with products, and how supply chain efficiencies can improve.”

Before the mobile computing era, organizations only needed a website in order to promote, sell and interact with customers at a high volume and on a high-quality basis. Today, however, every enterprise needs to be mobile as the app economy is at the intersection of several mega trends, from augmented reality to machine learning, which are redefining industries and opening new career pathways.

Mobile is quickly overtaking desktop computing, not only in terms of mainstream usage, but also within the enterprise. By 2020, it is forecasted that 70% of the world’s population will have a smart phone (~6.1



billion). Today, more than three-fourths of American adults now use a smartphone and an increasing number of employees and customers are expecting to interface with organizations using mobile technology. As organizations scramble to meet this demand, they are looking for employees with the right mix of technical skills, business acumen, and creativity to bring compelling mobile applications to the market. Mobile applications need to be intuitive, secure, and take advantage of the latest mobile hardware, software, and wireless network technologies.

COURSE DESCRIPTION & OBJECTIVES

This course will establish a foundation for understanding the value of mobile applications in the enterprise and how to design, create, and publish mobile applications for the Apple iOS using Swift and Xcode. These tools allow you to quickly develop a mobile application so you can focus your energy on your design.

Learning Objectives:

- Knowledge of Swift
 - Discover, explore, & demonstrate how to use the fundamental building blocks of Swift.
 - Learn the basic concepts of Swift programming including syntax, logic, structures, and functions.
- Knowledge of App Development
 - Learn the basics of the Apple Software Development Kit (SDK).
 - Explore / use developer tools such as Xcode, Simulator, and Interface Builder.
 - Learn how to build and run iOS apps using Swift.
 - Explore / learn common tools, technologies, & interface elements used to build iOS apps.
 - Learn the skills needed to build iOS apps for iPhone and iPad.
 - Learn to use common iOS frameworks for hands-on app projects.

CANVAS:

Canvas is the main platform for all the activities in the course that happen outside of the classroom. The WSU Canvas website (<http://canvas.wayne.edu>) contains all information for the course, including presentations, assignments, and a summary of your grades. It is also important for you to visit the course site frequently for important announcements. Canvas training options are at ...

<https://canvasproject.wayne.edu/resources>

Periodically during class:

- **Check on your progress:** Throughout the course, I will post your grades on assignments using the Gradebook function in Canvas. You should check your grades and assess your progress in the class.
- Your WSU email account is your email address for all official email communications for this course. You are expected to check Canvas and your WSU email account on a frequent and consistent basis in order to stay current with course-related information.
- Don't forget to download the Canvas Student mobile app!

ASSESSMENTS:

The assignments are designed to help reinforce the topics discussed, and prepare you to make your own iOS mobile applications.



Extra Credit – 10%

Complete Unwrap. Earn 20 badges.

Participation – 10%

Participation in Quizzes / Projects – 10 times @ 10 pts.

Swift Quizzes – 30%

There are multiple quizzes for Swift. Simple Types (8); Complex Types (11); Operators (10); Looping (8); Functions (11); Closures (12); Structs (13); Classes (8); Protocols (6); Optionals (11);

Mobile Application Project – 60%

We will complete 5 mobile application assignments.

UIKit: Quiz (50 pts); Loot Logger (150 pts); Globe Trotter (150 pts);

SwiftUI: We Split (100 pts); Flags (100 pts); Better Rest (150 pts)

We will work together during class to build each mobile application.

MAKE-UP POLICY:

There will be no make-up assignments without prior written approval.

CERTIFICATION:

App Development with Swift Certification Level 1

<https://certiport.pearsonvue.com/Certifications/Apple/App-Dev-With-Swift/Overview>

COURSE POINTS:

Your performance in this course will be assessed as follows:

Assessments	ISM 5670	ISM 8000	Graduate:		Undergraduate:	
			Score Range	Grade	Score Range	Grade
1. Quizzes	300	300	95.0 – 100	= A	95.0 – 100	= A
2. Participation	100	100	89.0 – 94.9	= A-	89.0 – 94.9	= A-
3. Projects – UIKit	350	350	85.0 – 88.9	= B+	85.0 – 88.9	= B+
4. Projects – SwiftUI	200	350	82.0 – 84.9	= B	82.0 – 84.9	= B
Total Points	950	1,100	78.0 – 81.9	= B-	78.0 – 81.9	= B-
			75.0 – 77.9	= C+	75.0 – 77.9	= C+
			70.0 – 74.9	= C	70.0 – 74.9	= C
			65.0 – 69.9	= C-	65.0 – 69.9	= C-
					60.0 – 64.9	= D+
					55.0 – 59.9	= D
					below 55.0	= F



APPLE DEVELOPER ACCOUNT

Developer.apple.com
Select "Account"
Create Apple ID

STATEMENT REGARDING PROFESSIONAL CONDUCT:

Wayne State University students are expected to conduct themselves in a manner that is conducive to continued growth toward a business and/or professional career. Each student is expected to access the class content regularly and stay up to date. All students are expected to act professionally and with a high degree of ethical conduct while applying themselves fully to the job of learning. All communications are expected to be conducted in a professional manner, whether written or oral.

It is the student's obligation to know and observe all University policies and procedures and to keep current by reading the materials posted on the Wayne State University website and in its printed policies and bulletins.

STATEMENT REGARDING ACADEMIC MISCONDUCT:

Plagiarism, unauthorized collusion on examinations, theft, sale, purchase or other unauthorized procurement of examinations or essay material, use of unauthorized aids while taking an examination, having someone else take an exam in your place or submitting for credit any paper not written by the student, taking an exam for another student, copying of "do not copy" designated library materials, copying copyrighted software and destruction of equipment by introducing a computer virus and other similar actions are considered to be academic misconduct and unacceptable for students enrolled at Wayne State University.

STATEMENT REGARDING DIVERSITY:

This course embraces the diversity of our students by providing an environment that is supportive, safe and welcoming. We will listen respectfully to a diversity of ideas, beliefs and cultures presented by the members of the class.

STATEMENT REGARDING STUDENT DISABILITY SERVICES:

"If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TTY: telecommunication device for the deaf; phone for hearing impaired students only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs."

"Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University."

You can learn more about the disability office at www.studentdisability.wayne.edu. To register with Student Disability Services, complete the online registration form at: https://wayne-accommodate.symplicity.com/public_accommodation/.

STATEMENT REGARDING RELIGIOUS OBSERVANCE POLICY:

Because of the extraordinary variety of religious affiliations represented in the University student body and staff, the Wayne State University calendar makes no provision for religious holidays. It is University policy, however, to respect the faith and religious obligations of the individual. Students who find that



their classes or examinations involve conflicts with their religious observances are expected to notify their instructors well in advance so that alternative arrangements as suitable as possible may be worked out.

POLICY ON WITHDRAWALS:

In the first two weeks of the (full) term, students can drop this class and receive tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on ~~Academica~~. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: <https://reg.wayne.edu/students/information#dropping>.

STATEMENT REGARDING CAMPUS HEALTH CENTER:

- Healthcare and Illness Documentation on Campus
- The Campus Health Center is a full-service primary clinic on main campus specifically for the WSU community. Call or visit CHC to make an appointment: 5285 Anthony Wayne Drive; 313-577-5041; www.health.wayne.edu. If you need medical documentation for a course, you must be seen by a provider while sick.
More information: <https://health.wayne.edu/patient-resources/>

COUNSELING AND PSYCHOLOGICAL SERVICES (CAPS):

It is quite common for college students to experience mental health challenges, such as stress, anxiety and depression, that interfere with academic performance and negatively impact daily life. Help is available for any currently enrolled WSU student who is struggling with a mental health difficulty, at WSU Counseling and Psychological Services (caps.wayne.edu; 313 577-3398). Other options, for students and nonstudents, include the Counseling and Testing Center, and the Counseling Psychology Training Clinic, in the WSU College of Education (<http://coe.wayne.edu/tbf/counseling/center-index.php>). Services at all three clinics are free and confidential. Remember that getting help, before stress reaches a crisis point, is a smart and courageous thing to do – for yourself, and for those you care about. Also, know that the WSU Police Department (313 577-2222) has personnel trained to respond sensitively to mental health emergencies at all hours.

CLASS RECORDINGS:

Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student's personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.

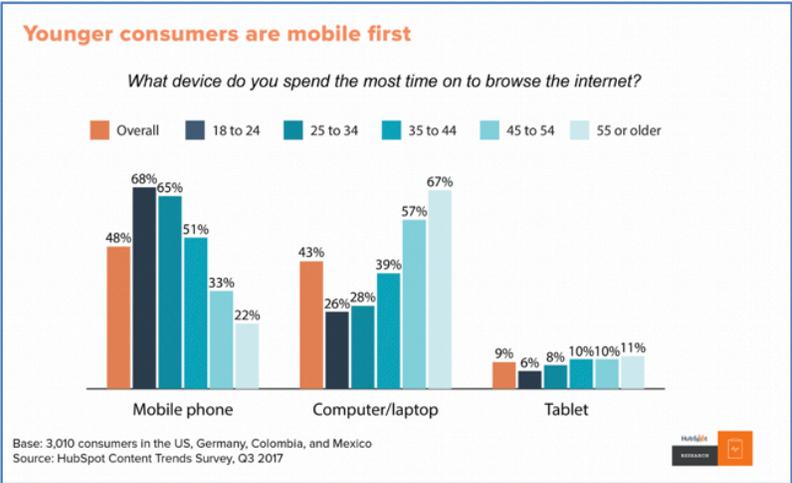
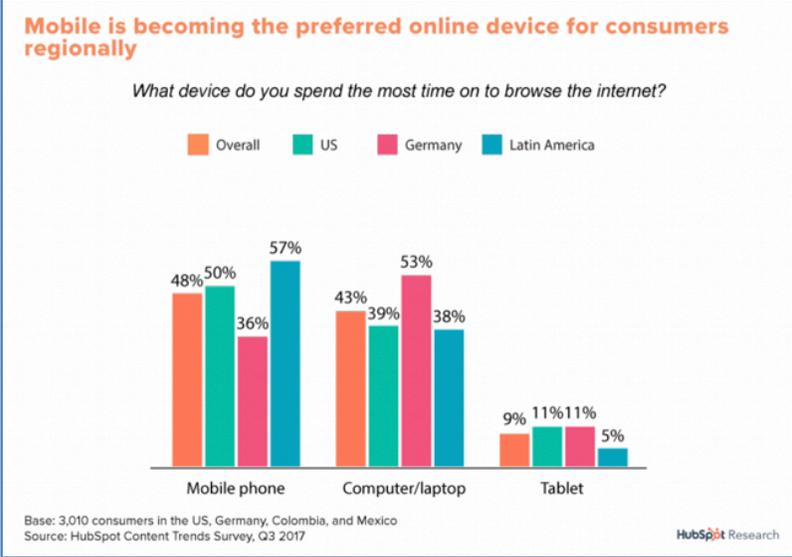
LIBRARY SERVICES:

Working on a research assignment, paper or project? Trying to figure out how to collect, organize and cite your sources? Wayne State librarians provide on campus or online personalized help. Contact them at: https://library.wayne.edu/forms/consultation_request.php

CONCLUDING COMMENTS

This is an *active learning* class; we will perform a **hands-on assignment during every class**. Attending each class period is important because the information gained is used in future classes. Effective communication is a key factor for a successful learning experience. Please feel free to contact me at any time with your questions and concerns. I check for messages multiple times each day throughout the semester.

Please make sure you add **ISM 5670/8000 Winter 2020** to the subject line of your email. You should expect a reply within 48 hours. If I don't respond within 48 hours, that means I did NOT receive your email, so please resend you message. I look forward to working with you this semester and wish you all the best for an enjoyable learning experience.



WEEKLY TOPIC AND ASSIGNMENT SCHEDULE

Week	Date	Class Content	Homework
1	Fri. 2/7	Review of syllabus Overview of the books / websites Overview of Swift / Overview of Xcode <u>App Creation</u> – Playgrounds <u>Swift 1</u> : Variables, Simple Data Types, & String Interpolation (8) <u>Swift 2</u> : Arrays, Dictionaries, Sets & Enums (11)	<u>Read</u> : • Syllabus <u>Complete Quizzes</u> : • Simple Types • Complex Types
	Sat. AM 2/8	<u>Swift 3</u> : Operators and Conditions (10) <u>Swift 4</u> : Loops (11) <u>Swift 5</u> : Functions, Parameters, & Errors (10) <u>Swift 6</u> : Closures – Part 1 (11)	<u>Complete Quizzes</u> : • Operators / Conditions • Looping • Functions
	Sat. PM 2/8	<u>Swift 7</u> : Closures – Part 2 (10) <u>Swift 8</u> : Structs, Properties, & Methods (11) <u>Swift 9</u> : Access Control, Static Properties, and Laziness (10) <u>Swift 10</u> : Classes and Inheritance (11)	<u>Complete Quizzes</u> : • Closures • Structs • Classes
	Sun. AM 2/9	<u>Swift 11</u> : Protocols, Extensions, & Protocol Extensions (10) <u>Swift 12</u> : Optionals, Unwrapping, & Typecasting (11)	<u>Complete Quizzes</u> : • Protocols • Optionals
	Sun. PM 2/9	<u>App Creation</u> – Quiz / We Split • Chapter 1 – A Simple iOS Application • Project 1 – We Split	<u>Complete App</u> : • Quiz • We Split
	Sun. PM 2/23	Final Submission of Swift Quizzes / Quiz App • <u>Swift Quizzes</u> : • <u>UIKit App</u> : Quiz • <u>SwiftUI App</u> : We Split	
2	Fri. 2/21	<u>App Creation</u> – GlobeTrotter • Chapter 3 – Views and View Hierarchy • Chapter 4 – View Controllers • Chapter 5 – Programmatic Views • Chapter 6 – Text Input and Delegation	
	Sat. AM 2/22	<u>App Creation</u> – LootLogger, Part 1 • Chapter 9 – UITableView and UITableViewController • Chapter 10 – Subclassing UITableViewCell • Chapter 11 – Stack Views • Chapter 12 – Navigation Controllers	<u>Complete App</u> : • Globe Trotter
	Sat. PM 2/22	<u>App Creation</u> – LootLogger, Part 2 • Chapter 13 – Saving, Loading, and Application States • Chapter 14 – Presenting View Controllers • Chapter 15 – Camera • Chapter 16 – Size Classes	<u>Complete App</u> : • Loot Logger
	Sun. AM 2/23	<u>App Creation</u> – UIKit • Project 2 – HackingWithSwift – Flags • Project 3 – HackingWithSwift – Views and Modifiers	<u>Complete App</u> : • Flags
	Sun. PM 2/23	<u>App Creation</u> – Machine Learning • YouTube – Create ML for Everyone • Project 4 – Better Rest	<u>Complete App</u> : • Better Rest
—	Sun. PM 03/15	Final Submission of Apps • <u>UIKit</u> : GlobeTrotter, LootLogger • <u>SwiftUI</u> : Flags, Better Rest	



HubSpot Blog

- <https://blog.hubspot.com/marketing/augmented-reality-books>
- <https://blog.hubspot.com/marketing/augmented-reality-iphone-apple>
- <https://blog.hubspot.com/marketing/augmented-reality-examples>

How much does an iOS Developer make in the United States?

- The average salary for an iOS Developer is \$112,129 per year in the US.
 - The typical tenure for an iOS Developer is less than 1 year.
- <https://www.indeed.com/salaries/iOS-Developer-Salaries>
<https://github.com/uraimo/Awesome-Swift-Playgrounds>

WWDC 2019

- <https://github.com/wwdc/2019>
- <https://www.wwdcsholars.com>

Medium

- Top 7 Modern programming languages to learn now
<https://towardsdatascience.com/top-7-modern-programming-language-to-learn-now-156863bd1ecc>
- How I'm working to overcome my struggles as a junior developer
<https://medium.com/free-code-camp/how-im-working-to-overcome-my-struggles-as-a-junior-developer-a6ab18ac29b2>
- 50 iOS Interview Questions And Answers
<https://medium.com/@duruldalkanat/ios-interview-questions-13840247a57a>

SwiftUI (<https://www.youtube.com/playlist?list=PLuoeXyslFTuZRi4q4VT6lZKxYbr7so1Mr>)

Project 1 – Check Splitter – About 45 minutes

Overview - - <https://www.hackingwithswift.com/100/swiftui/16>

1. Basic Structure - 5:09
2. Creating a Form - 2:40
3. Navigation Bar - 3:17
4. Modifying Program State - 4:42 -- @State
5. Binding State to User Interface Controls - 3:26 - Binding \$
6. Creating Views in a Loop - 3:43 - ForEach

Project – CheckSplitter - <https://www.hackingwithswift.com/100/swiftui/17>

7. Reading Text from the User with TextField - 5:53
8. Creating Pickers in a Form - 4:24
9. Adding a Segmented Control - 3:27
10. Calculating Total - 7:37

Project 2 – Flags – About 25 minutes

Overview – Part 1 – <https://www.hackingwithswift.com/100/swiftui/20>

1. Guess the Flag: Introduction
2. Using stacks to arrange views - 3:29
3. Colors and frames - 4:09
4. Gradients - 2:19
5. Buttons and images - 2:41
6. Showing alert messages - 3:09

Part 2 – <https://www.hackingwithswift.com/100/swiftui/21>

7. Stacking up buttons - 4:42
8. Showing the player's score with an alert - 3:51
9. Styling our flags - 3:13

Part 2 – <https://www.hackingwithswift.com/100/swiftui/22>

10. Wrap Up
11. Review



Project 3 – Views and Modifiers – About 45 minutes

Overview -- <https://www.hackingwithswift.com/100/swiftui/23>

1. Views and modifiers: Introduction – 3:25
2. Why does SwiftUI use structs for views?
3. What is behind the main SwiftUI view? – 2:11
4. Why modifier order matters – 4:04
5. Why does SwiftUI use “some View” for its view type? – 3:39
6. Conditional modifiers – 2:05
7. Environment modifiers – 1:47
8. Views as properties – 1:31
9. View composition – 1:40
10. Custom modifiers – 2:58
11. Custom containers – 3:54

Part 2: <https://www.hackingwithswift.com/100/swiftui/24>

12. Views and modifiers: Wrap up
13. Review for Project 3: Views and Modifiers

Project 4 – Better Rest – About 45 minutes

Overview -- <https://www.hackingwithswift.com/100/swiftui/26>

1. Introduction - ~~x:xx~~
2. Entering Numbers with Stepper – 3:41
3. Selecting Dates and Times with DatePicker – 4:00
4. Working with Dates – 5:48
5. Training a Model with CreateML – 8:39
6. Building a Basic Layout – 6:26
7. Connecting SwiftUI to CoreML – 8:45
8. Cleaning up the User Interface – 4:10

Create ML for Everyone – About 45 minutes

<https://www.youtube.com/watch?v=a905KIBw1hs&t=336s>

The Complete Guide to iOS and Swift Job Interviews

<https://www.hackingwithswift.com/articles/157/the-complete-guide-to-ios-and-swift-job-interviews>

Machine Learning

- <https://developer.apple.com/machine-learning/models/>
- <https://developer.apple.com/videos/frameworks/machine-learning-and-vision>
 - <https://developer.apple.com/videos/play/wwdc2019/209/>
 - <https://github.com/apple/turicreate/blob/master/userguide/README.md>
- <https://www.iowncode.com/ios-vision-animal-classifier-cat-vs-dog/>
- <https://www.iowncode.com/natural-language-framework-text-classifier-movie-reviews-create-ml/>