

Third Year of Engineering (Semester V)

iPhone Application Development

| Teaching Scheme | Credit | Examination Scheme |
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| Theory : 2 Hrs/week Laboratory: 4 Hrs/week | Theory: 02 Practical:04 | End_Sem: 100 |

Course Objectives:

1. To learn and understand the MVC Design pattern in Swift Language
2. Understanding the Parsing JSON data, SQLite databases in Swift.
3. To learn concept of Data Persistence.
4. To provide knowledge of Introduction to machine learning CoreML .

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1. Identify and understand the MVC Design pattern used in Swift programming Language.
CO2. Proficient in using the Parsing JSON data, SQLite databases of Swift, to develop program.
CO3. Apply the Knowledge Data Persistence for iOS App development.
CO4. Understand the fundamentals of machine learning CoreML and be able to apply it in iOS app development.

| Course Contents | | |
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| Unit I | iPhone Application Development | 08 Hours |

Understand the MVC Design pattern, MVC in XCode, Using Application Templates, User Input and Output: Handling Keyboard Input, Implementing Alert, Sounds and Vibrations, Using XCode debugger.

| Unit II | Database Management and Web Services | 08 Hours |
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Parsing JSON data, Parsing XML data, SQLite databases, Web Service APIs calls

| Unit III | Data Persistence | 07 Hours |
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File System, SQLite, NSUserDefaults

Concurrency and Background Execution: GCD and Closures, NSOperation and NSOperation Queue, Background execution

| Unit IV | Machine Learning on iOS | 07 Hours |
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Introduction to machine learning CoreML - Using pre-trained machine learning models for image recognition Using IBM Watson Bluemix and Carthage for intelligent iOS apps Advanced CoreML - Converting a model from Caffe to MLModel CreateML - Creating your own image recognition model Advanced CreateML - Create a Twitter sentiment analysis machine learning model using natural language processing (NLP) tools from CreateML.

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| Unit V | Augmented Reality on iOS and ARKIT | 07 Hours |
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Introduction to augmented reality, ARKit and SceneKit, Creating 3D objects and text in AR Animations in AR Plane detection Measuring real world distances in AR Image recognition and tracking in AR Rendering 3D models on tracked images Playing videos in real world tracked images

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| Unit VI | Publishing to App Store | 07 Hours |
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Familiarising with App Store, Connect How to write the app listing, Apple TestFlight, Submitting your app for review

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| Learning Resources |
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Text Books:

1. Matthew Mathias, John Gallagher, Swift Programming: The Big Nerd Ranch Guide 2nd edition, 2015.
2. Matt Neuberg , iOS 12 Programming Fundamentals with Swift, O'Reilly; 5th edition.
3. App Development with Swift (as available on iBook Store)
4. Beginning ARKit for iPhone and iPad: Augmented Reality App Development for iOS, Wallace Wang, Springer India
5. Beginning Machine Learning In Ios Coreml Framework,Thakkar, Springer India
6. Machine Learning for iOS Developers, Abhishek Mishra, Wiley

Reference Books:

1. Paris Buttfield-Addison, Jonathon Manning , Tim Nugent Learning Swift: Building Apps for macOS, iOS, and Beyond, O'Reilly Media, Inc., 3rd ed, 2018.
2. Jon Hoffman, Mastering Swift 4, Packt Publishing Limited ,4 thedition,2017.
3. Vandad Nahavandipoor. iOS 11 Swift Programming Cookbook, O'Reilly Media, 2017
4. S. Yamacli, Beginner's Guide to iOS 11 App Development Using Swift 4: Xcode, Swift and App Design Fundamentals,(1e), USA: CreateSpace Independent Publishing Platform, 2017.

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| Swift Laboratory |
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Group A:

- 1.Guided Project: **Habits**
- 2.Guided Project: **Restaurants**

Group B:

1. Develop Weather Forecasting App using iOS
2. Develop student information system app for college using iOS
3. Develop Financial App using iOS
4. Create an iOS Question AnswerApp
5. Create a Calculator App using Ios

Group C:

- 1.Design ios app based on CoreML
2. Design ios home decore app based on AR model