

M.Sc. (I.T.) 8th Semester**Course: 801: Java Web Development**

Course Code	801																								
Course Title	Java Web Development																								
Credit	4																								
Teaching per Week	4 Hrs																								
Minimum weeks per Semester	15 (Including Classwork, examination, preparation, holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	This course helps students to get an idea about how to use Java in Web Programming																								
Course Objective	The objective of the course is to make them understand and implement the Web Oriented Project Development Model of Java																								
Course Outcomes	<p>CO1 : Students will be able to learn about Java architecture and different frameworks.</p> <p>CO2 : Students will be able to learn about Java design patterns.</p> <p>CO3 : Students will be able to learn about Java security with authentication and authorization.</p>																								
Mapping between COs with PSOs	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
	PSO1	PSO2	PSO3	PSO4	PSO5																				
CO1																									
CO2																									
CO3																									
Pre-requisite	Understanding of OOPS concept and its implementation by Java Language																								
Course Outcome	Students will be able to develop Web Application in Java																								

12/11/2021
D.S. Srinivas

Course : IT 801 : Java Web Development

Course Code	801
Course Title	Java Web Development
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	This course helps students to get an idea about how to use Java in Web Programming
Course Objective	The objective of the course is to make them understand and implement the Web Oriented Project Development Model of Java
Pre-requisite	Understanding of OOPS concept and its implementation by Java Language
Course Out come	Students will be able to develop Web Application in Java
Course Content	<p>Unit 1: JAVA Web Architecture</p> <ul style="list-style-type: none"> 1.1 The Java Advantage for Web 1.2 Java Editions, Java Enterprise Edition 1.3 Java EE Web Architecture 1.4 Java Web Application Servers 1.5 Installing and Configuring Payara Application Server 1.6 Java EE APIs for building Web Applications 1.7 IDEs for Enterprise Application Development <p>Unit 2 JAVA Servlets</p> <ul style="list-style-type: none"> 2.1 Introduction to Java Servlets 2.2 The Java Servlet API 2.3 Servlet Life Cycle 2.4 Request and Response 2.5 Dispatching and forwarding the request 2.6 Getting Values from Forms and QueryStrings 2.7 Working with HTTP Headers 2.8 Cookies 2.9 Hidden Form Field 2.10 URL Rewriting 2.11 Session 2.12 ServletConfig and ServletContext 2.13 Attribute in Servlet 2.14 Servlet Filters 2.15 Servlet Web Listeners 2.16 Working with Databases 2.17 Configuring Deployment Descriptor(web.xml) 2.18 Asynchronous Servlets 2.19 Server Push 2.20 Web sockets <p>UNIT- 3 JAVA SERVER PAGES, JSTL AND EL</p> <ul style="list-style-type: none"> 3.1 Introduction to Java Server Pages(JSP) 3.2 Lifecycle of JSP 3.3 JSP Scripting Elements 3.4 Implicit Objects 3.5 JSP Directive Elements 3.6 Action Elements 3.7 Working with Java Beans 3.8 JSP Form Processing, Form Validation with Java Bean 3.9 JSP Custom Tags 3.10 State Management 3.11 Working with AJAX



	3.12 Working with Web Sockets 3.13 EL - Expression Language 3.14 Introduction to JSTL 3.15 Internationalization and Localization with fmt tag 3.16 Working with XML with JSTL 3.17 Working with Databases with JSTL/FI Unit 4 : JAVA Web Application Frameworks 4.1 Component Based Framework – JAVA SERVER FACES 4.1.1 Introduction to JSF 4.1.2 Request Processing Lifecycle 4.1.3 JSF Managed Beans 4.1.4 JSF UI Components 4.1.5 JSF Validators and Converters 4.1.6 Event Handling 4.1.7 Composite Components 4.1.8 Templating in JSF 4.1.9 Working with databases 4.1.10 Working with primefaces 4.2 Action Based Framework – SPRING 4.2.1 Introduction to Spring 4.2.2 Lifecycle of Spring MVC 4.2.3 DispatcherServlet 4.2.4 Multiple Controllers 4.2.5 Working with databases 4.2.6 Spring Boot Unit 5 - JAVA Web Security 5.1 The Need of certificates Web Security 5.2 Realm, Users, Group and Roles 5.3 Basic Authentication 5.4 Form Based Authentication 5.5 Protecting Your Resources with Authorization 5.6 Java API for Authentication and Security – JAAS 5.7 Using SSL Certificates in Web Application
Reference Book	1. JDBC 4.2, Servlet 3.1, and JSP 2.3 Includes JSF 2.2 and Design Patterns, Black Book, 2ed - Santosh Kumar, Dreamtech Press 2. Servlet & JSP: A Beginner's Tutorial - Budi Kurniawan, Brainy Software 3. The Definitive Guide to JSF in Java EE 8: Building Web Applications with JavaServer Faces - Bauke Scholtz, Arjan Tijms – Apress 4. Mastering JavaServer Faces 2.2 - Anghel Leonard - Packt Publishing 5. Spring in Action 4ed - Craig Walls – Manning 6. Getting Started With Spring Framework: A Hands-on Guide to Begin Developing Applications Using Spring Framework - Ashish Sarin, J Sharma - Createspace Independent Pub 7. Spring 5 Design Patterns - Dinesh Rajput – Packt 8. Learning Spring Boot 2.0 - Greg L. Turnquist - Packt
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

P.D. Datta

M.Sc. (I.T.) 8th Semester**Course: 802: Enterprise Java**

Course Code	802																								
Course Title	Enterprise Java																								
Credit	4																								
Teaching per Week	4 Hrs																								
Minimum weeks per Semester	15 (Including Classwork, examination, preparation, holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	This course helps students to understand and develop large scale enterprise , distributed and scalable applications using Java																								
Course Objective	The objective of the course is to provide in depth knowledge of all JAVA API which contribute to the development of high performing , secure , distributed and scalable applications in line with the current trends in the software industry																								
Course Outcomes	<p>CO1 : Students will be able to learn about enterprise business logic, enterprise security and database persistence.</p> <p>CO2 : Students will be able to learn about concepts of web services, REST services and REST patterns.</p> <p>CO3 : Students will be able to learn about enterprise java security with SSL certificates, securing REST services with authentication and SSL.</p>																								
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CO2																									
CO3																									
Pre-requisite	Knowledge of Java Language and Web Application concepts																								
Course Outcome	Students will be able to develop large scale and distributed applications in Java																								

P. V. Desai

Course : IT 802 : Enterprise Java

Course Code	IT 802
Course Title	Enterprise Java
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	This course helps students to understand and develop large scale enterprise , distributed and scalable applications using Java
Course Objective	The objective of the course is to provide in depth knowledge of all JAVA API which contribute to the development of high performing , secure , distributed and scalable applications in line with the current trends in the software industry
Pre-requisite	Knowledge of Java Language and Web Application concepts
Course Out come	Students will be able to develop large scale and distributed applications in Java
Course Content	<p>Unit 1 - JAVA EE and EJB</p> <ul style="list-style-type: none"> 1.1 Layered model architectures – principles and goals 1.2 Java EE definition and characteristics 1.3 Java EE technologies in a multi-tier architecture 1.4 Stateless Session Bean 1.5 Stateful Session Bean 1.6 Binding and looking up objects 1.7 Singleton Beans 1.8 Local and Remote Lookups 1.9 Timers and Schedulers 1.10 Asynchronous Beans <p>Unit-2 JAVA Messaging Services</p> <ul style="list-style-type: none"> 2.1 JMS Architecture 2.2 Queue And Topic Messages 2.3 Message Driven Beans Life Cycle 2.4 JMS Producers and Consumers 2.5 Creating Client for MDB <p>Unit 3 – ORM With JAVA Persistence</p> <ul style="list-style-type: none"> 3.1 JPA overview 3.2 JPA architecture 3.3 ORM with Entities 3.4 JPA Annotations 3.5 One to One 3.6 One to Many 3.7 Many to Many Relationships 3.8 JPA Query Language 3.9 Named, Dynamic Queries AND Native Queries 3.10 Criteria Queries 3.11 Transactions 3.12 Using Hibernate as ORM <p>Unit 4 - WEB Services</p> <ul style="list-style-type: none"> 4.1 Introduction to web services 4.2 SOAP Envelope ,WSDL , Schema and UDDI 4.3 Creating and Publishing a SOAP based Web Service 4.4 Searching and Consuming SOAP based Web Service 4.5 Google Remote Procedure Call (GRPC) 4.6 REST services with JAX-RS API 4.7 REST Patterns

P. V. Desai

	4.8 Using HTTP Methods and URL-Patterns in REST 4.9 JERSEY Client for REST Services 4.10 Using JavaScript API for calling REST methods 4.11 Micro-Services Architecture in Java 4.12 In Grid Data base using JCache / Hazelcast Unit 5 - JAVA Enterprise Security 5.1 Java API for Authentication and Security – JAAS 5.2 JAAS security for web and EJB applications 5.3 Maintaining Confidentiality and Trust with SSL certificates 5.4 JAAS Security to SOAP based Web Services 5.5 Securing REST services using Authentication Filters 5.6 Securing REST services with SSL 5.7 Security with JWT and OAuth
Reference Book	1. Mastering Enterprise JavaBeans , Enterprise Edition, by Ed Roman 2. Java 8 EE Tutorial : Basic Concepts by Oracle press 3. Beginning Java™ EE 8 Platform with PayaraTM Server Novice to Professional by Antonio Goncalves 4. Microservice Architecture: Aligning Principles, Practices, and Culture by Irakli Nadareishvili, Ronnie Mitra, Matt McLarty, Mike Amundsen 2018 5. Java EE 8 Application Development by David R. Heffelfinger Packt Publication Jan 2018 6. Beginning EJB 3: Java EE 7 Edition by Wetherbee and Chirag Rathod 7. High-Performance Java Persistence by Vlad Mihalcea 2018
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

P. V. Dosa

M.Sc. (I.T.) 8th Semester

Course: 803: Elective 1: Smart Device Computing Using iOS

Course Code	803																								
Course Title	Elective 1: Smart Device Computing Using iOS																								
Credit	4																								
Teaching per Week	4 Hrs																								
Minimum weeks per Semester	15 (Including Classwork, examination, preparation, holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	The Purpose of course is to help understanding the components and structure of mobile application development using iOS. The course also provides students with the skills necessary to develop an iOS App from scratch to deploying it on the Apple Store.																								
Course Objective	The objective of the course is to impart knowledge of Swift and Apple iOS application Design and Development.																								
Course Outcomes	<p>CO1 : Students will be able to learn about latest design concepts, controls and components of iPAD/ iPhone application development.</p> <p>CO2 : Students will be able to learn the different design patterns and UIControls in iOS with Swift programming.</p> <p>CO3 : Students will be able to learn about data persistence, services and data manipulation techniques.</p>																								
Mapping between COs with PSOs	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
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Pre-requisite	Knowledge of Object Oriented Programming is desirable.																								
Course Outcome	The primary learning outcome for this course is that students will be able to design and create iOS apps. Students will leverage Swift, the iOS SDK, and Apple developer tools. With iOS as the platform, students will learn Object-oriented programming, Design Patterns, Type Systems, Functional Language features, user interface design, best practices in programming, and problem analysis.																								

P. M. Devaraj

Course: 803 Elective 1: Smart Device Computing Using iOS

Course Code	803 Elective 1
Course Title	Smart Device Computing Using iOS
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	The Purpose of course is to help understanding the components and structure of mobile application development using iOS. The course also provides students with the skills necessary to develop an iOS App from scratch to deploying it on the Apple Store.
Course Objective	The objective of the course is to impart knowledge of Swift and Apple iOS application Design and Development.
Pre-requisite	Knowledge of Object Oriented Programming is desirable.
Course Out come	The primary learning outcome for this course is that students will be able to design and create iOS apps. Students will leverage Swift, the iOS SDK, and Apple developer tools. With iOS as the platform, students will learn Object-oriented programming, Design Patterns, Type Systems, Functional Language features, user interface design, best practices in programming, and problem analysis.
Course Content	<p>Unit 1 : Introduction to iOS with Swift Language</p> <ul style="list-style-type: none"> 1.1. Introduction iOS and iOS Architecture 1.1.1. Foundation Framework 1.1.2. Cocoa Framework 1.2. Introduction to Xcode IDE 1.2.1. Setting up Development Environment 1.2.2. Xcode Development Tools – Interface Builder and Simulator 1.2.3. Testing and Debugging 1.3. Introduction to Swift 1.3.1. Datatypes, Variables in Swift 1.3.2. Tuples, Constants, Literals in Swift 1.3.3. Working with Strings in Swift 1.4. Optionals in Swift 1.4.1. Implicit Optionals 1.4.2. Explicit Optionals 1.5. Collections in Swift 1.5.1. Dictionaries, Arrays, and Sets 1.6. Control Flows and Functions in Swift 1.7. Object Oriented Programming in Swift 1.7.1. Custom Class and Instance Creation 1.7.2. Inheritance and Polymorphism 1.8. Properties and its Attributes 1.9. Initializers in swift 1.9.1. Id 1.9.2. Self 1.9.3. Super 1.10. Enum and Struct 1.11. Protocols and Extensions 1.12. Information Property List File and App Permissions <p>Unit 2 : iOS Design Patterns</p> <ul style="list-style-type: none"> 2.1. Introduction to Storyboard 2.2. Introduction to UIView, UIWindow and UIViewController 2.3. Model View Controller (MVC) Pattern in Interface Design 2.4. Application Life Cycle and View Controller Life Cycle 2.5. Working with Basic UIElements 2.5.1. UILabel, UIButton, UITextField, UIImageView etc. 2.6. IBActions and IBOutlets 2.7. Auto Layout Constraints to create Adaptive UI

P. Y. Dossor

	<p>2.8 UIAnimation</p> <p>2.8.1 Animation using Auto Layout Constraints</p> <p>2.8.2 Animation with UIImageView</p> <p>2.9 Recognizing and Handling Gestures</p> <p>2.9.1 Introduction to UIGestureRecognizer</p> <p>2.9.2 Working with different types of Gestures</p> <p>2.9.3 Gestures with UIElements</p> <p>Unit 3 : UIControl in iOS</p> <p>3.1 Navigation Controller and its Usage</p> <p>3.2 Navigation Techniques</p> <p>3.2.1 Segue</p> <p>3.2.2 Push and Pop</p> <p>3.2.3 Present and Dismiss</p> <p>3.3 Working with TableView</p> <p>3.3.1 Static UITableViewController</p> <p>3.3.2 Dynamic TableView</p> <p>3.3.2.1 Plain TableView</p> <p>3.3.2.2 Grouped TableView</p> <p>3.4 Working with UIPickerView</p> <p>3.4.1 UIPickerView</p> <p>3.4.2 UIDatePickerView</p> <p>3.5 Working with Miscellaneous Controls in iOS</p> <p>3.5.1 UICollectionView</p> <p>3.5.2 UITabBarController</p> <p>3.5.3 UIScrollView</p> <p>3.5.4 UIWebView</p> <p>3.5.5 ContainerView</p> <p>3.6 Working with UIAlertController and its Types</p> <p>Unit 4 : Data Persistence and Data Manipulation Techniques</p> <p>4.1 Working with UserDefaults for data persistence</p> <p>4.2 Introduction to FileManager</p> <p>4.3 Frameworks and Library Configurations</p> <p>4.4 Data Persistence Techniques</p> <p>4.4.1 SQLite Framework</p> <p>4.4.2 Core Data Framework</p> <p>4.5 Working with URL and URL Classes</p> <p>4.6 Data Manipulation Techniques</p> <p>4.6.1 JSON Parsing</p> <p>4.6.2 XML Parsing</p> <p>Unit 5 : Advance Programming in iOS</p> <p>5.1 Location based Services</p> <p>5.1.1. Core Location Services</p> <p>5.1.2. CLLocation and CLLocationManager Classes</p> <p>5.1.3. MapKit, MapView and MKPointAnnotation</p> <p>5.1.4. Location Based Call-outs</p> <p>5.2 - Introduction to the working of Push Notifications</p> <p>5.3 Publishing iOS App to Apple Store</p>
Reference Book:	<ol style="list-style-type: none"> Swift Programming: The Big Nerd Ranch Guide (2nd Edition) (Big Nerd Ranch Guides) 2nd Edition by Matthew Mathias (Author), John Gallagher (Author) Swift: A Comprehensive Intermediate Guide to Learn and Master the Concept of Swift Programming Kindle Edition by MG Martin (Author) iOS 12 Programming Fundamentals with Swift: Swift, Xcode, and Cocoa Basics 1st Edition by Matt Neuburg (Author) Classic Computer Science Problems in Swift: Essential Techniques for Practicing Programmers 1st Edition by David Kopec
Teaching Methodology:	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method:	30% Internal assessment 70% External assessment

P. M. DESAI

M.Sc. (I.T.) 8th Semester**Course: 803: Elective 2: Smart Device Computing Using Android**

Course Code	803																								
Course Title	Elective 2: Smart Device Computing Using Android																								
Credit	4																								
Teaching per Week	4 Hrs																								
Minimum weeks per Semester	15 (Including Classwork, examination, preparation, holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	Purpose of Course is help students to understand the components and structure of mobile application development framework of Android. The course also provides students with the skills necessary to develop an Android App from scratch to deploying it on the Google App Store.																								
Course Objective	Learn the basic and important design concepts and issues of development of mobile applications. Understand the capabilities and limitations of mobile devices. Write applications for the platforms used, simulate them, and test them on the mobile hardware where possible.																								
Course Outcomes	<p>CO1 : Students will be able to learn about latest design concepts, controls and components of mobile application development in Android.</p> <p>CO2 : Students will be able to develop android applications using local database SQLite and integrate webservices in Android.</p> <p>CO3 : Students will be able to learn about different android services like background services, location based services, google maps etc.</p>																								
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CO3																									
Pre-requisite	Basic programming knowledge of Java and Event handling																								
Course Outcome	Course Outcome is student will design and develop user interfaces for the Android platform by applying Java programming concepts to Android application development and will be familiar with technology and business trends impacting mobile applications. Competent with the characterization and architecture of mobile applications																								



Course: 803 Elective 2: Smart Device Computing Using Android

Course Code	803 Elective 2
Course Title	Smart Device Computing Using Android
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, practical, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	Purpose of Course is help students to understand the components and structure of mobile application development framework of Android. The course also provides students with the skills necessary to develop an Android App from scratch to deploying it on the Google App Store.
Course Objective	Learn the basic and important design concepts and issues of development of mobile applications. Understand the capabilities and limitations of mobile devices. Write applications for the platforms used, simulate them, and test them on the mobile hardware where possible.
Pre-requisite	Basic programming knowledge of Java and Event handling
Course Out come	Course Out come is student will design and develop user Interfaces for the Android platform by applying Java programming concepts to Android application development and will be familiar with technology and business trends impacting mobile applications. Competent with the characterization and architecture of mobile applications
Course Content	<p>Unit 1 : Basics of Android</p> <ul style="list-style-type: none"> 1.1. Introduction to Android OS 1.1.1. Android Framework 1.2. Introduction to Android Studio 1.2.1. Setting up development environment 1.2.2. Android Development Tools 1.2.3. Android Studio Project structure 1.2.4. Testing and Debugging 1.3. Activity and Activity Life Cycle 1.4. View and ViewGroups 1.4.1. LinearLayout, RelativeLayout, Constraint Layout, Webview, Gridview, Recycler View, Adapter View 1.5. Intent and Intent filter 1.6. Android UI Widgets 1.7. Menus in Android 1.7.1. OptionsMenu 1.7.2. PopupMenu 1.7.3. ContextMenu 1.8. Dialogs and Notifications 1.9. Fragment 1.9.1. Fragment Life Cycle 1.9.2. Creating Fragment 1.9.3. Communicate with other fragments 1.10. Styles and Themes 1.11. App Manifest File 1.12. App Permissions 1.13. App Bar 1.13.1. Setup the App bar 1.13.2. Add and handle actions <p>Unit 2 : Data Storage and Retrieval</p> <ul style="list-style-type: none"> 2.1 Working with files 2.1.1 Internal Storage 2.1.2 External Storage 2.2 Working with network(P2P connection) 2.3 Managing Data using SQLite 2.4 Database Debugging 2.5 Shared Preferences 2.6 Content Provider

P. V. Desai

- 2.6.1 ContentResolver
- 2.6.2 Working with Content Provider(Contacts,SMS,Call,MMS)
- 2.6.3 Creating Content Provider
- 2.7 Data Backup

Unit 3 : Services in Android

- 3.1 Overview of Services
- 3.2 Service types
- 3.2.1 Bounded
- 3.2.2 Started
- 3.3 Asynchronous Task
- 3.4 Broadcast Receivers
- 3.4.1 Listening for specified broadcasts
- 3.4.2 System broadcasts
- 3.4.3 Custom & User defined broadcasts
- 3.4.4 Sticky Broadcasts
- 3.5 Google play services
- 3.6 Google Map and Events with Google Map
- 3.7 Geo coding and Reverse geo coding

Unit 4 : Working with Audio, Video and Camera

- 4.1 Camera
- 4.1.1 Taking Photos
- 4.1.2 Recording Videos
- 4.1.3 Controlling the camera
- 4.2 Images & Graphics
- 4.2.1 Drawables
- 4.3 Audio and Video
- 4.3.1 MediaPlayer
- 4.3.2 MediaController
- 4.4 Animations

Unit 5 : Advance Programming in Adroid

- 5.1 Android Web Services
- 5.1.1. Check HttpURLConnection.
- 5.1.2. Web Service Call
- 5.1.3. SQLITE and MySql in web Service
- 5.2 XML and JSON Parsing
- 5.3 Push Notifications
- 5.4 Working with Bluetooth, Wi-Fi and Sensors
- 5.5 Kotlin language in Android
- 5.6 Gradle plugin integration
- 5.7 Social Login with Google, Facebook or Twitter
- 5.8 Network Connectivity
- 5.9 Publishing App

Reference Book

1. Professional Android 4 by Reto Meier WROX Publication
2. Hello, Android: Introducing Google's Mobile Development Platform by Ed Burnrtte SPD publication
3. Android Essentials by Chris Haseman Apress Publication
4. Android Development by Mark L Murphy Wiley India
5. Sams Teach Yourself Android by Lauren Darcey &Sams Publishing
6. Android Application Development Black Book by Pradeep Kothari Dreamtech publication
7. Android Programming : Pushing the Limits by Erik Hellman Wiley India
8. Android Sensor Programming by Greg Milette Wiley India

Teaching Methodology

Class Room Teaching, Discussion and Assignment

Evaluation Method

30% Internal assessment

70% External assessment

P. Y. Dasar

M.Sc. (I.T.) 8th Semester**Course: 804: Artificial Intelligence**

Course Code	804																								
Course Title	Artificial Intelligence																								
Credit	4																								
Teaching per Week	4 Hrs																								
Minimum weeks per Semester	15 (Including Classwork, examination, preparation, holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	This course makes students learn to develop solutions for solving various artificial intelligence based problem using PROLOG																								
Course Objective	To provide background knowledge of AI and to prepare students for further studies in AI																								
Course Outcomes	<p>CO1 : Students will be able to learn about concepts of AI and intelligent agent.</p> <p>CO2 : Students will be able to learn various searching techniques, game playing techniques etc.</p> <p>CO3 : Students will be able to learn about knowledge representation and use it in ML, NLP, Expert System etc.</p>																								
Mapping between COs with PSOs	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
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CO1																									
CO2																									
CO3																									
Pre-requisite	Significant experience in programming , knowledge of data structures and mathematical concepts																								
Course Outcome	After learning this course, students will be able to understand, identify and solve artificial intelligence problems, understand NLP and ML																								



Course : IT 804 : Artificial Intelligence

Course Code	804
Course Title	Artificial Intelligence
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2019
Purpose of Course	This course makes students learn to develop solutions for solving various artificial intelligence based problem using PROLOG
Course Objective	To provide background knowledge of AI and to prepare students for further studies in AI
Pre-requisite	Significant experience in programming , knowledge of data structures and mathematical concepts
Course Outcome	After learning this course, students will be able to understand, identify and solve artificial intelligence problems, understand NLP and ML
Course Content	<p>Unit : 1 : Introduction to AI and Intelligent Agent</p> <ul style="list-style-type: none"> 1.1 Introduction to AI 1.2 History of AI 1.3 Emergence of Intelligent Agents 1.4 PEAS Representation for an agent 1.5 Agent Environment 1.6 Concept of Rational Agent 1.7 Structure of Intelligent Agents 1.8 Types of Agents 1.9 Communication as Action 1.10 Types of Communicating Agents <p>Unit : 2 : Search Algorithms and Optimization</p> <ul style="list-style-type: none"> 2.1 Solving Problems by Searching 2.2 Problem Formulation 2.3 Uninformed Search Methods - DFS, BFS, Iterative Deepening, Comparing Different Techniques, Search DFID 2.4 Informed Search Methods- Heuristic Functions, Hill Climbing, Simulated Annealing, A*, Performance Evaluation, AO*, Beam Search, Tabu Search, Dijkstra's Algorithm 2.5 Constraint Satisfaction Problems, Map Coloring, Crypt Arithmetic, Backtracking for CSP, Local Search <p>Unit : 3 : Gaming</p> <ul style="list-style-type: none"> 3.1 Game Playing 3.2 Game Playing - Minimax Search 3.3 Game Playing - AlphaBeta 3.4 Game Playing - SSS* <p>Unit : 4 : Planning</p> <ul style="list-style-type: none"> 4.1 Planning FSSP, BSSP 4.2 Goal Stack Planning, Sussman's Anomaly 4.3 Non-linear planning 4.4 Plan Space Planning 4.5 Graph Plan 4.6 Game Playing Algorithms 4.7 Planning as constraint Satisfaction <p>Unit : 5 : Knowledge Representation</p> <ul style="list-style-type: none"> 5.1 A knowledge based Agents

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	<p>5.2 Logic and Inferences</p> <p>5.2.1 Formal Logic</p> <p>5.2.2 Logic and knowledge</p> <p>5.2.3 Propositional Logic</p> <p>5.2.4 Resolution Method and Refutation for PL</p> <p>5.2.5 First-Order Logic (FOL)</p> <p>5.2.6 Incompleteness of forward chaining</p> <p>5.2.7 Forward and backward chaining, Resolution</p> <p>5.2.8 Horn Clauses and SLD resolution</p> <p>5.2.9 Overview of Second Order Logic</p> <p>5.3 Genetic Algorithms</p> <p>5.4 Fuzzy Logic</p> <p>5.5 Expert System Life Cycle</p> <p>5.6 States in Expert System Development</p> <p>5.7 RETE Algorithm for Pattern Matching</p> <p>5.8 Introduction to Ontology and its applications</p> <p>5.9 Rule Based Programs using PROLOG</p> <p>5.9.1 Facts</p> <p>5.9.2 Objects</p> <p>5.9.3 Predicates and Rules</p> <p>5.9.4 PROLOG Variable and its Type</p> <p>5.9.5 Arithmetic and Relational Operators</p> <p>5.9.6 I/O Predicates</p> <p>5.9.7 Fail & ! Predicates</p> <p>5.9.8 Recursion & repeat predicates</p>
Teaching Methodology	Black Board Teaching, power point presentation for theory &, practical
Evaluation Method	30% Internal Exam 70% External Exam

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M.Sc. (I.T.) 8th Semester

Course: 805: Practical 17

Course Code	805																								
Course Title	Practical 17																								
Credit	3																								
Teaching per Week	3 Hrs																								
Minimum weeks per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	The course provides practical knowledge of web application development using JAVA technologies like JSP, Servlets, JSF, EJB, JMS, JPA, etc.																								
Course Objective	The course prepares students to develop web applications using JAVA based frameworks.																								
Course Outcomes	<p>CO1 : Students will be able to develop web applications using JAVA based frameworks and design patterns.</p> <p>CO2 : Students will be able to implement java security and enterprise java security with authentication and authorization.</p> <p>CO3 : Students will be able to implement web services, REST services and REST patterns in their web applications.</p>																								
Mapping between COs with PSOs	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
	PSO1	PSO2	PSO3	PSO4	PSO5																				
CO1																									
CO2																									
CO3																									
Pre-requisite	Object Oriented Programming Concepts and Core JAVA																								
Course Outcome	After completion of this course, students will be able to develop web applications using JAVA.																								



Course : IT 805 : Practical 17

Course Code	805
Course Title	Practical 17
Credit	3
Teaching Per Week	3 Hrs
Minimum Weeks Per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)
Review/Revision	June 2019
Purpose of Course	The course provides practical knowledge of web application development using JAVA technologies like JSP, Servlets, JSF, EJB, JMS, JPA, etc.
Course Objective	The course prepares students to develop web applications using JAVA based frameworks.
Prerequisite	Object Oriented Programming Concepts and Core JAVA
Course Outcome	After completion of this course, students will be able to develop web applications using JAVA.
Course Content	Practical based on Paper No. 801 – JAVA Web Development and 802 – Enterprise JAVA.
Reference Books	NIL
Teaching Methodology	Lab Work
Evaluation Method	30% Internal Assessment 70% External Assessment

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M.Sc. (I.T.) 8th Semester**Course: 806: Practical 18**

Course Code	806																								
Course Title	Practical 18																								
Credit	3																								
Teaching per Week	3 Hrs																								
Minimum weeks per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	The course provides practical knowledge of application development for smart devices using iOS or Android.																								
Course Objective	The course prepares students to develop applications for smart devices using iOS or Android.																								
Course Outcomes	<p>Elective 1</p> <p>CO1 : Students will be able to develop simple applications with playground tools in XCode.</p> <p>CO2 : Students will be able to develop GUI applications with XCode IDE.</p> <p>CO3 : Students will be able to develop location based services using various frameworks.</p> <p>Elective 2</p> <p>CO1 : Students will be able to develop android applications using the latest design concepts, controls and components.</p> <p>CO2 : Students will be able to develop applications using the local database-SQLite and integrate webservices in android.</p> <p>CO3 : Students will be able to create applications using background services, location services, google maps, etc.</p>																								
Mapping between COs with PSOs	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
	PSO1	PSO2	PSO3	PSO4	PSO5																				
CO1																									
CO2																									
CO3																									
Pre-requisite	Basic Programming Concepts																								
Course Outcome	After completion of this course, students will be able to develop applications for smart devices using iOS or Android.																								

12/7/2021
Yeshwanth

Course : IT 806 : Practical 18

Course Code	806
Course Title	Practical 18
Credit	3
Teaching Per Week	3 Hrs
Minimum Weeks Per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)
Review/Revision	June 2019
Purpose of Course	The course provides practical knowledge of application development for smart devices using iOS or Android.
Course Objective	The course prepares students to develop applications for smart devices using iOS or Android.
Prerequisite	Basic Programming Concepts
Course Outcome	After completion of this course, students will be able to develop applications for smart devices using iOS or Android.
Course Content	Practical based on elective Paper No. 803 – (Elective I : Smart Device Computing Using iOS or Elective II : Smart Device Computing Using Android).
Reference Books	NIL
Teaching Methodology	Lab Work
Evaluation Method	30% Internal Assessment 70% External Assessment

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M.Sc. (I.T.) 8th Semester**Course: 807: Part Time Project 2**

Course Code	807																								
Course Title	Part Time Project 2																								
Credit	3																								
Teaching per Week	3 Hrs																								
Minimum weeks per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)																								
Effective From	June 2019																								
Purpose of Course	The project work is introduced to make students implement their theory and practical knowledge they learned during this semester to solve real life problems for software applications.																								
Course Objective	To help students to develop software applications using Java Enterprise Edition.																								
Course Outcomes	<p>CO1 : Students will be able to develop multi layered and MVC based Java applications.</p> <p>CO2 : Students will be able to apply Software engineering concepts to solve real world problems.</p> <p>CO3 : Students will be able to apply database related concepts to design database for the project.</p>																								
Mapping between COs with PSOs	<table border="1"> <thead> <tr> <th></th> <th>PSO1</th> <th>PSO2</th> <th>PSO3</th> <th>PSO4</th> <th>PSO5</th> </tr> </thead> <tbody> <tr> <td>CO1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO2</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CO3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		PSO1	PSO2	PSO3	PSO4	PSO5	CO1						CO2						CO3					
	PSO1	PSO2	PSO3	PSO4	PSO5																				
CO1																									
CO2																									
CO3																									
Pre-requisite	Knowledge of Object Oriented Programming, Web Technology Fundamentals, Software Engineering.																								
Course Outcome	After completion of this course, students will be able to develop software applications.																								



Course : 807 : Part Time Project 2

Course Code	807
Course Title	Part Time Project 2
Credit	3
Teaching Per Week	3 Hrs
Duration	-
Minimum Weeks Per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)
Review/Revision	June 2019
Purpose of Course	The project work is introduced to make students implement their theory and practical knowledge they learned during this semester to solve real life problems for software applications.
Course Objective	To help students to develop software applications using Java Enterprise Edition.
Prerequisite	Knowledge of Object Oriented Programming, Web Technology Fundamentals, Software Engineering.
Course Outcome	After completion of this course, students will be able to develop software applications.
Course Content	<p>The students are required to develop project using Java Enterprise Edition. The students must prepare documentation of the project completed as per the Software Engineering Guidelines.</p> <p>At the end of the semester, the students have to submit their project report in bounded form to the institution.</p> <p>The Project Presentation and Viva – Voce will be conducted as per the University exam schedule.</p> <p>The students have to submit the following reports at the institution:</p> <ol style="list-style-type: none"> 1. Project Joining Report 2. Project Title Report 3. Progress Report 4. Project Completion Certificate 5. Institution Certificate 6. Non disclosure of Source Code Certificate (In case the student is unable to demonstrate project source code)
Reference Books	NIL
Teaching Methodology	Project guidance, Review
Evaluation Method	30% Internal Assessment 70% External Assessment

P. Y. DMR