

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
MCA (5th Semester)
Web Group

Course: 501: Cloud Computing

Course Code	501
Course Title	Cloud Computing
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	The purpose of the course is to make student capable of implementing the concepts, methods and tools of Cloud Computing
Course Objective	The objective of the course is to provide comprehensive and in-depth knowledge of Cloud Computing Concepts, technologies, architecture and applications and implementations.
Pre-requisite	Web Services, DBMS concepts, Networking
Course Outcome	After completion of this course, the students will be capable to work in various cloud environment like Salesforce, Azure, AWS.
Course Content	<p>Unit 1: Introduction</p> <ul style="list-style-type: none"> 1.1 Grid Computing 1.2 Cluster Computing 1.3 Cloud Computing (NIST Model) <ul style="list-style-type: none"> 1.3.1 Evolution 1.3.2 History, Properties, characteristics & Disadvantages <p>Unit 2: Cloud Computing Architecture</p> <ul style="list-style-type: none"> 2.1 Cloud Computing Stack <ul style="list-style-type: none"> 2.1.1 Comparison with traditional architecture 2.2 Service Models Introduction <ul style="list-style-type: none"> 2.2.1 Infrastructure as a Service (IaaS) 2.2.2 Platform as a Service (PaaS) 2.2.3 Software as a Service (SaaS) 2.3 Deployment Models <ul style="list-style-type: none"> 2.3.1 Public Cloud 2.3.2 Private Cloud 2.3.3 Hybrid Cloud 2.3.4 Community Cloud <p>Unit 3: Service Models</p> <ul style="list-style-type: none"> 3.1. Infrastructure as a Service (IaaS) <ul style="list-style-type: none"> 3.1.1 Introduction to Virtualization <ul style="list-style-type: none"> 3.1.1.1 Hypervisors, Machine Image, Virtual Machine 3.1.2 Resource Virtualization <ul style="list-style-type: none"> 3.1.2.1 Server, Storage, Network 3.1.3 Amazon EC 3.1.4 Eucalyptus 3.2. Platform as a Service (PaaS) <ul style="list-style-type: none"> 3.2.1. Introduction to Service Oriented Architecture (SOA) 3.2.2. Cloud Platform

	<p>3.2.2.1. Computation 3.2.2.2. Storage 3.2.3. Microsoft Azure 3.2.4. Salesforce.com's Force.com 3.3. Software as a Service (SaaS) 3.3.1. Web Services 3.3.2. Web OS</p> <p>Unit 4: Cloud Security 4.1 Infrastructure Security 4.2 Data Security and Storage 4.3 Identity & Access Management 4.4 Access Control 4.5 Authentication in Cloud</p> <p>Unit 5: Introduction to Cloud Databases (DbaaS) 5.1 Amazon SimpleDB & RDS 5.2 Azure Table Service & SQL Azure 5.3 BigTable 5.4 Oracle Cloud</p>
Reference Books	<ol style="list-style-type: none"> 1. Cloud Computing Principles and Paradigms by Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wiley, 2011 2. Cloud Computing : Principles, Systems and Applications by Nikos Antonopoulos, Lee Gillam, Springer 2012 3. Enterprise Cloud Computing : Technology, Architecture, Applications by Gautam Shroff Cambridge University Press 2010 4. Cloud and Virtual Data Storage Networking by Greg Schulz Auerbach, 2011 5. Cloud Security : A Comprehensive Guide to Secure Cloud Computing by Ronald L Krutz, Russel Dean Vines, John Wiley & Sons, 2010 6. Cloud Computing Bible by Barrie Sosinsky, Wiley India, 2011 7. Cloud Computing by David Crookes, TMH Education 2012 8. Cloud Computing : Implementation, Management and Security by James F Ransome, John W Rittinghouse, CRC Press, 2009 9. Amazon Cloud Computing with Java by Aditya Yadav, Lulu.com, 2010 10. Grid and Cloud Database Management by Fiore, SAndro, Aloisio, Giovanni, Springer, 2010 11. Building a Database Cloud for Dummies by Michael Wessler, John Wiley & Sons, 2012
Teaching Methodology	Class work, Discussion, Self-Study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 501: Internet of Things (IoT) & Embedded Systems

Course Code	501
Course Title	Internet of Things (IoT) & Embedded Systems
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course is an introduction for students to IoT. The course also gives students an idea about various components of IoT and explains the working of them. The course also explains the role of embedded systems in IoT ecosystem.
Course Objective	The objective of the course is - <ol style="list-style-type: none"> 1. To make students understand IoT 2. To make student understand various component of Micro-Computer and their working 3. To explain various types of Micro-Computer operating system 4. To introduce students with Programming in IoT.
Pre-requisite	C , .NET, Unix
Course Outcome	After studying this Student will be able to understand how Micro-Computer works and importance of various components of a Micro-Computer. This course will also help students to appreciate the role of embedded systems in IoT Environment. After successful completion students will be able to work with different types of Micro-Computers and operating systems for their IoT based application development.
Course Content	<p>Unit 1: Introduction to Embedded Systems</p> <ol style="list-style-type: none"> 1.1 What is a Microcontroller? 1.2 Architecture of Microcontroller <ol style="list-style-type: none"> 1.2.1 ARM 1.2.2 8051 1.3 Introduction to Sensors 1.4 Types of Sensors & their work 1.5 Wireless Sensor Network 1.6 Role of Microcontrollers in IoT <p>Unit 2: Internet of Things (IoT)</p> <ol style="list-style-type: none"> 2.1 Introduction to IoT <ol style="list-style-type: none"> 2.1.1 IoT Today 2.1.2 IoT Vision 2.2 IoT Architecture <ol style="list-style-type: none"> 2.2.1 Elements of IOT Ecosystem 2.2.2 Physical-Entity View and IoT Context View 2.2.3 Requirement process and —other views 2.3 IoT Related Standards and Protocols 2.4 Industrial Applications of IoT 2.5 IoT Privacy, Security & Governance <ol style="list-style-type: none"> 2.5.1 Identification in Distributed Environment 2.5.2 Anonymization of user’s Data in a Distributed and Mobile Environment 2.5.3 Device Authentication 2.5.4 Data Correlation and Information Retrieval 2.5.5 Human IoT Trust Relationship 2.5.6 Risks of Isolation and Confinement 2.6 IoT Botnet

	<p>Unit 3: Micro-Computing Environment</p> <p>3.1 What is a Micro-Computer? 3.2 Micro-Computing Paradigm 3.3 Difference between Microcontroller and Micro-Computer 3.4 Micro-Computer OS 3.4.1 Raspbian OS 3.4.2 Windows IoT 3.4.3 Contiki OS 3.4.4 RIOT 3.5 Use of Micro-Computers in IoT 3.6 Interfacing with Micro-Computer</p> <p>Unit 4: Raspberry Pi : A platform for IoT</p> <p>4.1 Introduction to Pi family 4.2 OS in Pi 4.3 Configuring Pi for IoT 4.4 Interacting Pi with Ports & Sensors</p> <p>Unit 5: IoT Application Development Using .NET</p> <p>5.1 Server side Development 5.2 Client side Development 5.3 Peer to Peer Interaction 5.4 IoT Interaction through Mobile Apps</p>
Reference Books	<p>1) Introduction to Embedded System – By Shibu K V , McGrawHill 2) Microcontrollers – Architecture, Programming, Interfacing and system design – By Raj Kamal , Pearson 3) Exploring C for Microcontrollers : A hands on approach, Springer 4) 8051 Microcontrollers an Application based Introduction, Elsevier 5) Getting Started with Internet of Things – By Cuno Pfister, O’Reilly 6) Learning Internet of Things – By Peter Waher , Packt Publication 7) Internet of Things : A Hands-on Approach – By Arshdip Bahga and Vijay Madiseti 8) Raspberry Pi User Guide – By Eben Upton and Garath Halfacree, Wiley 9) Raspberry Pi for Dummies , Wiley 10) Microprocessor Architecture, Programming and Applications with the 8085 - By Ramesh Gaonkar , Penram International Publishing 11) Raspberry Pi IoT in C – By Harry Fairhead, I/O Press</p>
Teaching Methodology	Class work, Discussion, Self-Study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 70% assessment is based on semester end University External examination</p>

Course: 502: Artificial Intelligence and Knowledge Based Systems

Course Code	502
Course Title	Artificial Intelligence and Knowledge Based Systems
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	The purpose of the course is to make student capable of implementing the concepts, methods and tools of Artificial Intelligence and learn their implementation in Knowledge Based Systems
Course Objective	To acquaint students with concepts of Artificial Intelligence and its applications.
Pre-requisite	Data Structures, Information Systems
Course Outcome	After completion of this course, the students will be capable to use various Artificial Intelligence techniques in various applications.
Course Content	<p>Unit 1: Introduction to Artificial Intelligence</p> <ol style="list-style-type: none"> 1.1. What is AI 1.2. Applications of AI 1.3. Introduction to Expert System 1.4. Applications of expert systems <p>Unit 2: Knowledge Overview</p> <ol style="list-style-type: none"> 2.1. Definition and importance of knowledge 2.2. Overview knowledge representation 2.3. Overview of knowledge organization 2.4. Overview of knowledge Manipulation 2.5. Overview of Knowledge Acquisition <p>Unit 3: Representation and Search</p> <ol style="list-style-type: none"> 3.1. Structured Knowledge <ol style="list-style-type: none"> 3.1.1. Associative networks 3.1.2. Frame structures 3.1.3. Conceptual dependencies and scripts 3.2. Object oriented representation <p>Unit 4: Organization and Manipulation, Knowledge Acquisition</p> <ol style="list-style-type: none"> 4.1. Introduction to organization 4.2. Search techniques <ol style="list-style-type: none"> 4.2.1. Uninformed search 4.2.2. Informed search 4.3. Introduction to matching Techniques 4.3 Knowledge Acquisition <ol style="list-style-type: none"> 4.3.1. Knowledge learning types 4.3.2. General learning models 4.3.3. Performance of learning models <p>Unit 5: Expert System</p> <ol style="list-style-type: none"> 5.1. Advantages of Expert Systems 5.2. Characteristics of Expert Systems 5.3. Design of Expert Systems <ol style="list-style-type: none"> 5.3.1. Selecting Problem 5.3.2. Stages in Expert systems development 5.3.3. Errors in developments

	<p>5.3.4. Expert System Software Engineering</p> <p>5.3.5. Expert System Life Cycle</p>
Reference Books	<ol style="list-style-type: none"> 1. Introduction to Artificial Intelligence and Expert System by Dan W. Patterson, PHI (1999) 2. Artificial Intelligence – A Modern Approach (2nd Edition 2004) by Stuart J. Russell and Peter Norvig, Pearson Education 3. Artificial Intelligence - Structures and Strategies for Complex Problem Solving (4th Edition 2004) by George F. Luger, Pearson Education 4. Foundation of Artificial Intelligence and Expert Systems by V.S. Janakiraman, K. Sarukesi, P. Gopalakrishnan, Mc Millan (2002) 5. Expert Systems Principles and Programming (3rd Edition) by Giarratano & Riley, Thomson (Vikas Publishing House) 6. Introduction to Artificial Intelligence by Rajendra Akerkar, PHI
Teaching Methodology	Class work, Discussion, Self-Study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 503: **Advanced Java Programming**

Course Code	503
Course Title	Advanced Java Programming
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2017
Purpose of Course	This course is advance level java course to learn web & web enabled application development using Java Technologies.
Course Objective	To develop web application skills using Java web technology
Pre-requisite	Core Java, Object oriented Programming
Course Outcome	After studying this students will be able to understand how to develop web application. This course will also help students to know various java web servers available. After successful completion students will be able to develop web applications using java.
Course Content	<p>Unit 1: Java Database Connectivity(JDBC)</p> <ol style="list-style-type: none"> 1.1 Types of JDBC Drivers 1.2 Connecting to databases like Access, MySQL, SqlServer, Oracle 1.3 Interacting with Database using SQL Queries 1.4 JDBC Objects: Connection, Resultset, Statement, Metadata 1.5 More JDBC Objects: DataSource, RowSet, RowSet events 1.6 Calling Stored Procedures 1.7 Managing Transactions 1.8 JDBC Connection Pooling 1.9 Handling Errors/Warning <p>Unit 2: Java Servlets</p> <ol style="list-style-type: none"> 2.1 Introduction to Servlets 2.2 Servlet Lifecycle 2.3 Handling HTTP GET and POST requests 2.4 Invoking other web resources 2.5 Maintaining client state 2.6 Servlet 3.0 Annotations 2.7 Servlet Filter 2.8 File Upload <p>Unit 3: Java Server Pages(JSP), JSTL (Std Tag Library) & EL</p> <ol style="list-style-type: none"> 3.1 Introduction to JSP, page lifecycle 3.2 JSP Elements – directives, scriplet, action 3.3 Implicit JSP objects 3.4 Using JavaBeans in JSP, Session Tracking 3.5 JSTL – Using Java Standard Tag Library 3.6 JSTL Core & Database tags 3.7 Introduction to EL (Expression Language) 3.8 EL implicit objects <p>Unit 4: XML & Web Services</p> <ol style="list-style-type: none"> 4.1 Introduction to Web Services 4.2 Building XML based web services with JAX-WS 4.3 Building Restful web services with JAX-RS 4.4 Reading/Writing XML files in Java (JAXP) 4.5 Introduction to AJAX

	<p>Unit 5: JPA & MVC Introduction</p> <p>5.1 Introduction to Java Persistence API (JPA)</p> <p>5.2 Entity Beans & Session Beans</p> <p>5.3 Overview of MVC Framework</p> <p>5.4 Spring Architecture</p> <p>5.5 Spring XML Configuration</p> <p>5.6 Aspect oriented programming</p>
Reference Books	<ol style="list-style-type: none"> 1. Java EE Tutorial Basic Concepts by Oracle Corporation 2. Beginning Java™ EE Platform with GlassFish™ : From Novice to Professional by Antonio Goncalves 3. Beginning EJB 3 Application Development From Novice to Professional by Raghu R.Kodali and Jonathan Wetherbee with Peter Zadrozny, Apress Publication 4. Pro JPA 2: Mastering the Java™ Persistence API 5. Head First Servlets and JSP By: Bryan Basham, Kathy Sierra, Bert Bates Publisher: 'Reilly Media 6. Core Servlets and Javasever Pages: Author Marty Hall , Larry Brown, Sun Micro System 7. Java Servlet & JSP Cookbook by Bruce W. Perry O;reilly Publication 8. Beginning JSP™, JSF™ and Tomcat™ Web Development: From Novice to Professional by Giulio Zambon and Michael Sekler 9. JAVA Complete Reference , TMH Publication 10. Professional Java Development with Spring Framework , Wrox Publication
Teaching Methodology	Discussion, Independent Study, Seminars and Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 503: **Advanced Web Technologies**

Course Code	503
Course Title	Advanced Web Technologies
Credit	4
Teaching per Week	4
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2017
Purpose of Course	To teach ASP.Net for web application development
Course Objective	To impart knowledge of web application development using ASP.Net
Pre-requisite	Fundamental of .Net framework and HTML desirable
Course Outcome	Students will be able to development web applications using ASP.Net
Course Content	<p>Unit 1: Introduction to .NET Framework, C# and ASP.NET</p> <ol style="list-style-type: none"> 1.1. NET Architecture 1.2. C# Language 1.3. Page Class 1.4. Web Configuration files 1.5. Exception Handling 1.6. Logging Exceptions 1.7. Error Pages 1.8. Page Tracing 1.9. View State, Query String 1.10.Cookie , Session 1.11.Application , Global.asax <p>Unit 2: ASP.NET Controls</p> <ol style="list-style-type: none"> 2.1. HTML Server Controls 2.2. Web Controls <ol style="list-style-type: none"> 2.2.1. Common Web Server Controls 2.2.2. Specialized Web Server Controls 2.2.3. Table, Image, FileUpload 2.2.4.PostBack / AutoPostBack 2.3. Validation and Rich Controls 2.4. Website Navigation Controls <ul style="list-style-type: none"> - Sitemap, Treeview, Menu Controls 2.5. Introduction to Authentication & Authorization 2.6. ASP.NET AJAX Controls <ol style="list-style-type: none"> 2.6.1. Introduction 2.6.2. Server Callbacks / Script Manager 2.6.3. ASP.NET AJAX Server Controls 2.6.4. UpdatePanel 2.7. Creating Custom Control <p>Unit 3: ASP .NET Web Application with Database</p> <ol style="list-style-type: none"> 3.1. ADO.NET Architecture 3.2. Direct Data Access 3.3. Disconnected Data Access 3.4. Data Binding & Data Controls <ol style="list-style-type: none"> 3.4.1. Single-view, Repeated-Value, Data Source 3.4.2. Gridview - Formatting, Edit, Sorting, Paging, Templates 3.4.3. Detail View, Form View 3.4.4. Data Repeater Control 3.5. Introduction to LINQ

	<p>Unit 4: ASP .NET - XML, WEB Services, MVC, API</p> <ul style="list-style-type: none"> 4.1. XML <ul style="list-style-type: none"> 4.1.1. Basics 4.1.2. XML TextWriter 4.1.3. XML TextReader 4.1.4. XML Validation 4.2. Web Services <ul style="list-style-type: none"> 4.2.1. Architecture 4.2.2. WSDL 4.2.3. SOAP 4.2.4. DISCO 4.2.5. Web Service Creation and Implementation 4.3. MVC Framework <ul style="list-style-type: none"> 4.3.1. Models 4.3.2. Controllers 4.3.3. Views 4.4. Introduction to web API 4.5. Introduction to Caching <p>Unit 5: ASP .NET Web Application using JavaScript and jQuery</p> <ul style="list-style-type: none"> 5.1. Introduction to JavaScript <ul style="list-style-type: none"> 5.1.1. DOM 5.1.2. JavaScript Methods 5.1.3. JavaScript Elements 5.1.4. Arrays 5.1.5. Event Handling 5.1.6. Validation 5.2. Introduction to jQuery <ul style="list-style-type: none"> 5.2.1. jQuery Syntax 5.2.2. jQuery Selectors <ul style="list-style-type: none"> 5.2.2.1. CSS and Attributes 5.2.3. Animation and Events 5.3. jQuery AJAX 5.4. Introduction to JSON
Reference Books	<ol style="list-style-type: none"> 1. Professional ASP.NET, Wrox Publication 2. ASP.NET – From Novice to Professional, Wrox Publication 3. ASP.NET Bible, By Mridula Parihar 4. Designing Microsoft ASP.NET Application, Microsoft Press 5. Beginning ASP.NET 4.5, Wrox Publication 6. Programming Microsoft ASP.NET, Microsoft Press 7. Beginning AJAX with ASP.NET, Wrox Publication 8. Silverlight and ASP.NET Revealed, Apress 9. JavaScript Bible – by Danny Goodman, Michael Morrison, Paul Novitski, Tia Gustaff Rayl 10. Learning jQuery , By Jonathan Chaffer, Karl Swedberg 11. Web Development with jQuery, By Richard York – WROX Publication
Teaching Methodology	Classroom, seminar and assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 504: **Advanced Android Programming**

Course Code	504
Course Title	Advanced Android Programming
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks/ Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to understand advance user interfaces, various hardware level APIs, hardware sensors, location and map APIs etc. within android application. They can incorporate these features to develop more sophisticated Android apps.
Course Objective	The objective of the course is: <ol style="list-style-type: none"> 1. To provide a thorough introduction to the Android environment and tools for creating Android apps. 2. To impart knowledge of advanced level concepts in Android app design & development.
Pre-requisite	Object Oriented Concepts and Basic Android Programming
Course Out come	After studying the course, students will be able to develop Android apps making use of hardware sensors, Telephony & SMS utility, maps & location services etc.
Course Content	<p>Unit 1: Advance UI and Graphics Programming</p> <ol style="list-style-type: none"> 1.1. Advance User Interfaces <ol style="list-style-type: none"> 1.1.1. Working with Action Bar 1.1.2. Working with styles and themes 1.2. Detecting User Motions within a View 1.3. Handling Common Single-Touch/Multitouch Gestures 1.4. Graphics: Drawing on screen <ol style="list-style-type: none"> 1.4.1. using Canvas, Paint 1.4.2. using Gradients 1.5. Animation <ol style="list-style-type: none"> 1.5.1. Frame animation 1.5.2. Tween animation 1.5.3. Interpolators <p>Unit 2: Networking and Web</p> <ol style="list-style-type: none"> 2.1. Understanding mobile networking fundamentals 2.2. Accessing the Internet (HTTP) <ol style="list-style-type: none"> 2.2.1. Reading data from the Web 2.2.2. Using HTTPURLConnection 2.3. Browsing web with WebView 2.4. Data access through web services (external databases) <p>Unit 3: Android Common APIs and Notification</p> <ol style="list-style-type: none"> 3.1. Multimedia APIs: working with camera, audio, video 3.2. Telephony APIs <ol style="list-style-type: none"> 3.2.1. Working with Telephony utilities 3.2.2. Using SMS 3.3. Working with Notification <p>Unit 4: Sensors and Hardware API</p> <ol style="list-style-type: none"> 4.1. Hardware Sensors <ol style="list-style-type: none"> 4.1.1. Interacting with device hardware 4.1.2. Using device Sensors 4.2. Optional Hardware APIs

	<p>4.2.1. Working with Bluetooth 4.2.2. Working with USB 4.2.3. Working with Wi-Fi</p> <p>Unit 5: Leveraging Google APIs 5.1. Location and Map 5.1.1. Incorporating Location APIs 5.1.2. Incorporating Google maps 5.2. Case study 5.2.1. Google Cloud Messaging 5.2.2. Google play game Services</p>
Reference Books	<ol style="list-style-type: none"> 1. Advanced Android™ Application Development, Fourth Edition, By Shane Conder, Lauren Darcey, Joseph Annucci Jr., Pearson 2. Head First Android Development by Dawn Griffiths & David Griffiths – O’Reilly Media 3. The Busy Coder's Guide to Android Development - CommonsWare by Mark L. Murphy 4. Android Studio Application Development by Belen Cruz Zapata 5. Android Studio Development Essentials - Android 7 Edition – 2016 by Neil Smyth 6. Android 6 for Programmers: An App-Driven Approach – by Paul Deitel, Harvey Deitel, Alexander Wald 7. Android Programming Unleashed, B.M. Harwani, Sams Publishing 8. Beginning Android Application Development, Wei-Meng Lee 9. API Guides - Android Developers <p>Ref: https://developer.android.com/guide/index.html</p>
Teaching Methodology	Class work, Discussion, Self-Study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 504 : Advanced iOS Development

Course Code	504
Course Title	Advanced iOS Development
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks/ Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to understand fundamental as well as advanced concepts of iOS Programming. The course also provides students with the skills necessary to develop an iOS App from scratch to deploying it on the App Store. It also includes an overview of SWIFT to give the students a better exposure of iOS development as per current IT industry.
Course Objective	The objective of the course is: <ol style="list-style-type: none"> 1. To provide a thorough introduction to the iOS environment and tools for creating iOS applications. 2. To impart knowledge of advanced level concepts in iOS application design & development. 3. To provide an introduction to SWIFT language.
Pre-requisite	Knowledge of C, C++ and SQL
Course Outcome	After studying the course, students will be able to understand how iOS applications are created and deployed. They will also able to create advanced level, database/Web Services driven applications.
Course Content	<p>Unit 1: Introduction to Objective-C, Cocoa and Touch</p> <ol style="list-style-type: none"> 1.1 Classes, Objects and Methods 1.2 @interface, @end, @implementation, @property, @synthesize, Data Types, Inheritance 1.3 Polymorphism, Dynamic Typing, Method Overloading and Dynamic Binding 1.4 Categories and Protocols 1.5 Foundation Framework 1.6 NSNotification, NSNotificationCenter, NSFileManager, NSFileHandle, NSUserDefaults, Documents Directory, Caches Directory, Resource Files, Read/Write Text Files 1.7 What is Cocoa? Cocoa Framework, Cocoa Classes 1.8 Interface Builder, Xib files, File's Owner, Outlet & Action Connections, Inspector <p>Unit 2: Controls, View and Application</p> <ol style="list-style-type: none"> 2.1 Labels, IBOutlet, Buttons, IBAction, Event Handling, UIEvent, 2.2 Toolbars, Toolbar items, Status bar, Navigation bar, Navigation bar items, 2.3 Activity Indicator, Network Activity Indicator, Progress View, Refresh Control, Search Bar, Segmented Control, Slider, Stepper, Switch, Detail Disclosure Button, Info Button 2.4 What is a View? UIViews and UIViewController, UIView Class, UIView Subclasses, Types of Views, Auto Layout 2.5 UIApplication: <ul style="list-style-type: none"> Application, Application Delegate, View Controller, Window & Views, Device Info, Screen, CGRect, CGPoint, CGSize, CGRectMake(), CGRectZero, Static & Dynamic Device Info, Orientation Info, The iPhone Accelerometer, Detecting shakes, Responding to the accelerometer 2.6 Tab Bar & Navigation-Based Application: <ul style="list-style-type: none"> Tab Bars, Root View Controller, Navigation Controller, Navigation Bars, Navigation Items, Bar Button Items, Push/Pop Views

	<p>2.7 Picker View: UIPickerView, UIPickerViewDelegate, UIPickerViewDataSource, Date and Time Picker, UIDatePicker, NSTimer</p> <p>2.8 Table View: Table View Controller, Table View, Table View Cell, Data Source, Table View Delegate</p> <p>2.9 Collection View: Collection View Controller, Collection View, Collection View Cell, Data Source, Collection View Delegate</p> <p>2.10 Alerting Users: UIAlertController</p> <p>Unit 3: Media, Camera, Mail, SMS, Telephony, Data Persistence</p> <p>3.1 Media & Camera: UIImageView, UIImage, Animating Images, UITouch, UIGestureRecognizer, UIPinchGestureRecognizer, Panning, Zooming, Playing Audio, Playing Audio in background, Recording Audio, Playing Video, Photo Library, UIImagePickerController, Taking Pictures And Videos</p> <p>3.2 Mail: MessageUI, MFMailComposeViewController, MFMailComposeViewControllerDelegate</p> <p>3.3 SMS: MFMessageComposeViewController, MFMessageComposeViewControllerDelegate</p> <p>3.4 Telephony: ABAddressBook, ABGroup, ABMultiValue, ABPerson, ABRecord, tel://</p> <p>3.5 plists, Shared Preference, Storing on the file system</p> <p>3.6 SQLite, Core Data</p> <p>Unit 4: Processes, Threads & Networking, Location & Maps</p> <p>4.1 NSProcessInfo, NSThread, Perform In Background, GCD (Grand Central Dispatch), Blocks, Synchronization</p> <p>4.2 NSURL, NSURLRequest, NSURLConnection, JSONSerialization</p> <p>4.3 About Core Location, About Map Kit, Map Overlays, Adding annotations</p> <p>Unit 5: Real Time Working, Introduction to SWIFT</p> <p>5.1 What is a repository? What is IPA file? How to make an ipa file?</p> <p>5.2 How to upload an Ad-Hoc app – (diawi)</p> <p>5.3 How to upload app to AppStore</p> <p>5.4 Swift vs. Objective-C, Swift language principles</p> <p>5.5 Variables & Constants, Optional & Implicitly Unwrapped Optional</p>
Reference Books	<ol style="list-style-type: none"> 1. iPhone Programming : The Big Nerd Ranch Guide, 4th(+) Edition - Joe Conway, Aaron Hillegass 2. iOS 7(+) Programming Cookbook - Vandad Nahavandipoor 3. Programming in Objective-C (5th Edition) (Developer's Library) - Stephen G. Kochan 4. Test-Driven iOS Development (Developer's Library) - Graham Lee 5. iOS App Development For Dummies - Jesse Feiler 6. Beginning iPhone SDK Programming with Objective-C - Wei-Meng Lee 7. Mastering iOS 10 Programming - Donny Wals 8. iOS 10 Programming Fundamentals with Swift - Matt Neuburg 9. Apple Documentation [developer.apple.com/reference]
Teaching Methodology	Class work, Discussion, Self-study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 505: Open Source Web Based Programming (PHP/MySQL)

Course Code	505
Course Title	Open Source Web Based Programming(PHP/MySQL)
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks/ Semester	15 (Including Class work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to understand fundamentals of Open Source web based Programming. The course also imparts students learning about Open source web based scripting language PHP and MySQL database. It also includes MVC or Three tier architecture of web based programming and Javascript technology like AngularJS and Node.js
Course Objective	Student will learn fundamentals and advance topics of Open source Web technology
Pre-requisite	Knowledge of HTML, Javascript and SQL
Course Out come	After studying the course, students will be able to understand how Open source web technology works. They will also be able to create database driven Websites.
Course Content	<p>Unit 1 : Introduction to Open source Web based Programming</p> <ul style="list-style-type: none"> 1.1 Introduction to PHP & MySQL 1.2 Installation of PHP and MySQL 1.3 Language Characteristics & Features 1.4 Operators and Variables, Control Structures, Looping and Error handling 1.5 PHP functions <ul style="list-style-type: none"> 1.5.1 String Functions 1.5.2 Array Functions 1.5.3 Mathematical Functions 1.5.4 Graphics Library (GD Support) 1.5.6 Date and Time Functions 2.5.7 Misc. Function 1.6 State management Techniques 1.7 Object Oriented Features of PHP <ul style="list-style-type: none"> 1.7.1 Classes and Objects 1.7.2 Use of constructors 1.7.3 Serialization 1.7.4 Inheritance <p>Unit 2 : MySQL database server</p> <ul style="list-style-type: none"> 2.1 Configuring the MySQL Server 2.2 MySQL Tables, Displaying MySQL Database , Adding and removing user access 2.3 Database connection and data processing functions <p>Unit 3 : Advance PHP</p> <ul style="list-style-type: none"> 3.1 Ajax Basics <ul style="list-style-type: none"> 3.1.1 HTTP Request and Response Fundamentals 3.1.2 The XMLHttpRequest Object XMLHttpRequest Methods 3.1.3 XMLHttpRequest Properties 3.1.4 Cross-Browser Usage Sending a Request to the Server 3.1.5 PHP and Ajax Client-Driven Communication 3.1.6 Server-Side Processing Expanding and Contracting Content 3.1.7 Form Validation 3.1.8 Ajax-Based Database Querying

	<p>3.2 XML 3.3 Web services</p> <p>Unit 4 : MVC</p> <p>4.1 Introduction to MVC 4.2 CodeIgniter: Introduction, Features and Application Flow Chart 4.3 Controller 4.4 Views 4.5 Models 4.6 Helpers 4.7 Creating and Usage of Libraries and Helpers 4.8 URL Routing 4.9 Error Handling 4.10 Profiling Application</p> <p>Unit 5 : AngularJS and Node.js</p> <p>5.1 Introduction to Angular JS</p> <p>5.1.1 Introduction to JavaScript 5.1.2 Introduction to Angularjs 5.1.3 Directives, Expressions, Controllers, Filters, Tables, Html DOM 5.1.4 Modules, Forms, Includes, Views 5.1.5 Angular SQL 5.1.6 AngularJs Applications</p> <p>5.2 Introduction to Node.js</p> <p>5.2.1 Node.js framework 5.2.2 Callback 5.2.3 Responses 5.2.4 Syntax, Variables, Classes 5.2.5 Mysql Access 5.2.6 Miscellaneous functions like Array,time, date etc.</p>
Reference Books	<ol style="list-style-type: none"> 1. Beginning PHP, Apache, MySQL Web Development - Elizabeth Naramore, Jason Gerner , Yann Le Scouarnec,Jeremy Stolz,Michael K. Glass, Gary Mailer – Wrox Publication 2. Professional PHP Programming - Jesus Castagnetto ,Wrox Press Ltd 3. Beginning PHP and MySQL: From Novice to Professional - W. Jason Gilmore, Apress 4. Php: The Complete Reference - Steven Holzner, Tata Mcgraw Hill Education Private Limited 5. AJAX and PHP: Building Responsive Web Applications - Bogdan Brinzarea, Cristian Darie packtpub 6. CodeIgniter for Rapid PHP Application Development - David Upton ,packtpub 7. Professional CodeIgniter- Thomas Myer, Wrox Press Ltd 8. Node JS for PHP developers – Danial Howard, O’Reilly 9. Beginning AngularJS - Andrew Grant,Apress 10. Php manual – www. Php.com
Teaching Methodology	Class work, Discussion, Self Study, Seminars and/or Assignment
Evaluation Method	<p>30% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc.</p> <p>70% assessment is based on semester end University External examination</p>

Course: 506: Programming Skills XI

Course Code	506
Course Title	Programming Skills XI
Credit	2
Teaching per Week	2 Hrs.
Minimum weeks/ Semester	15 (Including Lab. work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to implement the Cloud Computing/IOT practically.
Course Objective	Learning to implement fundamentals and advanced topics of Cloud Computing/IOT practically
Pre-requisite	Practical programming in desktop environment / Embedded Technology
Course Outcome	After studying the course, students will be able to practically work on advanced technology platforms of Cloud Computing/IOT.
Course Content	Practical based on paper no 501. Separate journal to be prepared for this subject 501.
Reference Books	-----
Teaching Methodology	Lab work, Practical Programming Exercises (to be documented in a separate journal), Self-study, and/or Assignment
Evaluation Method	30% Internal assessment is based on Lab attendance, practical test, practical internal examination etc. 70% assessment is based on semester end University External practical examination

Course: 507: Programming Skills XII

Course Code	507
Course Title	Programming Skills XII
Credit	3
Teaching per Week	3 Hrs.
Minimum weeks/ Semester	15 (Including Lab. work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to implement the advanced concepts of .NET/Java practically.
Course Objective	Learning to implement the advanced topics of .NET/Java practically.
Pre-requisite	Practical programming in basic .NET/Java.
Course Outcome	After studying the course, students will be able to practically work on advanced technology platforms of .NET/Java.
Course Content	Practical based on paper no 503. Separate journal to be prepared for this subject 503.
Reference Books	-----
Teaching Methodology	Lab work, Practical Programming Exercises (to be documented in a separate journal), Self-study, and/or Assignment
Evaluation Method	30% Internal assessment is based on Lab attendance, practical test, practical internal examination etc. 70% assessment is based on semester end University External practical examination

Course: 508: Programming Skills XIII

Course Code	508
Course Title	Programming Skills XIII
Credit	2
Teaching per Week	2 Hrs.
Minimum weeks/ Semester	15 (Including Lab. work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to implement the advanced concepts of Android/iOS practically.
Course Objective	Learning to develop and deploy apps using advanced Android/iOS practically.
Pre-requisite	Practical programming in basic Android/iOS.
Course Outcome	After studying the course, students will be able to practically work on advanced technology platforms of Android/iOS.
Course Content	Practical based on paper no 504. Separate journal to be prepared for this subject 504.
Reference Books	-----
Teaching Methodology	Lab work, Practical Programming Exercises (to be documented in a separate journal), Self-study, and/or Assignment
Evaluation Method	30% Internal assessment is based on Lab attendance, practical test, practical internal examination etc. 70% assessment is based on semester end University External practical examination

Course: 509: Programming Skills XIV

Course Code	509
Course Title	Programming Skills XIV
Credit	3
Teaching per Week	3 Hrs.
Minimum weeks/ Semester	15 (Including Lab. work, examination, preparation, holidays etc.)
Review / Revision	June 2017
Purpose of Course	This course helps students to implement the basic and advanced concepts of PHP/MySQL practically.
Course Objective	Learning to develop and deploy websites using PHP/MySQL practically.
Pre-requisite	Basic scripting, programming, html.
Course Outcome	After studying the course, students will be able to practically develop dynamic websites using PHP/MySQL.
Course Content	Practical based on paper no 505. Separate journal to be prepared for this subject 505.
Reference Books	-----
Teaching Methodology	Lab work, Practical Programming Exercises (to be documented in a separate journal), Self-study, and/or Assignment
Evaluation Method	30% Internal assessment is based on Lab attendance, practical test, practical internal examination etc. 70% assessment is based on semester end University External practical examination