Course : ICT 301 : Smart Device Computing using iOS

Course Code	ICT 301
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 2015
Purpose of Course	This course helps students to understand iOS based smart device application development. The course also gives students an idea about various components of iOS application development tools.
Course Objective	The objective of the course is to provide in depth knowledge of Objective-C, iOS programming, iOS based application design and development.
Pre-requisite	Object Oriented Programming Language
Course Out come	Students will be able to develop smart device applications on iOS platform.
Course Content	**Unit : 1: Introduction to iOS and Objective C** 1.1. Introduction to iOS 1.2. iOS Device types 1.3. iOS Architecture 1.4. Development tools - Objective-C, Xcode IDE, Interface Builder, Device Simulator 1.5. Introduction to Objective-C 1.6. An Instance Reference Is a Pointer 1.7. Messages and Methods 1.8. Dynamic Typing and Dynamic Binding 1.9. Typecasting and the id Type 1.10. Messages as Data Type 1.11. Class and Superclass 1.12. Interface and Implementation 1.13. Header File and Implementation File 1.14. Class Methods 1.15. Polymorphism 1.16. The Keyword self 1.17. The Keyword super 1.18. Instance Variables and Accessors 1.19. Key–Value Coding 1.20. Declared Properties 1.21. Memory Management – ARC 1.22. Protocols and Categories 1.23. Introduction to Foundation Framework **Unit : 2 : Interfaces Designing** 2.1 Views and Window 2.2 Model View Controller (MVC) pattern in User Interface Design - Views, Controls, and Controllers in Cocoa Touch. 2.3 Cocoa Touch, UIKit 2.4 UIView, UIWindow, UIViewControllers, 2.5 UI elements: labels, buttons, text boxes, etc. 2.6 UIImages 2.7 UI event loop. 2.8 Outlets, actions, delegates 2.9 data sources in Cocoa Touch Framework **Unit : 3 : Table View & Gestures** 3.1 Static vs. Dynamic Table Views 3.2 Table View Delegate and dataSource

	3.3 Table View Styles 3.4 UITableViewController and UITableViewCell Subclasses 3.5 Table View Navigation 3.6 Multi-touch Events 3.7 Recognizing and Handling Gestures: 3.8 pinch, pan, zoom, swipe, and tap 3.9 Custom Gestures **Unit : 4 : Working with Data and Multimedia** 4.1 Maintaining state between application invocations 4.2 File system 4.3 Property Lists 4.4 SQLite 4.5 Core Data Framework 4.6 NSXML Parser 4.7 Core Graphics 4.8 Custom View and its methods 4.9 Core Media: audio, still photos and video 4.10 Drawing, Animation, and Threading 4.11. UIImageView and UIImage Animation 4.12. View Animation 4.13. Implicit Layer Animation 4.14. Core Animation 4.15. Actions **Unit : 5 : Location based Services and iCloud** 5.1 Core Location Framework 5.2 MapKit and MapView 5.3 Location based Reminder 5.4 iCloud Requirements 5.5 iCloud Data Storage Services 5.6 Ubiquity Containers 5.7 Core Data and iCloud 5.8 Sharing Data Between Applications
Reference Book	1. Programming in Objective-C 2.0 by Stephen Kochan, Addison-Wesley publication, 2009 2. iOS 5 Programming Cookbook by Vandad Nahavandippor, O'reilly Publication 3. iPhone and iPad App 24-Hour Trainer by Abhishek Mishra and Gene Backlin, WROX Publication-Wiley-India, 2012 4. Professional iPhone and iPad Database Application Programming by Patrick Alessi, WROX Publication-Wiley-India, 2012 5. iPhone App Development by Craig Hockenberry, SPD O'reilly Publication, 2010 6. Beginning iPhone and iPad Web Apps by Chris Appers and Daniel Paterson, Apress Publication, 2011
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

Course : ICT 302 : Advance Wireless Communication

Course Code	ICT 302
Course Title	Advance Wireless Communication
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	June 2015
Purpose of Course	This course provides in depth knowledge of mobile communication architecture and wireless communication technologies.
Course Objective	To make student understand Mobile technology architecture, its components and Wireless communication technology.
Pre-requisite	Fundamental knowledge of network communication
Course Out come	This course enables students to understand mobile communication. This course will also help students to understand the role of various wireless communication systems and select particular type of communication technology for their application development.
Course Content	**Unit : 1 : Introduction to Mobile Computing and Personal Communications Services** 1.1 Mobility, Nomadic, Mobile and Ubiquitous computing 1.2 Mobile Computing Architecture, Mobile Devices 1.3 Mobile Computing Technology (H/W, S/W, Communication) 1.4 PCS Architecture, **Unit : 2 : Cellular communication systems** 2.1 Global System for Mobile Communication (GSM) system overview: 2.1.1 Cellular concept 2.1.2 Frequency Reuse Planning and Design 2.1.3 GSM Architecture 2.1.4 Mobility Management 2.1.5 Network Signaling 2.2 General Packet Radio Service (GPRS) architecture and working 2.2.1 GPRS Architecture, GPRS backbone Architecture 2.2.2 Working of GPRS and GPRS Protocol Stack, 2.3 Wireless Local Loop (WLL) 2.3.1 Introduction to WLL Architecture and WLL Technologies **Unit : 3 : New Generation Mobile Services** 3.1 Introduction to International Mobile Telecommunications 2000 (IMT 2000) Vision 3.1.1 Spread spectrum concept and spreading code 3.1.2 Features of CDMA • RAKE Receiver • Power Control • Frequency Allocation • Soft Handoff 3.1.3 Network signaling 3.2 Wideband Code Division Multiple Access (W-CDMA) 3.3 CDMA 2000 3.4 Quality of Services in 3G Classes and Structure 3.5 Wireless Application Protocol(WAP} 3.6 Introduction to 4G technology **Unit : 4 : Satellite communication** 4.1 Introduction of satellite orbits and Architecture 4.2 IRIDIUM satellite system 4.3 GLOBALSTAR satellite system

	Unit : 5 : Wireless Enterprise networks and Industrial communication technology 5.1 Introduction to virtual Networks 5.2 Bluetooth technology 5.3 Bluetooth Protocols 5.4 RFID technology 5.5 Mobile IP 5.6 Infrared communication technology 5.7 Optical Wireless Network 5.8 Introduction to field bus communication and types 5.9 Wireless sensor networks,Wireless Sensor Network protocols 5.10 WIFI, WIMAX Technology 5.11 Overview of Hybrid Wireless Networks
Reference Book	1. Mobile and Personal communication systems and services, Raj pandya, PHI 2. Principles of Wireless Networks,Kavesh Pahlavan,Prashant Krishnamurti, Pearson Edition 3. Wireless and Mobile Network Architectures,Yi-Bing Lin & Imrich Chlamtac,John Wiely &sons, 4. Guide to Designing and Implementing Wireless LANs; Mark Ciampa,Thomson Learning Vikas Publishing house 5. The Wireless Application Protocol Sandip singhal, Pearson edition 6. Embedded real time system K.V.K.K. Prasad Dreamtech press 7. Mobile Computing, Asoke K Talukder,Hasan Ahmed,Roopa R. Yavagal Tata Mc Graw Hill 8. Adhoc Wireless Networks C.Siva Ram Murthy, B.S.Manoj Pearson Education
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

Course : ICT 303 : Cloud Computing

Course Code	ICT 303
Course Title	Cloud Computing
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	2015
Purpose of Course	Teach Cloud Computing and SOA as per software industry's requirements.
Course Objective	This course gives concepts and implementation of Cloud Computing and Service Oriented Architecture.
Pre-requisite	Programming Languages, Operating System Concepts, Networking, Distributed Computing, Web Services, Web Application Development
Course Out come	Students will be able to understand and implement Cloud Computing and Service Oriented Architecture.
Course Content	**Unit : 1 : Introduction to Cloud Computing and Virtualization** 1.1 Definition of Cloud Computing 1.2 Characteristics of Cloud Computing 1.3 Types of Cloud Services 1.3.1 Infrastructure as a Service – IaaS 1.3.2 Platform as a Service – PaaS 1.3.3 Software as a Service – SaaS 1.3.4 Anything as a Service – XaaS 1.4 Cloud Deployment Models 1.5 Issues and Challenges of Cloud Computing 1.6 Cloud Providers and Service Level Agreements 1.7 Virtualization Concept 1.8 Types of Virtualization 1.9 Virtual Machine Manager – Hypervisor 1.10 Virtualization usage in Cloud Datacenter **Unit : 2 : Cloud Development, Deployment and Management** 2.1 Datacenter Architecture 2.2 Building a Cloud 2.3 Networking in Cloud 2.4 Management and Monitoring 2.5 Recovery and Fault Tolerance 2.6 Cloud Security 2.7 Structure of Cloud Application 2.8 Application Configuration for Testing and Deployment 2.9 Cloud Application Deployment Portal **Unit : 3 : SOA Fundamentals, Planning and Analysis** 3.1 Definition, Evolution, characteristics of SOA 3.2 Role of SOA in Cloud Computing 3.3 Basic SOA architecture, infrastructure services 3.4 SOA Enterprise Software models 3.5 Stages of the SOA lifecycle 3.6 Service-oriented analysis, Capture and assess business and IT issues and drivers 3.7 Determining non-functional requirements 3.8 Business centric SOA and its benefits

	3.9 Business modeling Building blocks **Unit : 4 : SOA Design and implementation** 4.1 Service-oriented design process, design activities 4.2 Determine services 4.3 Tasks based on business process model 4.4 Mapping business processes using Bussiness Process Execution Language BPEL 4.5 Designing service integration environment with Enterprise Service Bus (ESB) 4.6 Business Integration Tools 4.7 Implementing SOA 4.8 SOA security implementation **Unit : 5 : SOA Governance** 5.1 SOA Governance Needs 5.2 SOA Governance Life Cycle 5.3 SOA Organization and Teams
Reference Book	1. Cloud Computing: Principles and Paradigms R. Buyya et al. (eds.) Wiley 2. Cloud Computing: Principles, Systems and Applications L. Gillam et al. (eds.) Springer 3. Cloud Computing: Principles, Systems and Applications L. Gillam et al. (eds.) Springer 4. Service-Oriented Architecture Compass: Business Value, Planning, and Enterprise Roadmap Norbert Bieberstein, Sanjay Bose, Marc Fiammante, Keith Jones, Rawn Shah IBM Press Publication 5. The New Language of Business: SOA & Web 2.0 Sandy Carter IBM Press Publication 6. Service-Oriented Architecture: A Field Guide to Integrating XML and Web Services Thomas Erl Prentice Hall Publication 7. Enterprise Service Bus Dave Chappell O'Reilly Publications 8. Web Services Platform Architecture: SOAP, WSDL, WS-Policy, WS-Addressing, WS-BPEL, WS-Reliable Messaging, and More Sanjiva Weerawarana, Francisco Curbera, Frank Leymann, Tony Storey, Donald F. Ferguson Prentice Hall Publication 9. Understanding SOA with Web Services Eric Newcomer, Greg Lomow Addison Wesley Publication
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

Course : ICT 304 : Open Source Web Development

Course Code	ICT 304
Course Title	Open Source 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 2015
Purpose of Course	This course provides practical approach for web application development using open source web technologies and language like PHP, Ruby and other frameworks available as open source.
Course Objective	To make student understand significance of open source technology, MVC architecture, and develop web applications using open source languages and framework.
Pre-requisite	Object Oriented Fundamentals, Web Technology Fundamentals
Course Out come	After studying this course, students will be able to understand concept and importance of open source technology and also develop web application using open source languages and framework.
Course Content	**Unit : 1 : Open Source Web Technology and PHP Language Basics** 1.1 PHP Language Characteristics, Features and Extensions 1.2 Language Constructs, Variables, Declarations and Types, Constants 1.3 Use of Operators and Control Structures 1.4 Arrays, Functions and References 1.5 PHP Configuration Directives of php.ini file 1.6 Super Global Arrays 1.7 Handling Session, Cookies, Form Data, File Uploads, Server Data, Server Environment 1.8 Handling Form Data Using JavaScript 1.9 Securing Request Data, Using CAPTCHA, Session Fixation Attack and Remedy **Unit : 2 : Object Oriented and Advanced Features of PHP** 2.1 Classes and Objects 2.2 Use Of Constructors, Destructors, Inheritance 2.3 Serialization 2.4 Built-In Library Functions: String, Array, Mathematics, Graphics Library, File System, Date and Time, Files and Directory, XML, PDF, HTTP, Network, PHP Options and Information, ZIP File 2.5 Configuring and Starting MySQL Server, Database, Tables 2.6 Working with PhpMyAdmin 2.7 Mysql Functions, Error Handling, SQL Injection Attack and Prevention 2.8 Web Services with PHP 2.9 Introduction to AJAX with PHP **Unit : 3 : Security Threats and Remedies** **Unit : 4 : Templates** 4.1 Template Systems: PHP itself 4.2 Smarty **Unit : 5 : Introduction to Frameworks** 5.1 JQuery Framework 5.2 PHP Frameworks and Libraries 5.3 Any one framework from other popular open source 5.4 Languages
Reference Book	1. PHP6 and MySQL6 Bible – Steve Suehring, Tim Converse, Joyce Park -

	Wiley 2. Programming PHP - Rasmus Lerdorf, Kevin Tatroe - O'Reilly 3. PHP Cookbook - David Sklar, Adam Trachtenberg - O'Reilly 4. Beginning Ruby: From Novice to Professional - Peter Cooper - Apress 5. Ruby on Rails: Up and Running - Bruce A. Tate, Curt Hibbs - O'Reilly 6. The Ruby Programming Language - Yukihiro Matsumoto, David Flanagan - O'Reilly 7. Beginning Rails 4 - Adam Gamble, Cloves Carneiro Jr., Rida Al Barazi – Apress 8. Agile Web Development with Rails 4 - Sam Ruby, Dave Thomas, David Heinemeier Hansson – SPD
Teaching Methodology	Lectures, Discussion, Independent Study, Seminars and Assignment
Evaluation Method	30% Internal assessment 70% External assessment

Course : ICT 305 : Practical

Course Code	ICT 305
Course Title	Practical
Credit	6
Teaching Per Week	6 Hrs
Minimum Weeks Per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)
Review/Revision	June 2015
Purpose of Course	The course provides practical knowledge of smart device applications on iOS and web applications using open source.
Course Objective	The course prepares students to develop smart device applications on iOS and web applications using open source programming language and framework.
Prerequisite	Object Oriented Programming, Web Technology Fundamentals
Course Outcome	After completion of this course, students will be able to develop applications for smart devices on iOS platform and web applications using open source programming language and framework. .
Course Content	Practical based on Paper No. ICT 301-Smart Device Computing using iOS and ICT 304-Open Source Web Development
Reference Books	NIL
Teaching Methodology	Lab Work
Evaluation Method	30% Internal Assessment 70% External Assessment

Course : ICT 306 : Part time Project based on Smart Device Computing

Course Code	ICT 306
Course Title	Part time Project based on Smart Device Computing
Credit	8
Teaching Per Week	8
Minimum Weeks Per Semester	15 (Including Practical Work, Examination, Preparation, Holidays etc.)
Review/Revision	June 2015
Purpose of Course	The part time project work is introduced to make students implement their theory and practical knowledge they learned during this semester to solve real life problems for mobile and web applications.
Course Objective	To help students to develop smart device applications and web applications using PHP or other open source language or framework.
Prerequisite	Knowledge of Object Oriented Programming, Web Technology Fundamentals
Course Outcome	After completion of this course, students will be able to develop smart device applications and web applications using PHP or other open source language or framework.
Course Content	The students are required to develop part time project based on Smart Device Computing and Open Source Web Development. The students must prepare documentation of the project completed as per the Software Engineering Guidelines. At the end of the semester, the students have to submit their project report in bounded form to the institution. The Project Presentation and Viva – Voce will be conducted as per the University exam schedule. The students have to submit the following reports at the institution: 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 submit project source code)
Reference Books	NIL
Teaching Methodology	Project guidance, Review
Evaluation Method	30% Internal Assessment 70% External Assessment

Course : ICT 401 : PROJECT

Course Code	ICT-401
Course Title	Project
Credit	30
Teaching Per Week	-
Duration	6 Months
Review/Revision	June 2015
Purpose of Course	To acquaint students with technological practices followed in the IT industry by making them work on projects for 6 months
Course Objective	To familiarize students with IT Projects Development and Management Practices in industry
Prerequisite	Knowledge of all the technologies studied in semester 1, 2 and 3 of M.Sc.(ICT)
Course Outcome	After completion of this course the students will be ready to work productively in IT industry
Course Content	The students have to submit the following reports at the institution: 1. Project Joining Report 2. Project Title Report 3. Monthly Progress Reports 4. Project Completion Certificate 5. Institution Certificate 6. Non disclosure of Source Code Certificate (In case the student is unable to submit project source code) • The students are required to do 6 months full time project preferably in industry. • The students must prepare documentation of the project completed as per the Software Engineering Guidelines. • The students are required to submit monthly progress report at the institute. • At the end of the semester, the students have to submit their project report in bounded form to the institution. • The Project Presentation and Viva – Voice will be conducted as per the University exam schedule.
Teaching Methodology	Project guidance, Review
Evaluation Method	30% Internal Assessment 70% External Assessment