

**BHARATHIAR UNIVERSITY, COIMBATORE – 641 046**

**M. Sc INFORMATION TECHNOLOGY (CBCS)  
(Effective from the academic Year 2018 - 2019)**

**1. Eligibility for Admission to the Programme**

Candidates for admission to the first year programme leading to the Degree of Master of Science in Information Technology (M.Sc IT) will be required to possess:

A Pass with 50% of marks in B.Sc. Computer Science / B.C.A. /B.Sc. Computer Technology / B.Sc. Information Technology.

In case of SC/ST candidates, a mere pass in any of the above Bachelor's degree will be sufficient.

**2. Duration of the Programme**

The programme shall be offered on a full-time basis. The programme will consist of three semesters of course work and laboratory work and the fourth semester consists of project work.

**3. Regulations**

The general Regulations of the Bharathiar University Choice Based Credit System Programme are applicable to this programme.

**4. The Medium of Instruction and Examinations**

The medium of instruction and Examinations shall be in English.

**5. Submission of Record Notebooks for Practical Examinations & Project Viva-Voce.**

Candidates taking the Practical Examinations should submit bonafide Record Note Books prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Practical Examinations.

Candidates taking the Project Viva Examination should submit Project Report prescribed for the Examinations. Otherwise the candidates will not be permitted to take the Project Viva-voce Examination.

**6. Online Courses.**

Candidates have to complete two online courses of minimum 3 month duration (One in each year) to complete the M.Sc (IT) Programme.

**M.Sc. Information Technology (University Department) 2018-2019**  
**SCHEME OF EXAMINATIONS**  
(Effective from the academic Year 2018-2019)

Core/ Elective/ Supportive/ Project	Suggested Code	Sem	Title of the Paper	Duration	Credits	Marks
Core 1	18IT13A	I	Object Oriented Software Engineering	4	4	100
Core 2	18IT13B	I	Design and Analysis of Algorithms	4	4	100
Core 3	18IT13C	I	Advanced Java Programming	4	4	100
Core 4	18IT13D	I	Relational Data Base Management Systems	4	4	100
Core 5	18IT13P	I	Advanced Java Programming - lab	3	3	75
Core 6	18IT13Q	I	Relational Data Base Management Systems – Lab	3	3	75
Elective - I	18IT1EX	I	Elective – I	4	4	100
Supportive-1	18IT1GSXX	I		2	2	50
Core 7	18IT23A	II	C# and .NET Programming	4	4	100
Core 8	18IT23B	II	Multimedia Systems	4	4	100
Core 9	18IT23C	II	Information Security	4	4	100
Core 10	18IT23D	II	Open Source Technology	4	4	100
Core 11	18IT23P	II	C# and .NET Programming - Lab	3	3	75
Core 12	18IT23Q	II	Open Source Technology - Lab	3	3	75
Elective - II	18IT2EX	II	Elective – II	4	4	100
Supportive-2	18IT2GSXX	II		2	2	50
Non-Credit Courses						
	One online course of Minimum 3 Months Durations.			0	0	0
Core 13	18IT33A	III	Embedded Systems	4	4	100
Core 14	18IT33B	III	Software Testing	4	4	100
Core 15	18IT33C	III	Grid and Cloud Computing	4	4	100
Core 16	18IT33D	III	Mobile Applications Development	4	4	100
Core 17	18IT33P	III	Software Testing - Lab	3	3	75
Core 18	18IT33Q	III	Mobile Applications Development - Lab	3	3	75
Elective - III	18IT3EX	III	Elective – III	4	4	100
Supportive-3	18IT3GSXX	III		2	2	50
Project	18ITPRO	IV	Project work and Viva-Voce		6	150
Non-Credit Courses						
	One online course of Minimum 3 Months Durations			0	0	0
<b>Total</b>					90	2250

M.Sc. Information Technology (University Department) 2018-2019

ELECTIVE PAPERS

Course Code	Title of the course	Instruction Hours	Credits	Marks
18ITE01	Digital Image Processing	4	4	100
18ITE02	E- Commerce	4	4	100
18ITE03	Mobile Ad-Hoc Networks	4	4	100
18ITE04	Web Programming	4	4	100
18ITE05	Software Quality Assurance	4	4	100

M.Sc Information Technology (University Department) 2018-2019

LIST OF SUPPORTIVE COURSES

Course Code	Title of the course	Instruction Hours	Credits	Marks
18ITS01	Windows and MS Word	2	2	50
18ITS02	Internet and HTML Programming	2	2	50
18ITS03	Introduction to Information Technology	2	2	50

Programme Objective for M.Sc (IT) Programme.

Post Graduates of M.Sc (IT) Programme will be.,

PO1 : Programming Experts in JAVA, C#, HTML and Open Source Software.

PO2 : Developers of a Product / Process in the domains DBMS, HCI, Networking and Security Tools.

PO3 : Solution Providers using appropriate IT Tools for the welfare of the society.

PO4: Able to do Research in the Domain of DIP, Networking, Software Engineering and Security.

**Title of the Course : Object Oriented Software Engineering**

**No. of Credits : 4**

**Code No.: 18IT13A**

**No. of Teaching Hours: 48**

**Course Objectives:**

- This course aims at introducing to the students about the product that is to be engineered and the process that provides a framework for the engineering technology.
- The course facilitates the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.
- It also improves the knowledge of the students to do research in further developments.

**UNIT I - Software Process and Life Cycle Models:**

Waterfall, RAD, Spiral, Open-source, Agile process, Understanding software process, Process metric, CMM levels.

**UNIT II - Planning and Estimation:**

Product metrics Estimation, LOC, FP, COCOMO models, Project Management, Planning, Scheduling, Tracking.

**UNIT III - Workflow of Software Life Cycle:**

Requirement Workflow, Functional , Non-functional, Characteristics of Requirements, Requirement Elicitation Techniques, Requirement Documentation, Use case specification, Activity Diagram, Analysis workflow, Static Analysis, Identifying Object, Methods of identifying objects and types, Boundary, Control, Entity, Dynamic Analysis, Identifying Interaction, Sequence and Collaboration diagrams, State chart diagram, Design Workflow, System Design Concept, Coupling and Cohesion, Architectural Styles, Identifying Subsystems and Interfaces, Design Patterns.

**UNIT IV - Implementation workflow:**

Mapping models to Code, Mapping Object Model to Database Schema Testing FTR, Walkthrough and Inspection, Unit Testing, Integration, System and Regression Testing, User Acceptance Testing, Software Quality, Quality Standards, Quality Matrices, Testing & SQA: FTR, unit testing, integration testing, product testing, and acceptance testing.

**UNIT V - Software Configuration Management:**

Managing and controlling Changes, Managing and controlling versions Maintenance, Types of maintenance, Maintenance Log and defect reports, Reverse and re-engineering.

**Reference Books:**

- Bernd Bruegge, “Object oriented software engineering”, Second Edition, Pearson Education.
- Stephan R. Schach, “Object oriented software engineering”, Tata McGraw Hill.
- Roger Pressman, “Software Engineering”, sixth edition, Tata McGraw Hill.

**Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Explain a process model for a software project Development.
- CO2: Prepare the SRS, Design document, Project plan of a given software system.
- CO3: Apply Project Management and Requirement analysis, Principles to S/W project development.
- CO4: Analyze the cost estimate and problem complexity using various Estimation techniques

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN.**

**Title of the Course : Design and Analysis of Algorithms**

**No. of Credits : 4**

**Code No.: 18IT13B**

**No. of Teaching Hours: 48**

**Course Objectives:**

- This course will enable students to solve a given problem using an algorithm.
- Also, it enables to mathematically analyze the algorithms for its efficiency and effectiveness.
- It also improves the knowledge of the students to do research in further developments.

**UNIT I - Algorithms:**

The Role of Algorithms in Computing - Insertion sort; Analyzing and Designing Algorithms: Functions, Asymptotic notation, Standard notations and common functions, Divide-and-Conquer, maximum-sub array problem, Strassen's algorithm for matrix multiplication substitution method for solving recurrences, The recursion-tree method for solving recurrences.

**UNIT II - Probabilistic Analysis and Randomized Algorithms:**

The hiring problem, Indicator random variables, Randomized algorithms, Probabilistic analysis and further uses of indicator random variables;

**UNIT III - Sorting Algorithms:**

Heap sort, Heaps, Maintaining the heap property, Building a heap, The heap sort algorithm, Priority queues, Quick sort, Performance of quick sort, A randomized version of quick sort Analysis of quick sort, Sorting in Linear Time.

**UNIT IV - Stacks and Queues:**

Linked lists, Implementing pointers and objects, Representing rooted trees Binary Search Trees, Red-Black Trees.

**UNIT V - Dynamic programming :**

Matrix chain multiplication, Elements of dynamic programming, Longest common subsequence, Optimal binary search trees. Greedy Algorithms: An activity selection problem, Huffman codes, Amortized Analysis, Aggregate analysis, The accounting method, The potential method, Dynamic tables.

**Reference Books:**

- Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, "Introduction to Algorithms", MIT Press, Third Edition, 2009.
- Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", Second edition, Galgotia Publication, New Delhi, 2003.
- Anany Levitin, "Introduction to the Design and Analysis of Algorithm", Second edition, Pearson Education, New Delhi, 2005.

**Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Summarize the relevance of algorithms for computational Problems solving and real time applications.
- CO2: Differentiate different algorithmic approaches, techniques and methods
- CO3: Apply design and analysis techniques for a given algorithm.
- CO4: Apply optimization techniques for improving the efficiency of algorithms.

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course: Advanced Java Programming**

**No. of Credits: 4**

**Code No. : 18IT13C**

**No. of Teaching Hours: 48**

**Course Objectives:**

- On successful completion of the course the students should have Acquired skill in advanced java programming.
- This course covers the advanced features of Java starting with the database connectivity using drivers and servlet programming.
- The distributed computing strategies of Java using RMI are analyzed.

**UNIT I - Basic Concept:**

JAVA – Features and Characters of JAVA - Object-Oriented Programming – Encapsulation – Inheritance – Polymorphism - Overriding– Constants -Variables – Types – Swing features – Difference between Swing and AWT components.

**UNIT II - Distributed Application and Networking:**

Client/Server communication - Overview of the RMI – Advantages of RMI – RMI Architecture – Developing RMI Applications – Parameters in RMI - Java Virtual Machine - Java Serialization - Java Networking.

**UNIT III - Applets and Events:**

Applets - HTML applet tags – Order of Applet initialization – Sizing graphics – Mouse Event Handling – Examples of key event handling - The Delegation Event Model – Event class and event listener.

**UNIT IV - JDBC and Servlets:**

JDBC Vs ODBC – Types of JDBC Drivers – Basic operations on JDBC. Features of Servlets – Servlet lifecycle service – Steps to run the servlet program – Cookies Vs Session – Database Connectivity with JDBC using Servlet.

**UNIT V - JSP and EJB:**

Define JSP – Advantages of JSP – JSP tags - Servlet Vs JSP – JSP Syntax Basics – JSP Directories – EJB Benefits – Types of Enterprises Beans – Session Bean with types – Entity Bean – Entity Beans Vs Session Beans – Message Driven Beans.

**Reference Books:**

- Professional Java Server Programming, Subrahmanyam Allamaraju and Cedric Bues, Apress, SPD, 2005.



- Java - The Complete Reference, Herbert Schildt, Tata McGraw-Hill, Eighth edition, 2011.
- Advanced Java for Students, Dr. Ashwin Metha and Sarika Shah, The X team, published by SPD Pvt. Ltd, 2012.
- Jamie Jaworski, “Java Unleashed”, SAMS techmedia Publications 1999.
- Campione, Walrath and Huml, “The Java Tutorial”, Addison Wesley 1999.
- Jim Keogh, “The Complete Reference J2EE”, Tata McGrawHill Publishing Company Ltd, 2002.

### **Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Describes about the basic object oriented concepts like encapsulation, polymorphism and various AWT concepts.
- CO2: Explains about networking in advanced java using client/server communication and remote method invocation. Provides an overview about HTML tags and explain about java applets and event.
- CO3: Handles different event in java using the delegation event model, event listener and class.
- CO4: Evaluate the business logic of enterprise applications and explains how to simplify of large distributed applications.

**Course prepared by: Dr. R. VADIVEL**

**Course Verified by: Dr. M. SUNDARESAN**

**Title of the Course : Relational Data Base Management Systems**

**No. of Credits : 4**

**Code No.: 18IT13D**

**No. of Teaching Hours: 48**

**Course Objectives :**

- This course aims at facilitating the student to understand the various functionalities of DBMS software.
- It helps to perform many operations related to creating, manipulating and maintaining databases for Real-world applications
- It helps the students to understand the various designing concepts, storage methods, querying and managing databases.

**Unit I -Database internals and Advanced concepts:**

Introduction- Data Models - Entity Relationship model - Relational model - Relational Database - Introduction - SQL - Other Relational languages - Integrity and Security - Relational Database design.

**Unit II -Transaction Management:**

Overview of Transaction Management- The ACID properties – Transactions and Schedules – Concurrent execution of Transactions – Lock based concurrency control – Performance of locking - Transaction support in SQL – Introduction to crash recovery – The log – Other recovery related structures – Check pointing – Recovering from a system crash – Media Recovery.

**Unit III -Object based Databases and XML:**

Structured Data Types - Operations on Structured Data - Encapsulation and ADTs – Inheritance - Objects, OIDs, and Reference Types - Database Design for an ORDBMS - ORDBMS Implementation Challenges – OODBMS - Comparing RDBMS, OODBMS, and ORDBMS – XML – Background – Structure of XML Data – XML Document Schema – Querying and Transformation - The Application program interface – Storage of XML data- XML Application - Case Study in XML.

**Unit IV -Parallel and Distributed Databases:**

Distributed Databases – Homogeneous and Heterogeneous Databases - Distributed Data Storage - Distributed Transactions - Commit Protocols – Concurrency Control in Distributed Databases – Availability - Distributed Query Processing - Heterogeneous Distributed Databases - Directory Systems - Parallel Databases – Introduction - I/O Parallelism – Inter query Parallelism – Intra operation Parallelism - Interoperation Parallelism - Design of Parallel Systems – Case Study in Oracle.

**Unit V -NoSQL:**

NoSQL Basics - Interfacing and Interacting with NoSQL – Storage Architecture - CRUD Operations - NoSQL Stores Queries - Data Stores Modifications and Evolution Management - Indexing and Ordering Data Sets - NoSQL in Cloud – Case Study in MongoDB.

**Reference Books:**

- Silberschatz, Korth, Sudarshan, “Database system concepts”, 4<sup>th</sup> Edition, Tata McGraw Hill (For UNITS I,III, IV).
- Ramakrishnan, Gehrke, “Database Management Systems”, Tata McGraw Hill (For UNIT II, III).
- Shashank Tiwari, “Professional NoSQL” (For UNIT V).

**Course Outcomes:**

On successful completion of the course, students will be able to

CO1: Explain the structure and model of the relational database system

CO2: Design multiple tables, and using group functions, sub queries

CO3: Design a database based on a data model considering the normalization to a specified level

CO4: Estimate the storage size of the database and design appropriate storage techniques

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course: Advanced Java Programming Lab**

**No. of Credits: 3**

**Code No. : 18IT13P**

**No. of Teaching Hours: 36**

**Course Objectives:**

- Objective of this course is to provide the ability to design console based applications, GUI based and web based applications.
- Students will also be able to understand integrated development environment to create, debug and run multi-tier and enterprise-level applications.
- Design and analyze programs using remote method invocations (RMI).

**Syllabus as per course code: 18IT13C, Title: Advanced Java Programming.**

**Course Outcomes:**

On successful completion of the course, students will be able to

CO1: Identify classes, objects, members of a class and relationships among them needed for a specific problem.

CO2: Apply Java application programs using OOP principles and proper program structuring.

CO3: Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc and exception handling mechanisms.

CO4: Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.

**Course prepared by: Dr. R. VADIVEL**

**Course Verified by: Dr. M. SUNDARESAN**

**Title of the Course: Relational Data Base  
Management Systems – Lab**

**No. of Credits : 3**

**Code No: 18IT13Q**

**No. of Teaching Hours: 36**

**Course Objectives:**

- This course aims at giving adequate exposure to students on the Database design and E-R modelling.
- The course also facilitates students with hands on training on SQL, oracle and NoSQL (Mongo DB) within the RDBMS environment.
- It helps the students to implement the various designing concepts, storage methods, querying and managing databases.

**Syllabus as per course code: 18IT13D, Title: Relational database management system.**

**Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Model Entity Relationship with E-R diagrams
- CO2: Design database schema considering normalization and relationships within database
- CO3: Write SQL queries to user specifications
- CO4: Develop triggers, procedures, user defined functions and design accurate and PLSQL programs in Oracle, XML and NoSQL.

**Course Prepared by : Mrs.W.ROSEVARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course : C# and.NET Programming**

**No. of Credits : 4**

**Code No. : 18IT23A**

**No. Teaching Hours : 48**

**Course Objectives:**

- Understood the .NET framework
- Learnt programming techniques in C#
- Design and Develop Dynamic pages using C# and .NET

**Unit I - Introduction to .NET frame work :**

NET objects – ASP .NET - .NET Web services – Windows forms

**Unit II - Introduction to C# :**

Understanding c# in .NET - Overview of C# - Literals, variables and data types

**Unit III – Operators, Looping and Arrays :**

Operators, Expressions, Branching and looping operations – Methods, Arrays, Strings

**Unit IV : Structures and Introduction to OOPS :**

Structures and Enumerations – Classes and Objects – Inheritance and Polymorphism, Multiple Inheritance

**Unit V – OOPS and Exception Handling :**

Operator overloading, Events, console I/O operations and Exceptions

**Reference Books :**

- E. Balagurusamy, “Programming in C#”, Tata McGraw-Hill, 2002
- David S. Platt, “Introducing Microsoft .NET”, Microsoft Press, SAARC Edition, 2001
- Microsoft, “C# Language Specifications”, Microsoft Press, 2001

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1 : Be Familiar with C# and .NET

CO 2 : Design dynamic web pages

CO 3 : Get a job using C# and .NET skills

CO 4 : Became a freelance programmer

**Course Prepared by :**

**Course Verified by : Dr. M.SUNDARESAN**

**Title of the Course: Multimedia Systems**

**No. of Credits: 4**

**Code No. : 18IT23B**

**No. of Teaching Hours: 48**

**Course Objectives:**

- To understand the Multimedia, animation and flash.
- Describe the ways in which multimedia information is captured, processed, and rendered.
- Introduce multimedia Quality of Service (QOS) and to compare subjective and objective methods of accessing user satisfaction.

**UNIT I - Introduction:**

Multimedia definition-Features of Multimedia-Goals and Objectives of Multimedia-Multimedia Applications-Architecture of Multimedia-Multimedia Database Systems-Requirements of Multimedia-Multimedia Standards.

**UNIT II - Multimedia Digital Representation:**

Digital Image concepts-ADC and DAC-Image Data types-Image File Formats-Digital Image Filters and types-Motion capturing Systems-Image Compression-Lossy Compression- Lossless Compression.

**UNIT III - Audio and Video Systems:**

Fundamental characteristics of Sound-Audio File Formats-MIDI and MIDI File Processing-MCI-Multimedia API-Video File Formats-Video Capturing-JPEG and MPEG-Video Compression Technique-LCD-LED-TV Monitoring Systems-Plasma Display Panel(PDP).

**UNIT IV - Graphics and Animation:**

Interactive and Non-Interactive Graphics-Animation-2D and 3D Animation-Animation Tools-Techniques of Animation: Onion Skinning, Morphing, Masking, Motion Cycling-Blue Screen Technique.

**UNIT V - Flash and Visual Special Effects:**

Flash-Flash Tools-Application of Flash-Importing sounds into Flash-Raster Operations (ROPs)-Multimedia Keys-Bitmap-Brushes.

**Reference Books:**

- Tay Vaughan, Multimedia making it Work“, McGraw Hill, 1994.
- Scott Jarol, Visual Basic Multimedia, Galgotia 1995.
- Jeffcoate, Judith, “Multimedia in Practice”, Prentice Hall, 2001.
- Vince, John, “Virtual Reality Systems”, Pearsons Education, 1995.
- Ralf Steinmetz and Klara Nahrstedt "Multimedia Computing, Communication and Applications", Pearson Education.
- Principles of Multimedia by Ranjan Parekh. Tata McGraw-Hill

**Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Describe technical characteristics and performance of multimedia system and terminals.
- CO2: Design creative approach in application of multimedia devices, equipment and systems.
- CO3: Carry out experiments and measurements on the multimedia systems in laboratory conditions on real components and equipment.
- CO4: Interpret and analyze measurement results obtained on the multimedia system and components.

**Course prepared by:** Dr. R. VADIVEL

**Course Verified by:** Dr. M. SUNDARESAN



**Title of the Course : Information Security**

**No. of Credits : 4**

**Code No.: 18IT23C**

**No. of Teaching Hours: 42**

**Course Objectives:**

- This course focuses on the fundamentals of information security that are used in protecting both the information present in computer storage as well as information traveling over computer networks.
- Interest in information security has been spurred by the pervasive use of computer-based applications such as information systems, databases, and the Internet.
- Information security is enabled through securing data, computers, and networks. By the end of this course, student will be able to describe major information security issues and trends, and advise an individual seeking to protect data.

**UNIT I - Conventional and modern encryption:**

Services, Attacks, Steganography, Classical Encryption Techniques, Block ciphers and the data encryption standard, DES, AES, Differential and Linear Cryptanalysis, Modes of operation, Encryption Algorithms : Triple DES, Blowfish, CAST128;

**UNIT II - Public key encryption:**

Number Theory concepts, Fermat & Euler Theorem, Euclid Algorithm, RSA Algorithm, Elliptic Curve Cryptography, Diffie Hellman Key Exchange.

**UNIT III - Authentication and security practice:**

Message Authentication and Hash function, Digital Signature and Authentication Protocols.

**UNIT IV - Network security:**

Authentication Application, Electronic Mail security, IP Security, Web Security.

**UNIT V - System security :**

Intruders and Intrusion, Malicious Software, Firewalls, Trusted systems, Security standards and standard settings organisation. Wireless security: Issues, Network Security Attach, Key Management, Secure routing.

**Reference Books:**

- William Stallings, “Cryptography & Network Security”, Pearson Education, New Delhi 2005.
- C.Siva Ram Murthy and B.S. Manoj, “Ad Hoc Wireless Networks – Architecture and Protocols, Pearson Education, Second Edition.

**Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Recognize the information security policies, standards and Procedures for completeness and alignment with generally accepted practices
- CO2: Explain the functionalities of information security
- CO3: Describe Authentication and Security practice
- CO4: Analyze the root causes of cyber crime

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course : Open Source Technology**

**No. of Credits : 4**

**Code No. : 18IT23D**

**No. of Teaching Hours : 48**

**Course Objectives :**

- Students can understand open source software
- Students can familiar with open source software development
- Develop their own open source software using these tools

**Unit I - Open Source Software :**

Open Source Definition – Terms – Open Source Technology – Need - Importance - Free and Open Source Software ( FOSS ) - Benefits - Perspectives of Open Source software Open Source Licenses : GNU General Public License (GPL) - GNU Lesser General Public License (LGPL) - GNU Affero General Public License (AGPL) - Apache License - Artistic License.

**Unit II – Perl :**

Overview of Perl – Variables – Statements – Scalar values – Operators – Control structures – regular expressions – Arrays – Hashes – List processing – Pattern Matching – File Handling

**Unit III - PHP :**

Basic Syntax of PHP – web environment – Common PHP Script – Elements -Using Variables – Constants – Data types – Operators – Statements – Flow Control functions – Dates and Times – Working With Arrays – Using Functions – String Manipulation and Regular Expression – File and Directory Handling – Working With Forms – OOP

**Unit IV - Python :**

Variables – Data types – Strings – Operators – Control Statements – Loops – Sequences : Lists – Tuples – Sets – Dictionaries – File Handling – Exception – Handling exception

**Unit V - MySQL :**

Data Types –Primary Keys and Auto Increment Fields – Queries -SQL programs – Create Database and Tables – Sorting Query Result – ODBC – Connecting to MySQL with PHP – Creating, opening and Closing a Connection – Inserting data with PHP, Retrieving data with PHP.

**Reference Books:**

- Chris DiBona, Danese Cooper and Mark stone O'Reilly,"Open Sources 2.0 The Continuing Evolution", First Edition, 2005.
- 2. Larry Wall, Tom Christiansen, Jon Orwart O'Reilly, "Programming PERL" Third Edition, 2010.

- Elliot White III, Jonathan.D.Eisenhamer, “PHP 5 in practice” pearson Education,2007.
- Mark Lutz, O’Reilly, ” Programming Python 4E” ,2011.
- Paul Du Bois, O’Reilly Publishers,” My SQL Cookbook”, Second Edition,2010.

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1 : Familiar with open source software tools

CO 2 : Can design their software package using open source software

CO 3 : Are able to get a job with their own open source software development skills.

CO 4 : Contribute open source software development

**Course Prepared by :Mr. T.RAMESH**

**Course verified by :Dr. M.SUNDARESAN**

**Title of the Course : C# and .NET Programming - Lab**

**No. of Credits : 3**

**Code No.: 18IT23P**

**No. of Teaching Hours: 36**

**Course Objectives:**

- This course presents the Introduction to .NET frame work, C# and its features.
- The course also facilitates the students to enable learn the fundamentals of .NET and C#
- It helps the students to Understood the .NET framework

**Syllabus as per course code: 18IT23A, Title: C# and .NET Programming.**

**Course Outcomes:**

On the successful completion of the course, students will be able to

- CO1: Understand Data Encapsulation, inheritance, polymorphism, interfaces.
- CO2: access code written in any .NET compliant language and also to inherit the classes written in these languages.
- CO3: Develop Console application, Windows application, and Web application using C#.
- CO4: Knowledge of the structure and model of the programming language C #

**Course Prepared by :**

**Course Verified by : Dr.M.SUNDARESAN**

**Title of the Course : Open Source Technology Lab**

**No. of Credits : 3**

**Code No. :18IT23Q**

**No. of Teaching Hours : 36**

**Course Objectives :**

- Students can understand open source software tools
- Students can hands on training with open source software development
- Students can acquire knowledge about to develop their own open source software package

**Syllabus as per course code: 18IT23D, Title: Open Source Technology .**

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1 : Be familiar with open source software environment

CO 2 : Design and develop software product using open source software

CO 3 : Get a job with their own open source software development skills.

CO 4 : Contribute to open source software development

**Course Prepared by : Mr. T.RAMESH**

**Course Verified by : Dr. M.SUNDARESAN**

**Title of the Course: Embedded Systems**

**No. of Credits: 4**

**Code No. : 18IT33A**

**No. of Teaching Hours: 48**

**Course Objectives:**

- On successful completion of the course the students should have understand the embedded system of hardware and software processor.
- Give brief analysis of Real Time Operating System concepts.
- To enable the students to learn the basic functions, principles, designs, processors in embedded systems and Real Time Operating Systems.

**UNIT I - Embedded system introduction:**

Definition - Classification-Components - Systems on a chip (SOC) - Exemplary embedded systems.

**UNIT II - Design process and examples:**

Automatic chocolate vending machine (ACVM) - Smart card - Simple Digital camera - Mobile phone and mobile computer - Set of Robots.

**UNIT III - Embedded processors:**

Embedded processors in system - Features of 8085 Microprocessor - Internal architecture of 8085 Microprocessor - Features and block diagram of 8051 Microcontroller - Differences between Microprocessor and Microcontroller - VLSI Microprocessor.

**UNIT IV - Hardware units:**

Logical gates with truth table - Boolean theorem – Demorgan’s theorem - Standard representation for logical function with example - Multiplexer - Demultiplexer - Flip-Flop - Characteristics of Flip-Flop - RS Flip-Flop - JK Flip-Flop - T Flip-Flop - D Flip-Flop.

**UNIT V - RTOS and Software tools:**

RTOS Round Robin scheduling - Binary semaphores - Interrupt handlers and schedulers - selecting RTOS - Task and task states - Host and target machines - Linking and locating software - Getting embedded software into target systems.

**Reference Books:**

- Rajkamal, Embedded System Architecture, Programming and Design, TATA McGraw Hill, Second Edition, Eighth reprint 2011.
- G.K.Kharate, Digital Electronics, Oxford University press, Sixth impression 2012.
- A.P.Godse, G.A.Godse, Microprocessor and Microcontroller, Technical Publication Pune, First Edition 2010.
- David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian reprint 2000.

### **Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Understand basic concepts in the embedded computing systems area.
- CO2: Determine the optimal composition and characteristics of an embedded system.
- CO3: Develop hardware-software complex with the use of the National Instruments products.
- CO4: An ability to design a system, component, or process to meet desired needs within realistic constraints.

**Course prepared by:** Dr. R. VADIVEL

**Course Verified by:** Dr. M. SUNDARESAN



**Title of the Course : Software Testing**

**No. of Credits: 4**

**Code No.: 18IT33B**

**No. of Teaching Hours: 48**

**Course Objectives :**

- To study the basic concepts of Software testing.
- To understand the test case scenarios and testing strategies.
- To study the various applications of testing and its challenges in commercial environments.

**UNIT I – Basics of Software Testing:**

Purpose of Software testing – Some Dichotomies – a model for testing – Playing pool and consulting oracles – Is complete testing possible – The Consequence of bugs – Taxonomy of Bugs.

**UNIT II – Design and Implementation of Test cases:**

Software testing Fundamentals – Test case Design – Introduction of Black Box Testing and White Box testing – Flow Graphs and Path testing – Path testing Basics - Predicates, Path Predicates and Achievable Paths - Path Sensitizing – Path Instrumentation – Implementation and Application of Path Testing.

**UNIT III – Testing strategies, applications and tools :**

Transaction Flow testing – Transaction Flows – techniques – Implementation Comments – Data Flow Testing – Basics – Strategies – Applications, Tools and effectiveness – Syntax Testing – Grammar for formats – Implementation

**UNIT IV – Specifications of Software Testing:**

Logic Based Testing – Motivational Overview – Decision tables – Path Expressions – KV Charts – Specifications – States, State Graphs and transition Testing – State Graphs – Good & bad states – state testing Metrics and Complexity.

**UNIT V – Testing tools and Web Services:**

Testing in engineering criteria for technologies – Testing Object Oriented software- Testing web applications and web services - Testing GUIs – Building testing Tools – challenges in testing software

**Reference Books :**

- Boris Beizer, Software testing techniques, Dreamtech Press, Second Edition – 2003.

- Paul Ammann, Jeff Offutt, “Introduction to Software Testing”, Cambridge university press, 2008.
- Myers and Glenford.J., The Art of Software Testing, John-Wiley & Sons,1979
- Roger.S.Pressman, Software Engineering – A Practitioner’s Approach ,Mc-Graw Hill,5th edition, 2001
- Marnie.L. Hutcheson, Software Testing Fundamentals, Wiley-India, 2007.

**Course Outcomes:**

On successful completion of the course, student will be able to

- CO1: Understand about the Types of errors and its consequences.
- CO2: Apply various methods and tools of testing and maintenance of software’s.
- CO3: Create test strategies and plans, design test cases, prioritize and execute them.
- CO4: Understand common lifecycle processes including Waterfall, Unified and Agile models.

**Course Prepared by:**

**Course Verified by : Dr.M.SUNDARESAN**

**Title of the Course : Grid And Cloud Computing**

**No of Credits : 4**

**Code No: 18IT33C**

**No of Teaching Hours: 48**

**Course Objectives:**

- Students will gain knowledge on Grid and Cloud computing fundamentals and Architecture by learning Grid and Cloud computing toolkits
- Grid and Cloud computing paradigm covers a range of distributed computing, hosting and access solutions, including service-based computing.
- The objective of the course is to provide comprehensive and in-depth knowledge of Grid and Cloud Computing concepts, technologies, architecture and researching state-of-the-art in Grid and Cloud Computing fundamental issues, technologies, applications and implementations.

**UNIT I - Introduction to Grid Computing:**

Grid Applications, Grid Standards, Grid Topologies, Grid Components, Grid Challenges, Computational grid, Data grid, Methods of Grid computing, Middleware Grid, Salient features of the GridSim, Grid Computing roles;

**UNIT II - Service Oriented Architecture of Grid:**

Web Service Architecture, Grid Architecture, A modular Architecture for GridSim platform, Grid resource management system, Grid Data management, Service message description mechanisms, Relationship between web service and Grid service, Grid Anatomy, Grid Security.

**UNIT III - Over view of Cloud Computing:**

Cloud Applications, Intranets and the Cloud, Companies in the Cloud Today, Cloud types, Cloud service model architectures, Cloud deployment model architectures, Cloud Computing Services, Development Services and Tools.

**UNIT IV - Cloud security:**

Infrastructure security, Data security, Network security, Security Issues in cloud, Cloud storage, Infrastructure in cloud computing, Cloud software architecture issues, Classification of Cloud Implementations.

**UNIT V - Pros and Cons in Cloud computing:**

Applications of Cloud computing, Principles and paradigms of cloud, Service providers in cloud, Various cloud platforms.

**Reference Books:**

- Joshy Joseph, Craig Fellenstein, "Grid Computing", IBM Press, Pearson Education, 2004.
- Ian Foster, Carl Kesselman (eds.), "The Grid: Blueprint for a New Computing Infrastructure", Morgan Kaufmann Publishers, 2004.

- Ahmar Abbas, "Grid Computing: A Practical Guide to Technology and Applications, Firewall Media", 2009.
- Anthony T.Velte, Toby J.Velte, Robert Elsenpeter, "Cloud Computing -A Practical Approach", Tata McGraw Hill Education Pvt. Ltd, 2010.
- Michael Miller," Cloud Computing: Web based Applications that change the way you work and Collaborate online", Que Publishing, August 2008.
- Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for on demand computing, Applications and Data Centers in the Cloud with SLAs", Emereo Pvt. Ltd, July 2008.
- Prof (Dr.) Andreas Polze, "A Comparative Analysis of Cloud Computing Environments".

### **Course Outcomes:**

On successful completion of the course, students will be able to

- CO1: Describe the key technologies, architecture, strengths, limitations and applications of Grid and Cloud computing
- CO2: Explain the types and service models of grid and cloud.
- CO3: Describe the core issues such as security, privacy, and interoperability in grid and cloud platform.
- CO4: Apply suitable technologies, algorithms, and applications in grid and cloud computing driven systems

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course : Mobile Application Development**

**No. of Credits : 4**

**Code No. : 18IT33D**

**No. of Teaching Hours : 48**

**Course Objectives:**

- To understand and learn the characteristics and development of mobile applications.
- To understand User Interface Design, Back end databases, other services for mobile applications.
- To get a job using mobile application development skills

**Unit I - Mobile Communication :**

Mobile Communication - Mobile Computing - Mobile Computing Architecture - GSM - Bluetooth – ZigBee - IrDA - RFID – IEEE 802.11 - GPS

**Unit II - User Interface Design :**

Fundamental - Views - Layouts – Draw able Resources - Resolution and Density Independence - Creating and Using Menus- Intents – Adapters - Internet Resources - Dialogs

**Unit III - Files and Data Bases :**

Files - Saving – retrieving – file Management - Databases – SQLite - Cursors and Content –Values – Working with SQLite

**Unit IV - Maps, Geocoding, And Location-Based Services :**

Maps – Geocoding - Location-Based Services – Alarm – service – Toast – Threads – using sensors

**Unit V : Tools :**

Android Development Tools – Architecture - Manifest - Application Life Cycle - Application Priority and Process States

IOS - iPhone Developer - Apple Developer Connection - Memory Management - Fundamental iPhone Design Patterns – Tables and Views

**Reference Books :**

- Ashok K Talukder and Roopa R Yavagal, Mobile Computing, Tata McGraw Hill, 2005
- Reto Meier, Wrox Wiley, “Professional Android 2 Application Development”, 2010.
- Alasdair Allan, “iPhone Programming”, O’Reilly, 2010.

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1: Design and develop Mobile application using Android and IOS.

CO 2 : Knowledge about the Mobile application development

CO 3 : Able to get a job with their own skills.

CO 4 : Became freelance software developer

**Course Prepared by :Mr.T.RAMESH**

**Course Verified by : Dr.M.SUNDARESAN**

**Title of the Course : Software Testing - Lab**

**No. of Credits : 3**

**Code No.: 18IT33P**

**No. of Teaching Hours: 36**

**Course Objectives :**

- To study the basic concepts of Software testing.
- To understand the test case scenarios and testing strategies.
- To study the various applications of testing and its challenges in commercial environments.

**Syllabus as per course code: 18IT33B, Title: Software Testing.**

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1 : Write and test a program to login a specific web page

CO 2 : Understand the automation testing approach.

CO 3 : Conduct a test suite for any web sites.

CO 4: Various test processes and continuous quality improvement

**Course Prepared by :**

**Course Verified by : Dr.M.SUNDARESAN**

**Title of the Course : Mobile Application Development - Lab**

**No. of Credits : 3**

**Code No. : 18IT33Q**

**No. of Teaching Hours : 36**

**Course Objectives:**

- To understand and learn the software environment for mobile applications.
- To understand User Interface Design, Back end databases, other services for mobile applications.
- To get a job using mobile application development skills

**Syllabus as per course code: 18IT33D, Title: Mobile Application Development**

**Course Outcomes :**

On successful completion of the course, students will be able to

CO 1 : Design and develop Mobile application using Android and IOS with their own skills

CO 2 : Become a Mobile application developer

CO 3 : Able to get a job using this skills.

CO 4 : Work as a freelance software developer

**Course Prepared by : Mr.T.RAMESH**

**Course Verified by : Dr.M.SUNDARESAN**



**Title of the Course : Digital Image Processing**

**No. of Credits : 4**

**Code No.:18ITE01**

**No. of Teaching Hours: 48**

**Course Objectives :**

- To study basic image processing techniques for solving real problems.
- To study the image transform and Image enhancement techniques in image processing.
- To study the Image compression and Segmentation procedures.

**UNIT I - Digital Image Fundamentals:**

Digital image, applications of digital image processing- elements of digital image processing- digital camera, line scan CCD sensor – display element perception – luminance – brightness, contrast- color models – RGB, CMY, HSI -Fourier transforms.

**UNIT II - Image transform:**

Properties of Unitary transform – 2D DFT – DCT- Discrete wavelet transform- Hotelling Transform – SVD transform – Slant, Haar transforms.

**UNIT III - Image enhancement and restoration:**

Contrast stretching – intensity level slicing – Histogram equalization – spatial averaging – smoothing – Median filtering – non linear filters – maximum , minimum, geometric mean – edge detection – degradation model –unconstrained and constrained filtering – removal of blur –Wiener filtering.

**UNIT IV - Image compression:**

Huffman's coding- truncated Huffman's coding – binary codes, arithmetic coding, run length coding- transform coding – JPEG and MPEG coding.

**UNIT V - Image segmentation:**

Pixel based approach – Feature threshold – choice of feature – optimum threshold – threshold selecting method- region based approach – region growing – region splitting – region merging.

**Reference Books:**

- S.Jayaraman, S.Esakkirajan and T.Veerakumar,"Digital Image Processing", Tata McGraw Hill Education Private Limited.
- Gonzalez R.C and Woods R. E, "Digital image processing "Addison Wesley 2. Anil K Jain Fundamentals of Digital image processing, Prentice Hall.
- S.Annadurai and R.Shanmugalakshmi,"Fundamentals of Digital Image Processing", Pearson Education.
- Anil.K.Jain,"Fundamentals of Image Processing", Prentice Hall.

- Maher.A.Sid Ahmad,"Image Processing-Theory,Algorithms and Architectures", McGraw Hill Education Private Limited.

**Course Outcomes:**

On successful completion of the course, student will be able to

CO1 : Understand about the fundamentals of Digital Image Processing. Describe about advanced concepts in image compression and segmentation.

CO2 : Apply, design and implement solutions for digital image processing problems.

CO3 - Describe and apply the concepts of feature selection and extraction for digital image retrieval.

CO4 - Explore the concepts of Multi-resolution process and recognize the objects in an efficient manner.

**Course Prepared by: Dr.M.SUNDARESAN**

**Course Verified by: Dr.M.SUNDARESAN**

**Title of the Course : E-Commerce**

**No. of Credits : 4**

**Code No.: 18ITE02**

**No. of Teaching Hours : 48**

**Course Objectives :**

- To understand the three major driving forces behind E-commerce – technology change, business development, and social issues to provide a coherent conceptual framework for understanding the field.
- To understand the e-business concepts and how it is different from e-commerce.
- To understand the e-business models and infrastructure.

**UNIT I - Anatomy and Framework of E-commerce:**

E-Commerce Framework- E-commerce and Media Convergence – The Anatomy of Ecommerce Applications – E-commerce Organization Applications – Market Forces Influencing the I-Way – Components of I-Way – Network Access Equipment.

**UNIT II - E-commerce Applications and Models:**

Architectural Framework for Electronic Commerce – World Wide Web (WWW) as the Architecture – Web Background: Hypertext Publishing – Technology behind the Web – Security and the web – Consumer-Oriented Applications – Mercantile Models from the Consumer's Perspective – Mercantile Models from the Merchant's Perspective.

**UNIT III - Payment System and Privacy Issues:**

Types of Electronic Payment Systems – Digital Token-Based Electronic Payment Systems – Smart Cards and Electronic Payment Systems – Credit Card-Based Electronic Payment Systems – Risk and Electronic Payment Systems – Designing Electronic Payment Systems – Electronic Data Interchange – EDI Applications in Business – EDI: Legal, Security and Privacy Issues –EDI and E-Commerce.

**UNIT IV - Internal Electronic commerce Systems:**

Internal Information Systems – Macro forces and Internal Commerce – Work-Flow Automation and Coordination – Customization and Internal Commerce – Supply Chain Management (SCM) – Dimensions of Internal Electronic Commerce Systems – Making a Business Case for a Document Library – Types of Digital Documents – Issues behind Document Infrastructure – Corporate Data Warehouses.

**UNIT V - Marketing Process:**

The New Age of Information-Based Marketing – Advertising on the Internet – Charting the On-Line Marketing Process – Market Research – Search and Resource Discovery Paradigms – Information Search and Retrieval – E-commerce Catalogs or Directories – Information Filtering – Consumer-Data Interface: Emerging Tools.

**Reference Books:**

- Ravi Kalakota, Andrew B.Whinston, “Frontiers of Electronic Commerce” Pearson Education Asia , Twelfth Impression.
- Jeffery F. Rayport, Bernard J.Jaworski , “E-commerce”, TMCH, 2002.
- Bharat Bhasker, “Electronic Commerce Framework, Technologies and Applications”, Tata McGraw Hill Publication, 2013.

**Course Outcomes:**

On successful completion of the course, student will be able to

CO1 : Demonstrate an understanding of the foundations and importance of E-commerce.

CO2 : Demonstrate an understanding of retailing in E-commerce by  
Analyzing branding and pricing strategies,  
Using and determining the effectiveness of market research  
Assessing the effects of disintermediation.

CO3 - Analyze the impact of E-commerce on business models and strategy.

CO4 - Describe the Internet trading relationships including Business to Consumer,  
Business-to-Business, Intra-organizational.

**Course Prepared by: Dr.M.SUNDARESAN**

**Course Verified by: Dr.M.SUNDARESAN**

**Title of the Course: Mobile Ad-Hoc Networks**

**No. of Credits: 4**

**Code No. : 18ITE03**

**No. of Teaching Hours: 48**

**Course Objectives:**

- This course covers all aspects of ad hoc and sensor networking, from design through performance issues to application requirements.
- This course starts with the design issues and challenges that are associated with implementations of ad hoc and sensor network applications.
- This course makes students understand the techniques and strategies for localizing sensor nodes in a network by means of exact and relative positioning techniques.

**UNIT I - Introduction:**

Ad-Hoc Networks- Services and applications – Characteristics – Wireless Sensor Networks – Sensor Application of Body Area Network and Health Care Monitoring - WLANs – WLAN Services –Physical Media For WLANs- Types of Mobile Host Movements-Challenges Facing Ad-Hoc Mobile Networks.

**UNIT II - Routing in MANETs:**

Types of Ad-Hoc Routing Protocols- Proactive Routing Protocols: DSDV –OLSR- WRP, Reactive Routing Protocols: AODV–DSR - TORA- LAR –PAR, Hybrid Routing Protocols: ZRP-FSR- LANMAR –Cluster Based Routing Protocols.

**UNIT III - QoS and Energy Management:**

Define Qos- Objective of Qos Based Routing -List out the QoS Applications- on Demand QoS Routing Protocol- A Cross Layer QoS of Service Model- Power Management- Advances in Device Power Management – Advances in Protocol Power Management – Power Conservation by Mobile Applications.

**UNIT IV - Architecture and Model:**

Ad-Hoc Service Location Architectures-Bluetooth Architectures- Bluetooth Network Configuration-Bluetooth Applications -The WAP Protocol Architecture – WAP Service Model – WAP Programming Model- WWW programming Model.

**UNIT V - Security and NS-2 Tools:**

MANET Performance Metrics, NS2 Simulation parameters- NS2 OTCL –Multicast Routing Mobile Ad-Hoc Networks- Unicast Route Discovery in AODV- Multicast Route Discovery in AODV -Classifications of MAC Protocols – Security in Ad-Hoc Networks.

**Reference Books:**

- William Stallings, “Wireless Communications & Networks”, Pearson Education, 2005.
- C.Siva Ram Murthy, B.S. Manoj, “Ad-Hoc Wireless Networks – Architectures and Protocols”, 2nd Edition, Pearson Education, 2011.
- Fei Hu , Xiaojun Cao, “ Wireless Sensor Networks Principles and Practice “ CRC

Press, 2010.

- C.K Toh,“Ad-Hoc Mobile Wireless Networks” Protocols and Systems, Pearson Edition, 2011.
- Carlos de Moraes Cordeiro, Dharma Rakish Agrawal, “Ad-Hoc & Sensor Networks”, Cambridge Uni.Press,India Pvt.Ltd ,2010.
- L.Gavrilovska, R.Prasad, “Ad-Hoc Networking Towards Seamless Communications”, Springer, 2006.
- Charles E.Perkins , “Ad-Hoc Networking”,Pearson Edition , 2011.
- George Aggelou,” Mobile Ad-Hoc Networks”, Tata McGraw –Hill Edition, 2009.

### **Course Outcomes:**

On successful completion of the course, student will be able to

- CO1: Describe the principles of mobile ad hoc networks and what distinguishes them from infrastructure-based networks. Understand the issue of broadcast storms and flooding, and how some techniques attempt to reduce them.
- CO2: Describe the limitations of wireless sensor networks, especially energy constraints, and the devised solutions. Understand the components of a wireless sensor nodes and the role of each component in the wireless sensor network.
- CO3: Understand the differences between routing in MANETs and routing in WSNs, and the general techniques used.
- CO4: Work on a project that addresses an issue applicable to MANETs or WSNs and propose a solution for it.

**Course prepared by: Dr. R. VADIVEL**

**Course Verified by: Dr. M. SUNDARESAN**

**Title of the Course: Web Programming**

**No. of Credits : 4**

**Code No.: 18ITE04**

**No. of Teaching Hours : 48**

**Course objectives :**

- To understand basic website design
- To understand client side programming and server side programming
- To design and develop their own web site

**Unit I - Introduction to Internet :**

Introduction to internet - world - wide web : history - web browsers - Web servers - Uniform Resource Locator. HTML : Basic html page - text formatting – table – headers – linking – images - List - meta elements. .

**Unit II - Cascading Style Sheets (CSS) :**

CSS : inline, internal and external style sheet - Conflicting styles - Positioning elements, Backgrounds, element text flow - box model - user style sheet.

**Unit III – JAVASCRIPTs :**

Introduction to javascript scripting (client - side) : Introduction - dynamic page - Operators - Decision making - Relational Operators – Cookies - Sessions - URL rewriting - Data storage

**Unit IV - Browsers and DOM :**

DOM : introduction - History and levels - intrinsic event handling - modifying element style - document tree – DOM event handling - accommodating noncompliant browsers properties of window

**Unit V - Representing web data :**

xml - documents and vocabularies - versions and declaration - namespaces - event - oriented parsing: sax - transforming xml documents - selecting xml data: xpath - template based transformations : xslt - displaying xml documents in browsers

**Reference Books:**

- Internet and world wide web: how to program (third edition), Deitel and Deitel and Goldberg, Pearson prentice hall ISBN 0-13124682-8
- Programming the www third edition, Robert w. Sebesta , Pearson Prentice hall

**Course Outcomes:**

On successful completion of the course, student will be able to

CO 1 : Design and Develop Web pages

CO 2 : Get job as a web page developer

CO 3 : Get basic knowledge which will helpful for further learning tools like Photoshop,  
Flash etc.,

CO 4 : Become freelance software developer

**Course Prepared by :Mr. T.RAMESH**

**Course Verified by : Dr. M.SUNDARESAN**



**Title of the Course : Software Quality Assurance**

**No. of Credits : 4**

**Code No.: 18ITE05**

**No. of Teaching Hours: 48**

**Course Objectives :**

- To study the basic concepts of Software Quality Assurance.
- To understand the Software Quality Management Process.
- To understand the difference between Quality Assurance, Quality Planning and Quality Control.

**UNIT I - Basics of SQA:**

Definition of software quality - quality factors – SQA components – contract review – development and quality plans – SQA components in project life cycle – SQA defect removal policies – Reviews

**UNIT II - Software Models and Framework:**

Software project planning - Effort and cost estimation techniques - LOC-based and Function-point based measures - The COCOMO model - Software Quality Assurance (SQA) - The ISO 9000 Quality standards - Evolution of CMMI – CMMI Framework – CMMI for Development – Capability level – Maturity levels – Case Study.

**UNIT III – Software Quality Management:**

Hierarchical models of software quality – software quality metrics –function points -Software product quality – software maintenance quality – effect of case tools – software quality infrastructure – procedures – certifications – configuration management – documentation control.

**UNIT IV – Project Management:**

Project progress control – costs – software quality management standards – project process standards – management and its role in SQA – SQA unit

**UNIT V – Software Testing:**

Software reliability - programming languages and reliability, computer architecture and reliability, proving program correctness, reliability models, software support system- Software Testing – Types, White and Black Box, Operational Profiles – Difficulties, Estimating Reliability, Time/Structure based software reliability – Assumptions, Testing methods, Limits, Starvation , Coverage, Filtering, Microscopic Model of Software Risk

**Reference Books:**

- Norman E Fenton and Shari Lawrence Fleeter , "Software Metrics : A rigorous and practical approach", 2nd edition, , Thomson Asia, 2002.
- Daniel Galin, Software Quality assurance – from theory to implementation, Pearson education, 2009.
- Watts S. Humphrey “Managing the Software Process”, Pearson Education,2008
- Marry Beth Chrissis, Mike Konnard and Sandy Shrum, “CMMI : guidelines for Process Integration and Product Improvement”, Addison Wesley, 3rd Edition,2011.

- Mark. C.Paulk, “CMM: Guidelines for Improving the Software Process” Addison-Wesley, 2011.
- Alan C Gillies, Software Quality Theory and Management, Cengage Learning, second edition, 2003.
- Patric D. T.O connor, “Practical Reliability Engineering”, 4th Edition, John Wesley & sons, 2003.
- John D. Musa, “Software Reliability Engineering”, Tata McGraw Hill, 1999.
- Michael Lyu, “Handbook of Software Reliability Engineering”, IEEE Computer Society Press, ISBN: 0-07-039400-8, 1996.

**Course Outcomes:**

On successful completion of the course, student will be able to

- CO1 : Understand about the Principles of Software Development Process.
- CO2 : Apply various techniques and tools to prepare effective Software Quality Plan.
- CO3 : Apply knowledge to design various Software Test strategies.
- CO4 : Understand the role of SQA in improving the Software Development Process.

**Course Prepared by:**

**Course Verified by : Dr.M.SUNDARESAN**

**Title of the Course: Windows and MS Word**

**No. of Credits: 2**

**Code No. : 18ITS01**

**No. of Teaching Hours: 24**

**Course Objectives:**

- This course is designed to aim at imparting a basic level appreciation program for the common man.
- After completing the course the incumbent is able to the use the computer for basic purposes of preparing his personnel/business letters, viewing information on Internet (the web), sending mails, using internet banking services etc.
- Identify categories of programs, system software and applications. Organize and work with files and folders.

**UNIT I - Getting started:**

About OS – types of OS – mouse handling – pull down menu selection.

**UNIT II - Window resizing:**

File manager operation – control panel operation – opening and closing files

**UNIT III – Editing:**

Cut, paste – copy to clipboard – creating icon – Creating group items.

**UNIT IV - Introduction to common office tools and techniques:**

Shares information within MS Office – word basics – formatting text documents – working with header, footer and footnotes.

**UNIT V – Tabs:**

Tables and sorting – graphics – templates writer tools – macros – keyboard shortcuts – means – custom toolbars.

**Reference Books:**

- Microsoft Office“ 2000 by woody Leonhard
- Using Microsoft Office“ 97 by Rick Winter and Patty Winter.

### **Course Outcomes:**

On successful completion of the course, student will be able to

- CO1: Describe the usage of computers, its operating systems and why computers are essential components in business and society.
- CO2: Utilize the Internet Web resources and evaluate on-line e-business system.
- CO3: Solve common business problems using appropriate Information Technology applications and systems.
- CO4: Identify categories of programs, system software and applications. Organize and work with files and folders.

**Course prepared by: Dr. R. VADIVEL**

**Course Verified by: Dr. M. SUNDARESAN**

**Title of the Subject : Internet and HTML Programming**

**No of Credits: 2**

**Code No.:18ITS02**

**No of Teaching Hours: 24**

### **Course Objectives:**

- This course aims at facilitating the student to understand the basic internet programming concepts and the programming concepts of HTML
- It gives guidance for developing HTML based applications
- It gives hands on practices by applying the concepts for implementing internet applications.

### **UNIT I - Internet Basics:**

Origin of Internet – ARPANET – Protocol – Packet switching theory – TCP/IP address (classification), Domain name system (Concept of DNS Server) – Router.

### **UNIT II -Routing Algorithm (introduction):**

Direct & Dial up Networking – MODEM ISP (VSNL) Services (shell & TCP/IP ACC) Up load, down load Protocols (ZMODEM, KERMIT etc)

### **UNIT III –Email:**

Newsgroup – FTP – Gopher – Origin of WWW – Origin of HTML – URL –Browsers (Text & Graphics) – HTTP - Search Engines (Purpose & Facilities, Yahoo, Alta Vista WebCrawler etc.

**UNIT IV -Website Homepage :**

Archie – Veronica – Telnet – Chat – What is meant by Website Homepage. Etc.

**UNIT V- HTML Programming:**

HTML – Basic Tags – Various versions of HTML – HTML forms – HTML frames – Browser (IE, Netscape communicator, Lynx (Text) Growser dependent – HTML tags.

**Reference Books :**

- Using Microsoft Office ,, 97 by Rick Winter and Patty Winter.
- Advanced Internet for Dummies by Hohn Levine and Margaret Levine.
- Asian Publishers Internet Concepts, problems and Solutions by Singh.

**Course Outcomes:**

On the successful completion of the course, students will be able to

- CO1: Apply a structured approach to identifying needs, interests, and functionality of a website
- CO2: Design dynamic websites that meet specified needs and interests
- CO3: Write well-structured, easily maintained, standards-compliant, accessible HTML code.
- CO4: Write well-structured, easily maintained, standards-compliant CSS code to present HTML pages in different ways

**Course Prepared by : Mrs.W.ROSE VARUNA**

**Course Verified by : Dr. M. SUNDARESAN**

**Title of the Course : Introduction to Information Technology**

**No. of Credits : 2**

**Code No. : 18ITS03**

**No. of Teaching Hours : 24**

**Course Objectives :**

- Non-Computer students are able to understand the Fundamentals
- Helpful to the students who are appearing the government exam like Bank, Lic or any other govt. exams
- Stepping stone for the students to learn computer science.

**Unit I – Computer Basics :**

Basic computer terminology - History of Computers - Number System – ASCII - ISCII - UNICODE; - Components of computer systems - ALU –Microprocessor : Basic concepts - Clock speed – Types; Memory Concepts : Units – Primary Memory - Secondary Memory - Input /Output Devices – Ports/ Connectors

**Unit II - Software and Operating System :**

Software Concepts : Types of Software : System software - Utility software - Application software; System Software - Operating system – Compiler - Interpreter and assembler - Operating System : Need - Functions - Concept of booting - Operating System basics

**Unit III – Introduction to RDBMS :**

Introduction to RDBMS – file organization – normal form – indexing – sorting - view

**Unit IV – Introduction to Microsoft Office :**

Microsoft Office – Ms Word – Power Point - Ms Excel - Computer Shortcut Keys -

**Unit V – Introduction to Computer Networks :**

Computer Network basics – Protocol – Topology - Networking Devices Virus, Hacking Internet – WWW – Web server – Browser – Search engine – Home Page

**Reference Book :**

- S.K. Das, Fundamentals of Computer Science, Platinum Publishers,

**Course Outcomes:**

On the successful completion of the course, students will be able to

CO1 : Understand the Computer Fundamentals

CO 2 : Prepare for government exam easily

CO 3 : Helpful for further studies in Computer science

CO 4 : Use computer for their own purposes like typing, presentation etc....

**Course Prepared by : Mr. T.RAMESH**  
**Course Verified by : Dr. M.SUNDARESAN**