Advanced web technology & Dot Net

Unit I  Introduction : The World Wide Web: WWW Architecture, Web Search Engines, Web crawling, Web indexing, Web Searching, Search engines optimization and limitations; Introduction to the semantic web (RDF, OWL)

Unit II  Introduction to .NET framework : Evolution of .NET, Comparison of Java and .NET, Architecture of .NET framework, Common Language Runtime, Common Type System, Metadata, Assemblies, Application Domains, CFL, Features of .NET, Advantages and Application

Unit III  C# : Basic principles of object oriented programming, Basic Data Types, Building Blocks - Control Structures, operators, expressions, variables, Reference Data Types - Strings, Data time objects, Arrays, Classes and object, Exception Handling, Generics, File Handling, Inheritance and Polymorphism, Database programming

Unit IV  Web Applications in ASP.NET : ASP.NET Coding Modules, ASP.NET Page Directives, Page events and Page Life Cycle, PostBack and CrossPage Posting, ASP.NET Application Compilation models, ASP.NET server Controls, HTML Controls, Validation Controls, Building Databases Introduction to JQuery : What is jQuery? JavaScript vs jQuery, How to use jQuery in ASP.NET?


Unit VI  Introduction to web services : What is a Web Service? Software as a service, Web Service Architectures, SOA, Creating and consuming Web, XML Web Services, Designing XML Web Services, Creating an XML Web Service with Visual Studio, Creating Web Service Consumers, Discovering Web Services Using UDDI


Exploring Silverlight : Architecture of Silverlight, Silverlight Controls in Silverlight Applications, Creating a Simple Silverlight Application Integrating Silverlight with ASP.NET Applications

Introducing AJAX Controls : The ScriptManager Control, The ScriptManagerProxy Control, The Timer Control, The UpdatePanel Control, The UpdateProgress Control
## Wireless & Mobile Technology

### Unit I
**Introduction To Wireless Technology**: Mobile and wireless communications, Applications, history, market vision, overview Frequency of Radio Transmission, Signal Antennas, Signal Propagation, Multiplexing, Modulation, Spread Spectrum, Coding and Error Control (Convolution Codes)

### Unit II

### Unit III
**Wireless Lan**: IEEE 802.11, WiFi, IEEE 802.16, Bluetooth, WIMAX, Standards – Architecture – Services

### Unit IV

### Unit V

### Unit VI
**Mobile Transport Layer**: TCP over Wireless Networks – Indirect TCP – Snooping TCP – Mobile TCP – Fast Retransmit / Fast Recovery Transmission/Timeout Freezing-Selective Retransmission – Transaction Oriented TCP, TCP over 2.5 / 3G wireless Networks

### Unit VII
**Application Layer**: WAP Model- Mobile Location based services -WAP Gateway – WAP protocols – WAP user agent profile, Caching model-wireless bearers for WAP - WML – WMLScripts – WTA - iMode- SyncML
Soft Computing


Unit II  Artificial Neural Network: Introduction, Fundamental Conce Network, Biological Neural Network, Brain vs. Computer - C Biological Neuron and Artificial Neuron (Brain vs. Computer), Networks, Basic Models of Artificial Neural Network

Supervised Learning Network- Perceptron Networks, Adapt (Adaline), Multiple Adaptive Linear Neurons, Back-Propogation learning methods, effect of learning rule co-efficien algorithm, factors affecting backpropagation training, As Networks, Unsupervised Learning Networks, Special Network

Unit III  Introduction to Fuzzy Logic, Classical Sets and Fuzzy Sets, It Logic, Classical Sets (Crisp Sets), Fuzzy Sets

Unit IV  Classical Relations and Fuzzy Relations: Introduction, Ca Relation, Classical Relation, Fuzzy Relations

Unit V  Membership Functions: Introduction, Features of the Men Fuzzification, Methods of Membership Value Assignments

Unit VI  Defuzzification: Introduction, Lambda-Cuts for Fuzzy Sets (Al Cuts for Fuzzy Relations, Defuzzification Methods


Unit X Genetic Algorithm: Basic concepts, Difference between genetic algorithm and traditional methods, Simple genetic algorithm, Similarity templates, Working principle, Procedures of GA, Genetic operators- reproduction, Mutation, crossover, basic building block hypothesis, the two-armed and k-armed bandit problem, Minimal deceptive problem, Applications

### Distributed computing and Cloud Computing

#### Unit I: Introduction to Distributed Computing Concepts

Basic concepts of distributed systems, distributed computing models, software concepts, issues in designing distributed systems, client server model and current case studies of the World Wide Web 1.0 and World Wide Web 2.0.

#### Unit II: Inter Process Communication

Fundamental concepts related to inter process communication including message-passing mechanism, a case study on IPC in MACH, concepts of group communication and case study of group communication CBCAST in ISIS, API for Internet Protocol.

#### Unit III: Formal Model Specifications and Remote Communication

Basic concepts of formal model definitions, Different types of communication systems, algorithms for message passing systems, Basic concept of middleware, Remote Procedural Call (RPC), a case study on Sun RPC, Remote Method Invocation (RMI) along with a case study on Java RMI.

#### Unit IV: Clock synchronization

clock synchronization, physical and logical clocks, global state mutual Exclusion algorithms, election algorithms.

#### Unit V: Distributed System Management

Resource management, process management, threads, and fault tolerance

#### Unit VI: Distributed Shared Memory

Fundamental concepts of DSM, types of DSM, various hardware DSM systems, Consistency models, issues in designing and implementing DSM systems.

#### Unit VII: Distributed File System

Concepts of a Distributed File System (DFS), file models, issues in file system design, naming transparency and semantics of file sharing, techniques of DFS implementation.
Unit VIII  Advances in Distributed Computing (SOA & Cloud Computing)

Service-Oriented Architecture, Elements of Service-Oriented Architectures, RPC versus Document Orientation, Major Benefits of Service-Oriented Computing, Composing Services, Goals of Composition, Challenges for Composition, Spirit of the Approach

Unit IX  Fundamentals of Cloud computing

Evolution of Cloud Computing, cluster computing Grid computing, Grid computing versus Cloud Computing, Key Characteristics of cloud computing

Unit X  Cloud models

Benefits of Cloud models, Public Cloud, Private Cloud, Hybrid Cloud, Community Cloud, Shared Private Cloud, Dedicated Private Cloud, Dynamic Private Cloud, Savings and cost impact

Web services delivered from cloud, Platform as a service, Software as a service, Infrastructure as a service

Unit XI  Cloud Security Fundamentals

Privacy and security in cloud, Security architecture, Data security, Identity and access management, security challenges

Unit XII  Implementation of Cloud Technologies

Introduction to Cloud Technologies, Hypervisor, Web services, AJAX, MASHUP, Hadoop, Map reduce, Virtualization Technologies, Virtual Machine Technology
Cloud data centre, Case studies: Google, Microsoft, Amazon
Elective II (SELECT ANY ONE)

Cyber Security

Unit I  Introduction to Cybercrime
Cybercrime definition and origins of the world, Cybercrime and information security, Classifications of cybercrime,

Unit II  ITA 2000: Cybercrime and the Indian ITA 2000, A global Perspective on cybercrimes

Unit III  Cyberoffenses& Cybercrime: Issues and challenges
Internet Filtering Encryption issues, Internet Gambling, Spam - Unsolicited Junk Email, Digital Signatures, Anti-Spam Laws, Anti-Spam Suits, What is Cyber squatting? Ant cyber squatting, Software Piracy, Domain Name Disputes, File Sharing,

Unit IV  Tools and Methods Used in Cyberline:

Unit V  Cybercrimes and Cybersecurity: The Legal Perspectives
Why do we need Cyberlaw: The Indian Context, The Indian IT Act, Digital Signature and the Indian IT Act, Amendments to the Indian IT Act, Cybercrime and Punishment, Cyberlaw, Technology and Students: Indian Scenario
Unit VI  Cybersecurity: Organizational Implications


Unit VII  Cyber Acts and related issues

Children’s Online Privacy Protection Act (COPPA), The Children’s Internet Protection Act (CIPA Sexual Predator Laws), The Child Online Protection Act (COPA), The Communications Decency Act (CDA), Electronic Signatures in Global & National Commerce Act (E-Sign),


Unit III  Sound, Audio and Video: Multimedia system sounds, Sound, Sound file formats, MIDI, MIDI Messages, MIDI Vs Digital Audio, sound on Internet, Adding sound & video to your multimedia project, Analog display standards, Digital display standards, Digital video Basics, Video recording and tap formats, Video on internet, Difference between computer, TV and Video, Optimizing video files for CD-Rom.

Unit IV  Multimedia Authoring Tools: Making instance multimedia, Types of Authoring tools, Time based authoring tools, card and page based authoring tools, Icon and object based authoring tools, Authoring Vs Presentation, Story boarding, Graphic design principle for PowerPoint, Development process for Multimedia Applications, Contents analysis for different applications.
Unit V  **Designing and Producing:** Designing, designing the structure of multimedia, Different types of Multimedia structure. Hot spots, Buttons, User interface analysis & Design: Rules of user interface design, models of user interface design, User interface Analysis & Elements of user interface, User interface design, User interface evaluation & examples. Delivering: Testing, Preparing of delivery.

Unit VI  **Planning and costing:** The process of making multimedia & multimedia skills, multimedia skills team, Planning & costing: Project planning, scheduling & costing, Idea analysis, Idea management software, Pre testing, Task planning, Building a Team, Prototype, Multimedia project team roles. Development: Alpha Development, Beta Development.

Unit VII  **Coding and Compression:** Introduction to coding and compression techniques, Entropy encoding, run length, Arithmetic encoding, Huffman, LempelZiv encoding, JPEG compression process, MPEG audio and video compression, Various CD Formats, MPEG Standards.

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**Information Security and Audit**

Unit I  **Security Principles and Practices:**

Information System Security Principles, Threats and Attacks, Classification of threats and assessing damages, Protecting Information Systems Security,

Information System Security Engineering Process

Security Policies, standards, Guidelines and Procedures

Unit II  **Data and Program Security:**

Data Protection, End Point security, Physical Security, Insider threats and data Protection

Secure programs, Non-malicious program errors, malicious code, Targeted malicious code, Controls against program threats

Unit III  **Operating System Security:**

Role of Operating systems in Information systems applications, Operating systems Security, Patched Operating systems, Protected Objects and Methods of Protection, Memory Address Protection, Control of Access to General Objects, File Protection Mechanism
Unit IV  Database Security:

Database Security Requirements and Challenges, Database Integrity, Data Security Policies, Sensitive data, Interface, Multilevel database

Application Software Controls: Concurrency Control, Cryptograph control, Audit train control.

Unit V  Steganography and Digital Forensics:

Steganography - Overview and Principles, need of steganography, pros and cons, Steganography vs Cryptography, Types of Steganography


Unit VI  Laws, & Legal Framework for Information Security:


Unit VII  Software Web Services Security:

Technologies for web services (XML, SOAP, WSDL & UDDI), Web Services Security - Token types, XML encryption, XML segment.

Unit VIII  Security of Wireless Networks:

An overview of wireless technology, Wired world versus wireless world: putting Wireless Networks in Information Security Context, Attacks on Wireless Networks

Unit IX  Auditing for Security:

Bioinformatics

Unit I
What is Bioinformatics? , Bioinformatics as multidisciplinary domain , Goal and scope of bioinformatics , Future prospectus of bioinformatics , Use of computers to biologists

Unit II
Biological research on the web, Public biological databases : Primary sequence database, Protein sequence databases , Secondary databases , Protein pattern databases , Searching biological databases- depositing data into public databasesFinding software , Judging the quality of information

Unit III
Introduction to Protein structure , Chemistry of proteins : 1D to 3D , Peptide bond, Amino Acid
Web based protein structure tools : Structure visualization , Cn3D, RasMol
Structure modeling , MolMol , JMol
Structure classification : Types of classification, Databases (SCOP,CATH)
Structure alignment : Comparing two structures (ProFit)
Structure analysis : ProCheck

Unit IV
Composition of DNA and RNA , Watson and Crick Solve the Structure of DNA, Importantace and features of DNA sequence analysis , Development of DNA Sequencing Methods, Genefinders and Feature Detection in DNA ,

Unit V
Pairwise Sequence Comparison, Pairwise Sequence alignemnt methods : Dot plot , Dynamic programming , Local and Global similarities , Word and K-tuple , BLAST , FASTA, Multiple sequence alignment methods : Progressive , ClustalW , Iterative , DiAlign

Unit VI
Phylogenetic Analysis : Phylogenetic Trees Based on Pairwise Distances, Phylogenetic Trees Based on Neighbor Joining, Phylogenetic Trees Based on Maximum Parsimony , Phylogenetic Trees Based on Maximum Likelihood Estimation Introduction to motif

Unit VII
Automating data analysis using Perl , Perl basics , Pattern matching and regular expressions , Parsing BLAST output using Perl
Software Quality Assurance

Unit I  Fundamentals Of Software Quality Engineering


Unit II  Development In Measuring Quality


Unit III  Quality Management System


Unit IV  Principles And Practices In Qms


Unit V  Measures And Metrics In Process And Project Domain