Veer Narmad South Gujarat University
Surat

Master of Science (Information Technology)
[Five Year Integrated Course]

Semester :3

Syllabus
(Revised)

Effective from June 2009-2010

Effective from June 2009

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Year Integrated Course]
B.Sc. (Information Technology)
Semester III
Teaching and Evaluation Scheme

Paper Sr. No.	Paper Title	Teaching Schedule (Hours/Week) Lect	Tut	Prac	University Exam Theory / Practical Duration | Hrs.	Marks	Internal Exam Theory / Practical Duration | Hrs.	Marks	Total Theory / Practical
301	Data Structures	4		-	3	70	2	30	100
302	Object Oriented Programming	4		-	3	70	2	30	100
303	Digital Electronics	4		-	3	70	2	30	100
304	Computer Networks	4		-	3	70	2	30	100
305	Business System – II	4		-	3	70	2	30	100
306	Practicals			10	5	140	3	60	200
Total		30				490		210	700

Effective from June 2009

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Semester III

Paper No : 301 **L: 4 Hrs**

Paper Title: Data Structures

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1. Introduction:

Data structure: Definition & classification, Importance of Data Structure
Data Structure Operations
Analysis of algorithms, Algorithms Complexity, Time-Space Trade off
Big oh and theta notation

2. Linear Data structures with applications:

Array: Storage, mapping, applications

Stack: Definition and Example, Implementation, Applications: Infix, Prefix and postfix, Converting infix to postfix, Expression Evaluation, Matching parentheses, Recursion and Simulating Recursion, Tower of Hanoi Problem

Queue: Introduction, Types of queue: simple queue, circular queue, deque, priority queue, implementation, Applications: Job Scheduling

Linked List, List Types: singly, doubly, singly circular, doubly circular
Operations on all types of Lists, Dynamic implementation of stack and queues
Applications: Polynomial Manipulation

3. Non Linear data structures:

Tree: Introduction and representation, Forest, Tree traversal, Binary Tree representation using array and links, Binary tree traversal (recursive & non-recursive implementation)

Applications of Trees - The manipulation of Arithmetic expressions, Expression tree, Symbol-table construction, Syntax Analysis

Binary search tree, Heap tree, AVL tree, Splay tree

4. Searching and Sorting:

Linear Search, Binary Search
Hash Tables: Introduction, hash functions and hash keys, Collisions, Resolving collisions, Rehashing

Sorting with algorithm analysis (best case, worst case, average): Bubble, Selection, Insertion, Shell, Merge, Quick, Heap, Radix

5. File Structure:

Physical storage media, File Organization, Organization records into blocks, Sequential blocks, Indexing (primary, secondary, clustered, unclustered, dense, sparse)
B+ tree Index files, B tree index files, B* Tree
Hashing function and it's characteristics, collision resolution, linear probing, chaining with and without replacement, rehashing

Main Readings:

1. An Introduction to Data Structures with applications – Trembley, Sorenson – TMH
2. Theory and problems of data structures – Seymour Lipschutz – TMH
3. Data Structures and Algorithms in C++ - Michael T. Goodrich, Roberto Tamassai, David M. Mount - Wiley

Supplementary Readings:

1. Fundamentals of Data Structures in C, Horowitz, Sahni, Anderson-Freed - W. H. Freeman & Co. New York, NY, USA
2. Data Structures: A Pseudo-code Approach with C, Gilberg & Forouzan -Thomson Learning.
3. Design and Analysis of Algorithms, Parag Dave & Himanshu Dave - Pearson Education (2008)
4. Data Structures Using C & C++, Tanenbaum - PHI.
5. Data Structures & Algorithms, A V Aho, J E Hopcroft, J D Ullman - Addison-Wesley Publishing (1983).
6. Sorting & Searching - The Art of Computer Programming, Vol. 3, D E Knuth-Addison- Wesley Publishing (1973).

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Paper No : 302 **L: 4 Hrs**

Paper Title: Object Oriented Programming

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1. Pointers and Self Referential Structures

2. Principles of Object Oriented Programming

Procedure Oriented Programming Vs Object Oriented Programming
Basic Concepts of Object Oriented Programming
Benefits of Object Oriented Programming

3. Classes & Objects

Specifying a class, defining member functions, Inline function, Nesting of member functions, private member function, Static data members, static member functions, friend functions, returning objects, pointers to members.

4. Constructors & Destructors

Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, copy constructors, dynamic constructors, const objects, and destructors.

5. Operator Overloading, Functional Overloading & Type Conversions

Unary Operators, Binary Operators, Using Friends as operator functions, Overloading other Operators, User defined conversion, Four different cases of user defined conversions, Comparison of both the methods of conversion

6. Inheritance

Defining derived class using single base class, Derivation using public, private and protected access modifiers, The implementation of inheritance in the C++ object model, The multiple-inheritance, Abstract classes, Composite objects (container objects)

7. Dynamic Polymorphism

Pointers to objects, this pointer, pointers to derived classes, virtual functions, pure virtual functions.

8. I/O streams

Introduction to stream, Advantages of using C++ I/O over C I/O, The C++ Predefined streams, Formatting I/O, Formatting using I/Os members, Manipulators, Creating our own manipulator

9. Data Files

Introduction to I/O, Text and binary streams, Opening and closing files, Dealing with text files, Dealing with binary files, Providing Random Access using seek, I/O Modes Handling Errors

10. Templates

Function Templates, Non Generic (Non Type) Parameters in Template functions, Template function and specialization, Overloading a template function, Using Default Arguments, Class Templates, Classes with multiple generic data types, Static data members, Primary and Partial Specialization, The Export Keyword.

Main Readings :

1. Object Oriented Programming with C++: Balagurusamy - TMH
2. OOP in Turbo C++: Robert Lafore - Galgotia Publication

Supplementary Readings :

1. C++ Primer :Lippman - Addison Wesley
2. Object Oriented Programming Fundamentals & Applications: Probal Sengupta - PHI
3. The Complete Reference: Schildt - Osborne
4. The C++ Programming Language: Stroustrup - Addison Wesley

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Semester III

Paper No : 303 **L: 4 Hrs**

Paper Title: Digital Electronics

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1. Logic gates

Logic symbol, Timing Diagrams, Truth table Demorgan's first & second theorem. Interchangeability bubbled gates, Universal gates

2. Boolean Laws & theorem

Duality theorem sum of product method & equation truth table, Karnaugh map for two three & four variables & it's simplification & NAND-NAND ckts, Don't care condition , product of sum method , & it's simplification . NOR - NOR ckts. & application of duality theorem.

3. Data processing circuits

Multiplexers, Nibble multiplexers, Demultiplexers decoders chip expansion, BCD to Decimal decoders, seven segment decoder,
decoder driver IC's Encoders , decimal to BCD decoder, parity generator & checkers &its application (ROM, PROM, EPROM)

4. Binary addition & subtraction HALF adder, full adder , adder - subtracter circuits

5. TTL & CMOS circuits

Power Dissipation ,Propagation delay time ,TTL ckts ,two i/p TTL NAND gate , Inverter gate ,NOR gate ,Three state TTL devices , Schmitt Triggers, sinking and sousing , Loadings ,noise immunity, Positive and negative logic CMOS ckts , CMOS Inverter ,CMOS NAND , NOR gate.

6. FLIP FLOPS

Construction of flip flops using different gates , RS flip flops , D flip flop , Edge triggered D flip flop, clocked RS flip flop ,switching time , JK flip flop , JK master slave flip flop , Schmitt trigger.

7. Shift Registers

Types of Registers , Serial in Serial out , Serial in Parallel out , Parallel in Serial out , Parallel in Parallel out, Ring counter, Asynchronous counter 4, Binary up-down counter , Decoding gate , Synchronous counter , Mode 8 Parallel binary counter & up down counter , Parallel up down counter , Mod-3 counter , Mod-6 counters, Mod - 5 counters & C Decade counter, Shift counters, Digital clock.

8. D/A & A/D conversion

Variable Resistor Network , Binary Ladder , 4 bit D/A converter , dual slope A/D conversion.

9. TRANSDUCEERS

Thermo couples, capacitive pressure transducer, pizo-electric transducers, strain gauge.

Main Readings:

1. Digital Principles and Application : Albert Paul, Malvino , Donald P. Leach - TMH
2. Basic Electronics, Solid state: B.L. Thereja , Chand Publication, fifth edition.

Supplementary Readings:

1. Digital logic and Computer Design : By M. Morris Mano - PHI

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Semester III

Paper No : 304 **L: 4 Hrs**

Paper Title: Computer Networks

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1. Introduction to Networks

Data Communications: components, direction of data flow, Networking – Concepts, Need, Uses and advantages of Network, Categories of networks , Client, Servers and Peers based and Hybrid Networks, topologies

2. The OSI Model

Layer architecture, OSI Model, The OSI Model layer functions

3. Major Protocol Suits

Review of protocols, Models and implementations, Transport and Internet protocols

4. Physical Layer

Data and Signals, Digital Transmission, Analog transmission, Bandwidth, Transmission Media, Switching, IEEE 8.2 Standards

5. Data Link Layer

Functions of Data link layer, Error detection and correction, error detection and correction codes, data link control and protocols, Multiple access protocol: CSMA/CD, LAN: Ethernet, Introduction : Wireless LAN, Connecting devices: Repeaters, Hubs, Bridges, switches, Concept of VLAN

6. Network Layer

Connectionless service, Connection oriented service, internetworking, addressing, Routing algorithms (Distance vector, Link state), Introduction to Network layer in internet: Logical addressing, IP protocol, IP address, Classes of IP addresses, Routers, Brouters, Gateways

7. Transport Layer

Transport Service Primitives, addressing, connection establishment, flow control, multiplexing, Introduction to transport layer protocols and their features.

8. Session, Presentation and Application Layers

Introduction to : Establishing Session, Presentation with Content Encoding and Decoding Introduction to application layer protocols.

9. Network Configuration and Administration

Installing and configuring network adapters, Managing network bindings, Sharing files and printers User profiles, Folder security, Account policies, Trust relationship between
domains, Computer management, Workstation management

10. Network Security

Various Types of security, Security with certificates, Planning a security approach, Security problems and their consequences, Introduction to firewalls, Encryption and decryption standards, Secure Socket Layer, Virtual Private Networks

Main reading:

1. Data Communications and Networking, 4/e Behrouz A. Forouzan - DeAnza College
2. Computer Networks by A.S. Tanenbaum - PHI Publications

Supplementary Readings:

1. Computer Networks : A pragmatic Approach, C R Sharma, Jaico, 2005
2. Data and computer Communication, William stallings - Pearson Education,
3. MCSE: Networking Essentials Study Guide - TMH
4. MCSE: Windows 2000 Network Infrastructure Design Study Guide -TMH
5. Mastering Local Area Networks by Christa Anderson & Mark Minasi – BPB

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Semester III

Paper No : 305 **L: 4 Hrs**

Paper Title: Business System - II

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1. Human Resources

Organizational Management, Personnel Administration, Recruitment, Personnel Development, Time Management, Training and Event Management, Human Capital Management.

2. Services Oriented Business System

Service Definition, Types of Services, Process of Services, Effects of Services, Software as a Service

3. Payroll System

4. Business Logistics System

Introduction to Logistics, Logistics Process, Procurement, Logistics And Supply Chain Management, Warehouse Management, Freight Transport, Material Management

5. Retailing

Introduction to Retailing, Customer Relationship Management in Retailing, Merchandising and Inventory Management in Retailing

6. Production Planning

Production process, Capacity Planning, Master Production, Scheduling, Material Requirements Planning, Shop Floor

7. Introduction to ERP

Evolution of ERP, Definition of ERP, Reasons for the growth of ERP, scenario And Justification of ERP in India, Various Modules of ERP, Advantage of ERP.

Explanation of the above systems must be supported with the help of related documents, visuals of the systems, case studies and demonstration of computerized systems.

Main Readings :

1. Human Resource Development: P.C. Tripathi - Sage Publication, New Delhi.
2. Human Resource And Personnel Management: K.Aswathappa - TMH
3. Services Marketing People, Technology, Strategy: Chrestopper Lovelock and Jochen Wirtz - Pearson Education.
4. Production And Operations Management: K. Aswathappa And Shrddhara Bhat, Himalaya Publishing House.
5. Retailing Management: Levy writz - TMH.
6. Logistics And Distributed Management: Alan Rushton, John Oxley Phil Croucher - Kogan Page.
7. Retailing Management: Swapna Pradhan - TMH

Supplementary Readings :

1. Designing & Monitoring HRD System: Dr. T. V. Rao.
2. Logistics And Retail Management: John Fernie And Leigh Sparks - Kogan Page.
3. Excellence in Warehouse Management: Stuart Emmett - John Wiley And Sons Inc.

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Semester III

Paper No : 306 **L: 0, T:0, P:10 Hrs**

Paper Title : Practicals.

Practical shall be conducted for the Papers 301, 302 and 304

Veer Narmad South Gujarat University
Surat

Master of Science (Information Technology)
[Five Year Integrated Course]

Semester :4

Syllabus
(Revised)

Effective from June 2009-2010

Effective from June 2009

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT
M.Sc. (I.T.) [Five Year Integrated Course]
B.Sc. (Information Technology)
Semester IV
Teaching and Evaluation Scheme

Paper Sr. No.	Paper Title	Teaching Schedule (Hours/Week) Lect	Prac	University Exam Theory / Practical Duration | Hrs.	Marks	Internal Exam Theory / Practical Duration | Hrs.	Marks	Total Theory / Practical
401	VADT	4	-	3	70	2	30	100
402	RDBMS-I	4	-	3	70	2	30	100
403	Microprocessor & Assembly Language	4	-	3	70	2	30	100
404	Web Development-I	4	-	3	70	2	30	100
405	E-Business	4	-	3	70	2	30	100
406	Practicals		10	5	140	3	60	200
Total		30			490		210	700

VADT - Visual Application Development Techniques
RDBMS – Relational Database Management System

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M.Sc. (I.T.) [Five Year Integrated Course]
B.Sc. (Information Technology)
Semester IV

Paper No : 401 **L: 4 Hrs**

Paper Title: VADT (Visual Application Development Techniques)

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1. Introduction to Microsoft .NET

Microsoft .NET Framework architecture, Common Language Runtime
Common Type System, Microsoft Intermediate Language Assemblies, namespaces and class libraries

2. The VB.NET Language

Data Type, Variables, Constants, Arrays, Control Array, Collections, Subroutines Functions, Control Flow statements, Messagebox and Inputbox.

3. Working with Win Forms

Form Lifecycle, Textbox, Label, Button, Listbox, Combobox, Checkbox, PictureBox RadioButton, Link Label, Panel, Scroll bar, Timer, ListView, TreeView, Toolbar StatusBar

4. Containers

Flow layout panel, Group box, Panel, Split container, Tab control, Table layout panel

5. Dialog Boxes and Menus

OpenFileDilog, SaveFileDialog, FontDialog, ColorDialog, PrintDialog, Menus

6. Database Programming with ADO.NET

ADO.NET Architecture, ADO.NET Components, Connection Object, Command Object
DataReader Object, DataAdepter Object, SQL Server .NET Data Provider
OLEDB .NET Data Provider, DataSet Object, Design time data binding
Runtime data binding, DataGrid Object

Main Readings:

1. Professional VB.NET: Fred Barwell - Wrox Publication
2. Visual Basic .NET Programming – Black Book: Stevan Holzner - Dreamtech Press

Supplementary Readings:

1. Mastering VB.NET by Evangelos petroutsos- BPB publications
2. Introduction to .NET framework -Worx publication
3. The Complete Reference – Visual Basic .NET : Jeffrey Shapiro - TMH

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Semester IV

Paper No : 402 **L: 4 Hrs**

Paper Title: RDBMS - I

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1. Relational Data Model

Enhanced ER Diagrams and Features, Specialization, Generalization, Aggregation
Entity Integrity Constraints, Domain Constraints
Referential Integrity Constraints
Codd's Rules for RDBMS

2. Relational Database design

Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, irreducible set of FD
Normalization – 1Nf, 2NF, 3NF, Decomposition using FD- dependency preservation, BCNF, Multi-valued dependency, 4NF, Join dependency and 5NF
Effect of de-normalization on database performance

3. SQL Basics

Table Fundamentals, Data Types, Statements, Names, Constants, Expression
Basic Structure, DML Statements, Simple Queries, Search conditions, Sorting
Defining constraints – Data Constraints, Unique Key,
Column and Table level Constraints, Primary key and Foreign Key Constraints,

NOT NULL, Check Constrains
Default Value Concepts

Arithmetic and Logical Operators, IN Operator and Like Clause,
Range Searching and Pattern Matching, The Oracle Table – Dual, SYSDATE

4. SQL Functions, Sub queries and Joins

Aggregate functions, Built-in functions – Numeric, Date functions, String functions, Conversion Functions
Grouping Data from Tables, Group By and Having Clause, The Rollup and Cube Operator
Sub queries and query expression, Correlated sub-queries, Exist/Not Exists Operator, Joins, Types of Joins, Structure of Joins, Any, All
Using UNION, INTERSECT, MINUS Clause
View: What is view, Creating View, Updateable View, Destroying View

5. Security Management Using SQL

Types of privileges
Granting and Revoking Permissions
Grant and Revoke Command

6. Data Dictionary

Introduction to data dictionary,
Usage of data dictionary

Main Readings :

1. Database System Concepts - Henry F. Korth & Abraham Silberschatz – TMH
2. SQL, PL/SQL – The programming Language Oracle-by Ivan Bayross - BPB
3. Raghu Ramakrishnan/Johannes Gehrke, “Database Management Systems” - TMH

Supplementary Readings :

1. Principles of Database Systems - Jeffery Ullman - Galgotia Publication
2. Data base Systems, Connoley - Pearson education
3. Introduction to Database System - Bipin C. Desai – Galgotia
4. An introduction to Database Systems - C.J.Date - Addison-Wesley

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Semester IV

Paper No : 403 **L: 4 Hrs**

Paper Title: Microprocessor & Assembly Language

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1. Introduction to Microprocessors.

Typical requirements of architecture: Batch Processing , Multiprogramming , Time sharing & Multitasking Systems ; Intel 8086 architecture , Internal Operation Addressing Modes , Intel 8086 Configurations-Minimum Mode and brief introduction of Maximum Mode , Intel 8086 System Connections , System Bus Timing

2. Intel 8086 Family assembly Language Programming

Program Development Stage , Programming with the use of Assembler and other Development Tools like Loader , Compiler , Locator , debugger , Assemble Instruction Format , Practice with Simple sequence Programs , Flags , jumps , etc . Implementation of Decision making, Multiple Branching and Iterative Looping Controls with Assembly Language instructions, String Instructions, Stack manipulation, Writing & Using Procedures, Macros & Debugging of Assembly Language Programs, Assembly Directives. Use of DOS / BIOS interrupts. Using C with Assembly language Programming.

3. Interrupts Management

Intel 8086 interrupts, IVT, acknowledgment cycle, typical 8086 response. Different types of Interrupts, Interrupt Service Routines, TDR's, Block transfers and Interfacing DMAC - IC 8237.

4. Advanced Microprocessors

Overview of 80286, 80386, 80486, Pentium architectures.

5. Introduction of Microcontroller 8051 core

Architecture, Keyboard interrupt, Timers / Counters, UART, SPI, I2C, ports.

Main Readings:

1. Microprocessor & Interfacing: Douglas Hall - TMH
2. 8086/8088 family architecture, programming & design : Yu Chang Liu & Gibson, PHI
3. Programming & Interfacing, J Uffenbech, PHI
4. The 8051 microcontroller and embedded system by Muhammad ali Mazidi,Pearson Education india publication

Supplementary Readings:

1. Advance MS-DOS Programming – Ray Duncan
2. The Intel Microprocessors – Fourth Edition – Barry B. Brey – PHI
3. IBM PC and its Clones: Govind Rajalu: TMH Publication , 1994.
4. The 8051 Architecture 2nd Edition by kenith. j. Ayala – PenRAM International Publishing Pvt Ltd.,1997

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Semester IV

Paper No : 404 **L: 4 Hrs**

Paper Title: Web Development - I

Client Side Web Scripting

1. JavaScript Basics

HTML to XHTML ,Basics of JavaScript Programming, The <script> tag — Basic Syntax Variables (expressions, data types, operators), Arrays Working With Text Converting Strings Conditionals Loops , Functions, Entities , Advanced math operations Date object Timeout , Cookies

2. Object Model and Event Handling

Programming Using Objects, Navigator Object, Document Object Model (Object Hierarchy, Properties,Methods, Events) ,Events, Event Listeners, and Handlers,Window Object Writing New Windows Dynamically Alert, Confirm, and Prompt Windows , Frames Navigation

3. Manipulating Components

The Keyword this, Forms, Names vs. IDs , Arrays of Elements ,Manipulating the Value of a Text Field,Text Field Events , Form Handlers, Checkboxes , Radio Buttons, Selects onChange in Various Form Elements Hidden Text Field values , Dynamically Modifying Select Lists Validating Form Entries, Processing Forms ,

4. Image Handling and Browser Capabilities

Image Swaps Graphical Navigational Bar (rollovers, pre caching, changing buttons) Interactive Image Maps Using JavaScript ,
Browser detection, Browser compatibility, The Location and History Objects,Screen Object

5. Handling Layers

Using JavaScript to Manipulate the Layer Object (hide and show content, positioning)

Extensible Markup Language (XML)

6. XML Fundamentals

XML Basics, History, Writing a Sample XML, Need of XML in Application Development

7. Document Type Definition

Writing a DTD, Data Types , Valoidations, Writing XML using a DTD

8. XML Schemas

XML Schemas ,Representing Various Data Structure in schemas like Complex Data Types, Sequences, Binary data Types, Primitive Data Types etc.
NameSpaces, Data Validation, Internationalisation

9. XLink and XPointer, XPath, XQuery

10. XSL, XSLT, XML on the Web

11. Parsing XML DOM using JavaScript

12. XML and Databases, XML as Middleware , Introduction to AJAX

Main Readings:

1. JavaScript Bible - by Danny Goodman, Michael Morrison - Wiley
2. The Book of JavaScript: A Practical Guide - by Thau
3. XML in a Nutshell" written by Elliotte Rusty Harold & W. Scott - Orielly Publication
4. Professional XML (Programmer to Programmer) by Bill Evjen, Kent Sharkey, Thiru Thangarathinam, and Michael Kay - Wrox Publication

Supplementary Readings:

1. JavaScript: The Definitive Guide - by David Flanagan - Orielly Publication
2. Head First java Script by Michael Morrison - Orielly Publication
3. XML All-in-One Desk Reference for Dummies by Richard Wagner and Richard Mansfield - Wiley

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Semester IV

Paper No : 405 **L: 4 Hrs**

Paper Title: E-Business

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1. Information Technology And Business

Introduction, Objectives, Commerce – The Traditional way - The Buyer, The Seller
History of Electronic Commerce, Definition of Electronic Commerce
Comparison between Traditional Commerce and E-Commerce
The Technologies of E-Commerce, Advantages and Disadvantages of E-Commerce, International Electronic Commerce, Infrastructural requirements for E-Commerce

2. Types of E-Commerce

Introduction, objectives, Types of business transactions, Business-to-business (b2b) Business-to-consumer (b2c), Business-to-employee (b2e), Business-to-government (b2g)
Government-to-business (g2b), Government-to-government (g2g)
Government-to-citizen (g2c), Consumer-to-consumer (c2c), Consumer-to-business (c2b).

3. Security Of E-Commerce

Introduction , Network and website Security Risks, Website Hacking, Security Incidents on the internet, How Vulnerable are the internet sites, Security and E mail, Network and website security, E- business Risk management issues, Firewall, Security framework

4. Cyber Security and Legal Issues

Un lawful conduct, Computer as target for crime, Computer as storage Devices, Computer as Communication Tools, Cyber stalking, Case on Cyber stalking
Cops to widen Web to catch cyber criminals (Mumbai), Limitation of India's Cyber Laws. Privacy Risk in the internet age, Cookies and privacy, Phishing, Copyright
Internet Gambling, Threats to Children.
The special nature of computer ethics.
The three ethically significant characteristics of the internet.

5. E-Payment

Introduction to e- payments, Digital payments requirements, Digital Token based
E payment system, Classification of new payment system, Properties of electronic cash
Electronic Cheque Payment, Risk and E payment system.
Designing E payment system, Digital Signature
Online financial services in India, Online Stock Trading : The High speed alternative,

6. Implementing An E-Commerce Site (Case Study)

Introduction, Web presence goals, Achieving Web presence goals
How the Web is different, Meeting the needs of Web site visitors, Usability Testing
Identifying and Reaching customers, Communication on the Web
The Web 's new marketing approaches, Technology-enabled Relationship management
Creating and maintaining Brands on the Web, Elements of Branding
Rational Branding vs. Emotional Branding.

7. Models of E – Business

Introduction to Supply chain management, Introduction to Mobile Commerce
Introduction to Customer relationship management, Introduction to EDI
E strategy, E marketing

Main Readings:

1. Frontiers of Electronic Commerce : Kalakota and Whinston - Addison Wesley.
2. Electronic Commerce : A managerial Perspective : E fraim Turban, Jac Lee, David King, H Michel Chung - Pearson Education Asia..
3. E-Commerce An Indian Perspective P.T. Joseph ,S. J. - PHI publication

Supplementary Readings:

1. IT Encyclopedia.Com: Volume 8 : Parag Diwan & Sunil Sharma : E-commerce - Pentagon Press.
2. E-Commerce Strategies : Charles Trepper - PHI
3. E-business management: integration of Web technologies with business models : By Michael Shaw - Springer, 2002

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Semester IV

Paper No : 406 **L: 0, T:0, P:10 Hrs**

Paper Title : Practicals.

Practical shall be conducted for the Papers 401, 402 and 404