B.Sc. in Information Science & Telecommunication

B.Sc.(IST)

COURSE STRUCTURE

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SEMESTER-II

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SEMESTER –I

Communicative English (IST – 1.1.1)

UNIT – I

Basics of Technical Communication :-
Communication Networks, The importance of Technical Communication
Barriers to communication:-
Definition of Noise , Classification of Barriers

UNIT – II

Technology in Communication
Impact of Technology ,Software for creating messages, Software for writing documents., Software for presenting documents, Transmitting documents
Active Listening
Introduction, Types of Listening, Traits of a good Listener, Active versus Passive listening, Implications of Effective listening

UNIT – III

Effective presentation Strategies:-
Introduction, Defining Purpose, Analyzing Audience and Locale , Organizing Contents, Preparing an outline, Visual aids, Understanding nuances of Delivery, Kinesics, Proxemics, Para linguistics, Chronemics, Sample speech
Interviews:-
Introduction, objectives, Types of Interviews, Job Interviews.
Group Communication :
Introduction, Group Discussion, Organizational Group Discussion, GD as part of a selection process, meetings, Conferences.

Books.
1) Technical Communication - Raman & Sharma (Oxford)
2) Business Communication Today- Bovee Thill (Pearson)
Analog Electronics (IST-1.1.2)

UNIT – I


UNIT – II

Transistor & its action, Transistor as an amplifier, Transistor connections: common base, common emitter, & their input and output characteristics, common collector connection, Relationship between $\alpha$, $\beta$ & $\gamma$. Concept of Stabilization and need of biasing( base resistor, feedback, voltage divider ckt), Operating point.

Single stage Transistor amplifier, practical circuit of transistor amplifier, classification of amplifiers, Multistage amplifier, R-C coupled & Transformer coupled amplifier, basic concepts of power amplifiers, Tuned amplifier, frequency response, relation between Q & bandwidth.

UNIT – III

Intro to Feedback circuit, principles of negative feedback in amplifiers, Gain of negative feedback amplifier, Advantages of negative feedback. Introduction to Oscillator, sinusoidal oscillators, types of oscillations, oscillatory circuit, essentials of transistor oscillators, Different types of transistor oscillators: Colpitts oscillator, Hartley oscillator, Phase shift oscillator & crystal oscillator.

Books

1) Principles of Electronics By: V. K. Mehta.
2) Electronics & Communication By B.B. Swain
Circuit Theory (IST-1.1.3)

UNIT – I

Circuit Analysis: Elements, series and parallel circuits (Resistances in series, resistances in parallel, current division rule, voltage division rule), Purely resistive, Inductive and capacitive circuits, RL, RC and RLC series circuits, Energy Sources, Source transformation, star- Delta transformation, simple problems.

UNIT – II

Network theorems: Superposition theorem, Thevenin’s theorem, Norton’s theorem, Maximum power transfer theorem, Reciprocity theorem, Resonance (Series and Parallel) with simple problems.

UNIT – III

Two Port Networks: Elements, Network configuration, Z-parameters, Y-Parameters. Network Functions: Introduction, Driving Point Impedance & Admittance, Transfer Impedance & Admittance, Concept of Poles & zeros in a Network function, Passive Filters:-

Books :
2) Network Analysis & synthesis by B. R. Gupta
**Computer Fundamentals (IST-1.1.4)**

**UNIT – I**

Introduction to Computer, Characteristics of computer, Evolution & Generations of computer, basic computer organization, Processor.
Main Memory : (RAM, ROM, PROM, EPROM, EEPROM, Cache).
Secondary Storage Devices : Magnetic tape, Magnetic disk, Optical disk, Mass Storage Devices, Storage Hierarchy
Input Devices (Keyboard, Mouse, Scanner, Track ball, Joystick, Light Pen).
Output Devices (Monitors, Printers, Plotters, Screen Image Project).

**UNIT – II**

Computer Software : Introduction, Relation between hardware & software, types of software., Local System Architecture Acquiring software, Steps for software development.
Planning the Computer Program : Purpose, Algorithm, Flow Chart, Pseudocode.

**UNIT – III**

Fundamentals of Computer network, Topologies, Protocol, LAN, MAN & WAN.
The Internet : Definition, History, basic Services, WWW, Browsers, Uses.
Classification of Computers : Notebook Computers, PCs, Work Stations, Main Frame Systems, Super computers, Clients & Servers.

**Books**

Operating System (IST-1.1.5)

UNIT – I

Introduction to OS, Computer System Organization, Computer System Operation, OS Structure, OS Operations - Process Management, Memory Management and Storage Management, OS Services, Protection and Security


UNIT – II

CPU Scheduling Basic Concepts, Preemptive Scheduling and Dispatcher, Scheduling Criteria, Scheduling Algorithms - FCFS, SJF, Priority Scheduling and RR Schedule,

Synchronization - The critical section problem (Peterson's Solution and Semaphores), Deadlocks and Starvation, Monitors

MultiThreading: Overview, Benefits, Multithreading Models (Many-to-one, one-to-one, many-to-many)

UNIT – III

Memory Management: Basic hardware, Swapping, Contagious memory allocation, Fragmentation, Paging, Hardware Support, Segmentation

Virtual Memory: Basic Concepts, Demand Paging, Page replacement algorithms - FIFO, Optimal, LRU, LFU & MFU

Allocation of frames, Allocation Algorithms, Thrashing - Causes & Remedies.

Books:
Analog Electronics Lab(IST-1.1.6)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1. Study of passive Components (Resistors, Inductors, Capacitors)
2. Study of passive Components (Diode, Transistor, Zener diode)
3. Study the characteristics of PN junction diode.
5. Study the characteristics of Zener diode.
6. Study the different characteristics of Multimeter (Voltage, current & resistance).
7. Study of input & output characteristics of CB, & CE transistor applications.
8. Study of CRO & Function Generator
9. Study the frequency response of RC coupled Amplifier through CRO.
10. Study the frequency response of Tuned Amplifier through CRO.
Computer Fundamental Lab (IST-1.1.7)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

Introduction to Disk operating System.
Internal & External Commands
Introduction to Windows operating System
Ms-Word
Ms-Excel
Ms-Power point
Ms-Access
Introduction to LINUX Operating System with commands.

Comprehensive Viva (IST-1.1.8)

A comprehensive viva will be taken at the end of the every semester considering into all theory papers. The total marks is 50.
SEMESTER-II

Mathematics-I (IST-1.2.9)

UNIT – I


UNIT – II

Counting - The basics of counting, pigeon hole principle, Recurrence relations, solving recurrence relations, Relations - Relations and their properties, n-ary relations and their applications, representing relations, equivalence relations, partial orderings.

UNIT – III

Graphs - introduction to graphs, graph terminology, representing graphs and graph isomorphism, connectivity, Euler and Hamilton paths, shortest path problems, planar graphs.
Trees - Introduction to trees, application of trees, tree traversal, trees and sorting, spanning trees, minimum spanning trees.

Books:

2) Discrete Structure & Graph Theory – G. S. S. Bhishma Rao (Scitech)
UNIT – I

Number system and codes:-
Introduction, Decimal to Binary conversion and Binary to Decimal, Decimal to octal and Octal to Decimal, Decimal to hexadecimal and Hexadecimal to Decimal, Octal to binary and vice versa, Binary arithmetic addition, subtraction(1’s compliments 2’s compliments), Multiplication and Division codes: Weighted code, Non weight code(Excess -3 code, Gray code)

UNIT – II

Boolean Algebra and Logic gates:-
Introduction, Boolean logic operations, Basic laws of Boolean algebra, Demorgan’s theorem sum of product and product of sum, Karnaugh map (upto 4 variables)
Logic gates: OR , AND, NOT, NAND,NOR,EX-OR, EX-NOR gat, Implementation of Logic circuits.
Combinational circuits:- Introduction, Half adder, Full adder, Half and Full subtractor, Parallel binary adder, serial adder, Multiplexer(4 to 1, 8 to 1), Demultiplexer(1 to 4 and 1 to 8) Decoder(BCD to Decimal and BCD to Seven segment Decoder) Decimal to BCD encoder.

UNIT – III

Sequential logic circuit:-
Clock generators: Astable , Monostable and Bistable Multivibrator.

BOOKS:
1. Digital Fundamentals by Floyd & jain
2. Digital Circuit and Design by S. Salivahaum
3. Digital Electronics by M Mano
Analog Communication Theory (IST-1.2.11)

UNIT – I

Amplitude Modulation Theory: Frequency spectrum of the AM wave, representation of AM, power relations in the AM wave, Generation and Detection of AM, Balanced Modulator.

UNIT – II


UNIT – III

Side Band Techniques: -
Evolution and Description of SSB, Suppression of carrier, suppression of unwanted side band, generation and detection of SSB, Comparison of SSB & DSB.


Books:

1. Principles of Communication Engineering by Singh and Chhabra
2. Electronic Communication Systems by Kennedy and Davis
3. Electronic Communication Systems by Roody and Coolen
Programming in ‘C’ (IST-1.2.12)

UNIT – I

An Overview of C Language, Structure of a C program Fundamentals: Data, Types, Variables and Constants (Int, Real, Char, Logical, String), Keywords, Type Modifiers, Scope of Variables (Local & Global), operators (arithmetic, increment, decrement, logical, relational, bitwise, conditional, comma, assignment), precedence of operators and associativity. Expressions, type casting, control statements (if, if-else, if-else-if, nested if, switch, break, continue, goto, exit), Loops in C (for, while, do-while). Formatted console I/O (printf, scanf), unformatted console I/O (getchar, putchar, gets, puts).

UNIT – II

Array Declaration, Initialization of Array, Types of Array (Single Dimensional, Two Dimensional, Multidimensional), Functions: general form, declaration, arguments, return statements, function call (call by value, call by reference), scope rules of function, calling functions with arrays, and recursions. Pointers: An introduction to Pointer, The & and * operators, pointer Assignments, pointer arithmetic, Pointer versus Arrays, Array of pointers, Limitations of Array of pointers to String, Pointer to pointer, Pointer to Functions.

UNIT – III


BOOKS:

1. Working with ‘C’ by Y. Kanetkar
3. Let us “c” by Y. Kanetkar
Database Management System (IST-1.2.13)

UNIT – I

Fundamentals of DBMS (Introduction, Characteristics and Advantages - Data Abstraction and Data independence), Database System Architecture - Three Schema Architecture, DBMS Languages - Data Definitions and Data Manipulation Languages

Data Models - FMS, Hierarchical, Network and Relational Models, ER Diagram - Mapping ER Model to Relational Model, Integrity constraints (Entity and Referential Integrity)

Relation Query Languages - Introduction to SQL and QBE

UNIT – II

Relational Database Design: Design Guidelines and Functional Dependencies, Normalization - First & Second Normal Forms, Dependency Preservation, Lossless Design

Query processing and Optimization: Relational Algebra (SELECT, PROJECT, UNION, INTERSECTION, MINUS Operations), Relational Calculus (Expressions & Formulas - Tuple & Domain Relational Calculus), Translating SQL Queries to Relational Algebra Expressions, Optimization - Query Trees & Query Graphs

Transaction Processing: Recovery and Concurrency Control (Locking, Timestamp, Multiversion and Optimistic concurrency control schemes)

UNIT – III

Advanced Topics:- Object and Object Relational databases (Overview of OO Concepts, Object Identity, Structure and Type Constructors), Logical databases, Web databases, Distributed databases, Data Warehouses: Introduction, Characteristics, Components and schemas - Data Modelling for DW, Data Mining: Introduction, Overview and goal of DM, Classifications and Applications

BOOKS:-

2. C.J Date: - An introduction to Database to database systems, Pearson Education.
3. Bipin Desai:- An introduction to databases system, Galgotia Publication
Digital Electronics Lab (IST-1.2.14)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1. Study & Verify the Logic gates with their truth tables.(7400, 7408, 7432)
2. Study & Verify the Half-Adder circuit with truth table.
3. Study & Verify the Full-Adder circuit with truth table.
4. Study & Verify the Half-Sub tractor circuit with truth table
5. Study & Verify the Full-Sub tractor circuit with truth table
6. Study & Verify the Multiplexer circuit with truth table (74LS373)
7. Study & Verify the De-Multiplexer circuit with truth table (  
8. Study the various Decoders.( BCD to Decimal & BCD to Seven segment)
9. Study & Verify the Encoder circuit with truth table
10. Study the Various types of Flip-Flops with truth tables.- (7475, 7474)
‘C’ Programming lab (IST-1.2.15)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1. Sample Program coding on variables, constants, data types,
2. Program coding on various Operators.
3. Program coding on scope of Variables.
4. Program coding on different types of Branching Statements.
5. Program coding on different types of Looping Statements.
6. Program coding on Formatted Console I/O functions.
7. Program coding on Un-Formatted Console I/O functions.
8. Program coding on Arrays.
9. Program coding on Functions.
11. Program coding on Structures & Unions
12. Program coding on File Handling

Comprehensive Viva(IST-1.2.16)

A comprehensive viva will be taken at the end of the every semester considering into all theory papers. The total marks is 50.
## COURSE STRUCTURE

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SEMESTER-III
Mathematics-II (IST-2.3.17)

UNIT – I

Numerical Methods:

Interpolation:
Basic Definitions, Forward Difference, Backward Difference, Central Difference, Difference of a polynomial, other Difference operators and their relations, Newtons Interpolation Formula (Forward and Backward), Lagranges Interpolation Formula, Newton’s Divided Difference formula.

UNIT – II

Numerical Differentiation, Integration and Numerical Solution of ordinary Differential Equations:

UNIT – III

Statistics and Probability:

Books
2. Introductory methods of Numerical Analysis By S.S.Sasthri (PHI)
UNIT – I

Basic organization of the computer and block level description of the functional units as related to the execution of a program.
Fetch, decode and execute cycle, role of operating systems and compilers (Introduction only).
IO subsystems: Input – Output devices such as Disk, CD-ROM, Printer etc; Interfacing with IO devices, Keyboard and display interfaces.

UNIT – II

Instruction Set Architecture: Instruction set, instruction cycles, registers and storage, addressing modes, discussions about RISC versus CISC architecture;
Inside a CPU: Information representation, computer arithmetic and their implementation; control and data path, data path components, design of ALU and data path, controller design.

UNIT – III

Memory and IO access: Memory maps, Read write operations, Programmed IO, Concept of handling, Pollled and Interrupt driven IO, DMA data transfer.
Inside the Memory: Memory organization, static and dynamic memory, cache memory and Memory Hierarchy- cache memory access techniques; Virtual Memory.
Introduction to Multiprogramming and Multiprocessing: Introduction to pipelined operation and architecture

Books:
1. Computer System Architecture By Moris Mano
2. Computer Architecture By William Stalling
Data Structure Using ‘C’ (IST-2.3.19)

UNIT – I

Representation of Strings, Operations on Strings, Pointers and Strings, Two dimensional Array of Strings, Array of Pointers to Strings, Limitation of Array of Pointers to Strings. Pattern Matching. More String Functions.
Queues : Queue as an array, and as an linked list, circular queue., deque, priority queue

UNIT – II

Stack as an array & linked list, Application of Stack, Infix to Prefix, Infix to Postfix, Postfix to prefix, Postfix to Infix,

UNIT – III

Tree: Introduction, binary tree, traversal of binary tree, representation of binary tree in computer memory, traversal of binary tree, insertion and deletion of a node in binary tree.
Graph: Introduction & terminology, graph representation, Spanning tree.
Searching : Linear Search, Binary Search, comparisons between linear & binary search.
Sorting Internal : Bubble sort, selection sort, quick sort, insertion sort, Binary tree sort, External Sorting.

Digital Communication Theory (IST-2.3.20)

UNIT – I


UNIT – II

Pulse Modulation: Pulse Time Modulation, Pulse width modulation, Generation & Detection of PWM signal, advantages & disadvantages of PWM, pulse position modulation Generation & Detection of PPM signal, advantages & disadvantages of PPM. Waveform coding Techniques: Introduction, quantization, pulse code modulation, PCM Generator, PCM receiver, companding in PCM, Delta modulation, advantages & disadvantages, concepts of DPCM.

UNIT – III


Books:
Communication System (IST-2.3.21)

UNIT – I

Radio Transmission system:-
Introduction, AM Transmitter, Broadcast transmitter (Block Diagram & Function of each block i.e Master Oscillator, Buffer amplifier, Harmonic Generators), Block diagram and function of Single sideband Transmitter, Block diagram of Frequency modulated Transmitter and function of each blocks, FM Stereo Transmitter, Pre-emphasis circuits.

UNIT – II

Radio Reception System :-

UNIT – III

Television Transmission System:

Books:
1. Principles of communication Engg. by Singh and Chhabra
3. Electronic Communication Systems by Kennedy & Davis
Data Structure Lab (IST-2.3.22)

Full Mark : 40
Record : 10
Viva : 10
Experiment : 20

1. Program coding on Strings.
2. Program coding on Arrays.
3. Program coding on Linked List
4. Program coding on Stack
5. Program coding on Queue.
6. Program coding on Tree
7. Program coding on Graph

B.Sc (Information Science & Telecommunication)
Communication Lab-I (IST-2.3.23)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1. Study of DSB-AM type Transmitter.
2. Study of FM type Transmitter.
4. Study of AM type Receiver.
5. Study of SSB Receiver.
7. Study of Amplitude Shift Keying
8. Study of Frequency Shift Keying.

Comprehensive Viva (IST-2.3.24)

A comprehensive viva will be taken at the end of the every semester considering into all theory papers. The total marks is 50.
SEMESTER –IV

Wave propagation and Antenna Theory (IST-2.4.25)

UNIT – I


UNIT – II

Transmission Lines: - Introduction, open wire line, co – axial cables, strip and microstrip lines, wave guides, primary & secondary constants of a x-mission line, characteristic impedance, propagation constant (attenuation & phase shift constant), standing waves.

UNIT – III

Effects of ground on Antennas : - Grounded antenna, ungrounded antennas, medium wave antennas, Antenna coupling at MF, short wave antenna, Directional High frequency antenna: Dipole arrays, Folded Dipole, Rhombic antenna, UHF & Microwave antennas : Antennas with parabolic reflectors, Horn antenna, Lens antenna

Books :

   By – Singh & Chhabra
   By – Kennedy & Davis
Computer Network Theory(IST-2.4.26)

UNIT – I

Introduction to Computer Network, Reference Model (OSI, TCP/IP), Comparison between OSI & TCP/IP
Internet (ARPANET, Uses Architecture)
Connection Oriented Network : Overview of X-25, Frame Relay & ATM.

UNIT – II

Overview of Ethernet, Access Method, Addressing, Frame Format. Concept of Switched Ethernet, Fast and Gigabit Ethernet, Repeaters, HUBS, Bridges (Types of Bridges), Routers, Gateway, Brouter, Switches.
Network Layer Design Issues, Store and Forward Packet Switching, services provided to the Transport Layer, Implementation of Connection Less & Connection Oriented Service, Comparison of Virtual Circuit & Datagram Subnets

UNIT – III

IP Protocol, IP Address, Internet Control Protocol.
Transport Layer : Services Provided to the Upper Layer, Service Primitive, Addressing, Connection Establish & Released. Introduction to UDP, Remote Procedure Call, Real Time Transport Protocol.
TCP Service Model, TCP Protocol, TCP Segment Header, TCP Connection Establishment & Released, TCP Transmission Policy, TCP Congestion Control.
Application Layer : DNS ( Name Space, Resource Method, Name Server).

Books
   By Uyless Black (PHI)
SQL Server & Visual Basic Programming(IST-2.4.27)

UNIT – I
An Introduction to SQL, Overview, Popular SQL implementations, open database connectivity (ODBC), Introduction to Query, General Rules of Syntax, Data retrieval select and form, Expressions, conditions, and operators, functions (Aggregate, Date & Time, Arithmetic, Character), Clauses in SQL, Joining Tables (inner & outer), Sub-queries; The embedded SELECT Statement. Manipulating Data, (Insert Statement, Update Statement, Delete Statement) Creating and Maintaining Tables (Create Database Statement, Create Table Statement, Alter Table Statement, Drop table statement), Creating Views and Indexes (A Simple View, Renaming Columns, SQL View Processing, Modifying data in a view, Common applications of views. Index, Advanced SQL (Cursor, Stored Procedure, Triggers)

UNIT – II (Visual Basic)
Introduction to Visual Basic, Features, The Control, Properties, Events, Methods, Design the User Interface, Creating Applications: Tool Box, Project Explorer, Properties Window, form, saving the project, toolbar, Text box, label box, command button, List box, combo box, Check box, working with properties window, variables, Data types, scope of variables, Module level variables, Operators, Statements & Expressions, Arrays, control flow statements like branching, looping, function, subroutines.

UNIT – III
Menu, The menu system, menu conventions, menu Editor, creating customize menu bar, Creating Toolbar, Adding images into Toolbars, multiple document interface applications, loading MDI forms and child forms, Active form property, Scroll bar, common Dialog Box control (predefined, Custom). Introduction to Database, table, working with data control, setting the properties, adding new records, deleting & updating the record. Data Access Objects: Jet database engine, DDL and DML Language, the DAO object model, creating database, creating table, adding records, updating records, editing records.

Books:
1. Unit – I, Fundamental of SQL by Gruber (BPB)
2. Unit – II & III, Programming with Visual Basic by Mohammed Azam
UNIT – I

Architecture of a Typical Microprocessor: Introduction, Register, Section, Types of registers, Arithmetic Logic Unit, Interface Sections (Address bus, Data bus, Control bus), Timing & control section, Response to CPU control signals, Assembly Language, Cross assembler, One pass & two pass assembler, advantages & disadvantage of Assembly language.

UNIT – II

Architecture of Intel 8085A: Introduction, Register Section, ALU, Clock, Interrupts, Serial Input / Output, PIN descriptions, Instruction sets, execution timing, Data formats, symbols & abbreviations, Addressing modes, condition flags, list of instructions, Examples of Assembly language Programs.

UNIT – III


Books:

1) Microprocessor & Peripherals. by : S. P. Chowdhury.
2) Microprocessors & Application by B. Ram
3) Microprocessor & Applications by R. Gaonkar
Advanced Communication System (IST-2.4.29)

UNIT – I

Telephone instruments and Signals:

UNIT – II

Optical Fibre transmission: - Introduction, Advantages of optical fibre over metallic cable, Electromagnetic spectrum, Block diagram of an optical fibre system, optical fibre types, Light propagation, Fibre configuration and classifications, Losses in Optical Fibre, Light sources, Optical sources : LED, construction & application, Light detectors. ( PIN Diode), LASERS(types, characteristics & construction), Optical fibre system Link budget.

UNIT – III


Books:

1. Advanced Communication System by Wayne Tomasi (Sixth edition)
2. Principles of Communication Engineering. by Singh & Chhabra
SQL & VB Lab (IST-2.4.30)

Full Mark : 40

Record    : 10
Viva      : 10
Experiment: 20

Verify the different types of SQL Statements like:

Create a Database & table, Perform all operations like Insertion, updation & deletion on table, Verify the DML & DDL operation, Modify the structure of table, retrieve data from table by using different clauses (where, sort by, Group by, Having).

Create a View & perform all operations on View

Create a Stored Procedure & perform all operations on Procedure.

Create a Cursor & perform all operations on Cursor.

Create a Trigger & perform all operations on Trigger.

Program coding on Visual Basic as per the Theory syllabus.
Communication Lab-II (IST-2.4.31)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1) Microprocessor lab on INTEL 8085
   Assembly Language programming on Addition, Subtraction, Block addition, Sorting, 1’s complement, 2’s Complement, Comparison

2) Microprocessor lab on INTEL 8086
   Assembly Language programming on Addition, Subtraction, Multiplication, Division, Block addition, Sorting, 1’s complement, 2’s Complement, Comparison

3) Optical Fiber Communication Lab
   * Study of fiber Loss
   * Study of Numerical Aperture.

4) Study of Telephone circuits

Comprehensive Viva(IST-2.4.32)

A comprehensive viva will be taken at the end of the every semester considering into all theory papers. The total marks is 50.
# COURSE STRUCTURE

## SEMESTER-V

<table>
<thead>
<tr>
<th>PAPER CODE</th>
<th>TITLE OF THE PAPER</th>
<th>MARKS</th>
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<th>EXAM DURATION</th>
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<tr>
<td>IST-3.5.33</td>
<td>Software Engineering</td>
<td>10</td>
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<td>Fundamentals of Multimedia</td>
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<td>Hons. Papers (Theory) ETC measurements and Instrumentation</td>
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## SEMESTER-VI

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<td>.Net Programming</td>
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<td>Internet and Web Tech-II</td>
<td>10</td>
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SEMESTER –V

Software Engineering(IST-3.5.33)

UNIT – I


Software Project Management: Project planning, Metrics for project size estimation, Estimation Techniques, Scheduling(Backbone structures, Activity network & Critical Path Method, Gantt Chart, Pert chart, Project Monitoring & Control), Staffing & Risk management(Identification, Assessment, Contentment)

UNIT-II

Software Design: Introduction, Classification of Cohesion & Coupling, Neat arrangement, Software design approaches(Function oriented & Object oriented), Difference between Objected oriented & Function oriented design.

Function Oriented Software Design: Overview, Structured Analysis, Data flow Diagram, Structured design.

Objected Oriented Design: Overview, Basic mechanism, advantages of Object Oriented Design. Introduction to UML & UML Diagrams, Design patterns

UNIT-III

Coding & Testing:


Books:
1. Fundamental of Software Engineering by Rajib Mall(PHI)
2. Software Engineering by Rohit khurana (Vikas Publication)

B.Sc (Information Science & Telecommunication)
UNIT – I

Introduction to Multimedia, Need for Multimedia, Global Structure, Media and Data Streams: Perception Medium, Representation Medium, Presentation, Storage Transmission & Information Exchange Medium, Multimedia in Education, Multimedia hardware and Software Products.

UNIT – II

Introduction to Sound / Audio:
Basic Sound Concepts: (Computer Representation of Sound, Audio Formats)
Music
(MIDI Basic Concepts, MIDI Devices, MIDI Message, MIDI Software’s) speech
(Speech Generation & Speech Transmission)
Introduction to Images and Graphics.
Basic Concepts, Digital Image Representation, Image Format, Graphics Format,
Image Processing criteria, (Synthesis, analysis, Transmission)

UNIT – III

Introduction to Video and Animation:
Basic Concepts: Video Signal Representation, Computer Video Format,
Computer based Animation: Basic Concepts, Method of Controlling animation,
Display animation.
Multimedia Data Compression Issues: Storage space, Coding requirement.
JPEG: Image Preparation, Loss Less Mode, Hierarchical Mode, MPEG: Video
encoding, Audio encoding, Data Stream. Multimedia Application: Introduction,
Media Preparation, Composition and Integration.

Books:

1. Multimedia Computing, Communication & Application:
   by Ralf Stein Metz & Klara Nabrsedt.
3. Multimedia in Practice: Technology & Applications by Judith Jeffcoate (PHI)
Electronic Measurement & Instrumentation (IST-3.5.35)

UNIT – I


UNIT – II

Digital voltmeters:- Introduction, Ramp Technique, Dual Slope Integrating Type DVM.(Voltage to Time Conversion), Integrating Type DVM(Voltage to Frequency Conversion), 3 ½ Digit Resolution and Sensitivity of a DVM, Digital multimeter, Digital Measurement of Frequency. Bridges:- Wheat Stones Bridge, A.C Bridges, Maxwells Bridge, Hay’s & Wien’s Bridge, Q Meter, LCR Bridge.

UNIT – III


Books:

1. Electronic Measurement by Kalsi
Oops with Java (IST-3.5.36)

UNIT – I

Introduction to OOPS, Polymorphism and Encapsulation,
**Introduction to Java**: Java features, hardware & software requirement, Java environment, simple Java programs, JVM, Command line arguments, constants, variables, Data types, Arrays, Operators, Control Statement (Branching & Looping)
Overview of Inheritance, Defining, Extending and Implementing Interfaces.
**Packages**: Introduction, Java API packages, Creating Package, Accessing & using a package

UNIT – II

**Multithreaded Programming**: Introduction, Creating Thread, Extending the Thread Class, Stopping & Blocking thread, Life Cycle.
Exception handling; Exceptions, types of exception, try and catch, throw, finally, strings: string constructors, length, operations, character extraction, comparison, searching, modifying, string buffer class, string tokenizer and date class. Java. Lan: number, character, math and throwable.

UNIT – III

**Java.IO**: introduction, concept stream, stream class, byte stream class; input stream, output stream, character stream; reader stream, writer stream.
**Java.Applet**: introduction, applet life cycle, passing parameter to applet.
Graphics class: introduction, line and rectangle, circle and ellipse, arc, polygon drawing, font setting.
**Java.AWT**: text component class, text filled, scroll bar, text area, menu bar and menu class, button class, label class, applet with button and labels, button in action, check box, check boxgroup, choice class, list menu.
**Event Handling**: event classes, event listeners, key events, mouse events

**Books**: 1. *programming in Java* by E. Balagurusamy 2. *A Complete Referrence to Java*.
Internet And Web Technology-I (IST-3.5.37)

UNIT – I

Introduction to Internet: Modem, characteristics of a modem, connectivity for communication: Dial-up connection, ISDN connection, DSL connection, client server model & types.
Protocol: SMTP, POP3, PPP / SLIP, TCP / IP, HTTP, FTP, WAP, internet IP Address, Domain name, browser, URL, internet services, electronic mail & its advantages & disadvantages, World Wide Web, E-commerce & Electronic Data Interchange (EDI)

UNIT – II

Introduction to HTML, HTML tags, documents, header section, body section, headings, formatting characters (text), font tag, image & pictures, listing, link documents using anchor tag, table handling in HTML, creating frames & forms (Frameset definition, frame definition, nested frameset, HTML forms, elements of a form).

UNIT – III

Introduction to JavaScript, client-side JavaScript and server-side JavaScript, advantages of JavaScript, writing JavaScript into HTML, Elements of JavaScript: Data types, variables, operators, conditional statements, array objects, date objects, string objects
Objects & Events: Document object, Image object, forms & elements, event handling & data validation.
Functions in JavaScript:(Built in function, declaring functions, passing parameters, recursive functions) Dialog boxes: (Alert, prompt, & confirm dialog boxes). Assignments,

Books :
1. Web Technology & Design by C.Xavier
2. Web technology –I by Ivan Bayrose
Oops Lab (IST-3.5.38)

Full Mark : 40
Record : 10
Viva : 10
Experiment : 20

OOP’s Concepts: Encapsulation, Inheritance, Polymorphism
Method overloading, Overriding, Abstraction
Exception Handling, Package
Programming on I/O Package
Programming on Utility Package
Programming on Language Package.
Programming on AWT Package.
Programming on Applet Package
Internet and Web Technology Lab-I (IST-3.5.39)

**Full Mark : 40**

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<td>Record</td>
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<td>Viva</td>
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<tr>
<td>Experiment</td>
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IWT Practical:

- Fundamentals of Internet & its uses
- Programming in HTML
- Programming In JavaScript
- Front page Editor-2000

Multimedia Practical:

- Sound Forge, Photoshop, Adobe Premier

Seminar (IST-3.5.40)

A Seminar will be presented by the individual students of 5th semester. The seminar topic will be given at the time of beginning of 5th semester and finally it will be evaluated by internal examiners. The total marks is 50 and the pass mark is 40% of the total marks.
SEMESTER-VI

.Net Programming (IST-3.6.41)

Unit-I
Introduction to .NET, Evolution of Microsoft .NET.
VB .NET: Projects Introduction, Creating projects, Keywords, Data types, Operator, Option statements, Variable, Constants, Type conversion, Sub procedure and Functions, Exception handling.
Window Programming: Message Box, Multiple documents Interface Form(MDI), Listbox, Groupbox, Panel, Combobox, Tree view control, Timer, Progress Bar, Status Bar.

Unit-II
Database programming: Introduction, Connection, Data adapter, Data sets.
ADO .NET: Introduction, Creating Connection, Creation new table, Insert data, SQL connection, SQL command, SQL data adapter, SQL data reader, Data table, Data column, Data row, Data grid view.
Introduction to Crystal Report.

Unit III
ASP .NET: Introduction, Static page, Web page, Web server, Working with web forms, Designing and deploying web forms, Control statements, Working with sever controls (Label, Button, Textbox, Listbox, Dropdown list box), Response and Request.
Use of ADO .NET in web applications (Create table, Insert, Update, Delete), Datagrid view.
Internet Information Service (IIS): Change the Home directory in IIS, Add a virtual directory in IIS, Set a default documents for IIS, Stop, Start of Pause for IIS.

Books
1. VB.Net Black Book
2. VB .Net Wrox
3. ASP. Net Wrox
Internet & Web Technology – II (IST-3.6.42)

UNIT – I

Introduction to JSP, Client responsibility, server responsibility, JSP architecture, JSP server, JSP tags, request object, response object, business processing with JSP.

JSP with JDBC: creating ODBC data source, introduction to JDBC, prepared statement class, reading from database table, resultset class, extracting data from resultset object, creating new row in a table, update data in a table & deleting rows from the table, Examples.

UNIT – II

Servlet Environment and Role, Protocol support, HTML support, Replacing CGI Scripts, Installing Servlet, Using java Web server, servlet API & Life cycle, Servlet Context, HTML to Servlet communication.

UNIT – III

Introduction to XML, why XML?, XML development goals, understanding the specs, XML in Netscape and in Internet explorer, XMLs syntax and structure rules, Document type declaration, XML and data binding, adding records to a data Island, examples, XML’s style language, converting html document into XML documents.

Books:
1. Web Technology & Design by C.Xavier
2. Web technology –I by Ivan Bayrose
UNIT – I


Cellular Concepts:- Introduction, frequency reuse, channel assignment strategies, handoff strategies, roaming support using system backbone, Interference and system capacity (Co-channel interference and system capacity, channel planning for wireless system), improving coverage & capacity in cellular systems (cell splitting, sectoring, repeaters for range extension).

UNIT – II

Multiple Access Techniques for Wireless Communication:
Introduction to multiple access, frequency division multiple access (FDMA), time division multiple access (TDMA), spread spectrum multiple access (frequency hopped multiple access (FHMA), code division multiple access (CDMA), Hybrid spread spectrum techniques), space division multiple access (SDMA), packet radio Protocols (Pure ALOHA, Slotted ALOHA), carrier sense multiple access (CSMA) protocols

UNIT – III

Wireless Systems and Standards:-
Advanced Mobile Phone Systems (AMPS), characteristic operation, general working system, Global system for Mobile (GSM): Services & features, system architecture, radio subsystems, channel types (Traffic channel & control channel) frame structure & signal processing., CDMA Digital cellular standard Frequency & channel specification, forward CDMA channel, Reverse CDMA channel.

Wireless Networking:
Introduction, difference between wireless & fixed telephone networks, development of wireless network, Traffic routing, Basic concept of signaling (CAS, CCS), Wireless Local Loop (WLL), Wireless Local Area Networks (WLAN), Basic concept of Bluetooth and Personal Area Networks (PANs).

Books:
Microwave and Radar Technology(IST-3.6.44)

UNIT – I
Introduction to Microwave:
History, microwave region & band descriptions, advantages of microwave, applications of microwave.
Electromagnetics:- Introduction, Maxwell’s equation, amperes law, faradays law, gauss’s law.
Transmission Lines:- Introduction, two wire parallel transmission line, voltage & current relationship, characteristic impedance, reflection co-efficient, propagation constant, input impedance, impedance at a voltage minimum & at a voltage maximum, impedance matching, stub matching, problems.

UNIT – II
Wave Guides (Single line)
Comparison of Wave Guides With Two-wire Transmission Line , Types of Wave guides, Propagation of waves in rectangular wave guides, TE & TM modes .

Semiconductor Microwave Tubes:-
Klystrones : ( Two cavity, reflex )

Semiconductor Microwave Devices:-
Introduction, varactor diodes : construction, equivalent ckt & applications, parametric amplifier, PIN diode : operation & applications, Tunnel diode, Gunn diode.

UNIT – III
Radar Fundamentals:-
Introductions; Basic concepts, Advantages, limitations, applications, Block diagram of a simple radar, classification (continuous wave and pulsed radar), radar range equation, factors affecting range of a radar, pulsed radar system, radar receivers, plan position indicator, scanning & tracking with a radars, CW doppler radar, moving target indicator (MTI) radar, radar antennas, problems.

Books:

1. Microwave & Radar Engineering – by M. Kulkarni
.Net Lab (IST-3.6.45)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

1. VB.net Programming
2. ADO.net Programming
3. ASP.net Programming.
4. C#.net Programming
Internet and Web Technology Lab-II (IST-3.6.46)

Full Mark : 40

Record : 10
Viva : 10
Experiment : 20

2. Java Servlet Programming.
3. XML programming.
4. 3D Max Animation
5. Flash Animation
Project (IST-3.6.47)

Every student will have to do Project work in any area of Information Science & Telecommunication detailed in the curriculum under the guidance of department Teachers / Guest Teachers/ Industry Experts. It should be research based to create new knowledge in any area of Information science & Telecommunication. The student shall submit the project report before the final Examination. Marks will be awarded (out of 100) for the project report after viva, internally conducted by the External Examiner and the pass mark is 50% of the total mark.

Mark Distribution:

1) Project Demo - 30
2) Project Report - 20
3) Presentation / Seminar - 30
4) Viva - 20

B.Sc (Information Science & Telecommunication)