St. PETER'S UNIVERSITY

St. Peter's Institute of Higher Education and Research
(Declared Under Section 3 of the UGC Act, 1956)
AVADI, CHENNAI – 600 054
TAMIL NADU

M.Sc. (INFORMATION TECHNOLOGY)
Code No. - 422

(Effective From **2009 – 2010**)
(Distance Education)

Regulations and Syllabi

(I to IV Semester)

St. PETER'S INSTITUTE OF DISTANCE EDUCATION
Recognized by Distance Education Council and
Joint Committee of UGC – AICTE - DEC, New Delhi
(Ref. F. No. DEC/SPU/CHN/TN/Recog/09/14 dated 02.04.2009 and Ref.F.No.DEC/Recog/2009/3169 dated 09.09.2009)

St. PETER'S UNIVERSITY
St. PETER'S INSTITUTE OF DISTANCE EDUCATION
Chennai – 600 054.

Code No. – 422
M.Sc. (INFORMATION TECHNOLOGY)
(Distance Education)

Regulations and Syllabi
(Effective from 2009 – 2010)

1. **Eligibility:** Candidates who passed the degree examination with mathematics in +2, or B.Sc. (Information Technology/Computer Science/software Engineering), or B.C.A of this University or an examination of other university accepted as equivalent thereto are eligible for admission to Two Year M.Sc Programme in Information Technology.
2. **Duration:** Two Years.
3. **Medium:** English is the medium of instruction and examination.
4. **Methodology:** The methodology of distance education includes the supply of self-instructional study materials in print format and in CD, face-to-face instruction for theory and practicals for a limited period during week ends and on holidays, provision of virtual class in phased manner, dissemination of information over e-mail, Student - Support Service at various Centres of the University, Continuous Assessment and End Assessment conducted by the University at various parts of India.
5. **Weightage for Continuous and End Assessment:** There is no weightage for Continuous Assessment (CA) unless the ratio is specifically mentioned in the scheme of Examinations. The End Assessment has 100% weightage.
6. **Credit System:** Credit system be followed with 36 credits for each Year and each credit is equivalent to 25-30 hours of effective study provided in the Time Table of the formal system.

7. Scheme of Examinations

First Semester

Code No.	Course Title	Credit	Marks	
Theory			**EA**	**Total**
109PITT01	Discrete Mathematics	3	100	100
109PITT02	Wireless Technology	3	100	100
109PITT03	Advanced Computer Architecture	3	100	100
109PITT04	Network Protocols	3	100	100
109PITT05	Object Oriented Programming	2	100	100
109PITT06	Advanced Database Management Systems	2	100	100
109PITP01	Object Oriented Programming Lab Record	1	90 10	100
109PITP02	RDBMS Lab Record	1	90 10	100
	Total	**18**	**800**	**800**

Second Semester

Code No.	Course Title	Credit	Marks	
Theory			**EA**	**Total**
209PITT01	Mobile Computing	3	100	100
209PITT02	Distributed Operating System	3	100	100
209PITT03	Visual Programming	2	100	100
209PITT04	Object Oriented Analysis and Design	2	100	100
209PITT05	Software Project Management	3	100	100
Elective-I (any one from the following papers)				
209PITT06	Digital Signal Processing	3	100	100
209PITT07	Image Processing			
209PITT08	Extreme Programming			
209PITT09	Design Analysis of Algorithms			
Practicals and Project				
209PITP01	Visual Programming Lab Record	1	90 10	100
209PITP02	Case Tools and UML Lab Record	1	90 10	100
	Total	**18**	**800**	**800**

Third Semester

Code No.	Course Title	Credit	Marks	
Theory			**EA**	**Total**
309PITT01	Multimedia Systems	3	100	100
309PITT02	Unix and Networking	3	100	100
309PITT03	Middle Ware Technologies	3	100	100
309PITT04	Web Technology	3	100	100
309PITT05	Advanced Software Engineering	3	100	100
Elective-I (Any one from the following papers)				
309PITT06	Human Resource Management	3	100	100
309PITT07	E – Commerce			
309PITT08	Scripting Languages			
309PITT09	Pervasive Computing			
309PITT10	Network Security			
309PITT11	Network Administration			
Practical and Project				
309PITP01	Visual Programming Lab Record	0	90 10	100
309PITP02	Case Tools and UML Lab Record	0	90 10	100
	Total	**18**	**800**	**800**

Fourth Semester

Code No.	Course Title	Credit	Marks	
	Project		**EA**	**Total**
409PITP01	Project Work Viva - Voce	18	75 25	100

8. Passing Requirements: The minimum pass mark (raw score) be 50% in End Assessment.

9. Grading System: Grading System on a 10 Point Scale be followed with 1 mark = 0.1 and the conversion of the Grade point as given below.

$$\text{Overall Grade Point Average (OGPA)} = \frac{\text{Sum of Weighted Grade Points}}{\text{Total Credits}}$$

$$= \frac{\Sigma(EA)C}{\Sigma C}$$

The Overall Grade: The Overall Grade and Classification of all the candidates be arrived at from the Overall Grade Point Average as stipulated in the following conversion Table.

Grade	Over all Grade Point Average(OGPA)	Over all weighted Average marks	Classification
0	9.00 to 10.00	90.00 to 100	First Class
A	8.00 to 8.99	80.00 to 89.99	First Class
B	7.00 to 7.99	70.00 to 79.99	First Class
C	6.00 to 6.99	60.00 to 69.99	First Class
D	5.00 to 5.99	50.00 to 59.99	Second Class
F	0.00 to 4.99	0.00 to 49.99	**Fail**

The Grade Sheets of the candidates provide particulars such as (1) Overall weighted Average Marks, (2) Overall Grade Point Average, (3) Overall Grade and (4) the Overall classification.

10. Pattern of the Question Paper: The question paper for the End Assessment will be set for three hours and for a maximum of 100 marks with the following divisions and details.

Part A: 10 questions (with equal distribution to all the units in the syllabus). Each question carries 2 marks.

Part B: 5 questions with either or type (with equal distribution to all the units in the syllabus). Each question carries 16 marks.

The total marks scored by the candidates will be reduced to the maximum prescribed in the Regulations.

11. Syllabus

109PITT01 – DISCRETE MATHEMATICS
(I SEMESTER)

1. LOGIC
Statements – Connectives – The Theory of Inference for Statement Calculus (Excluding Automatic Theorem Proving) – The Predicate Calculus – Inference Theory of the Predicate Calculus.

2. COMBINATORICS
Permutation – Combination – Pigeonhole Principle – The Principle of Inclusion & Exclusion – Recurrence relations.

3. ALGEBRAIC STRUCTURES
Semigroups and Monoids (Definitions and examples only) – Groups – subgroups – homomorphisms – cosets and Lagrange's Theorem – Normal Subgroups – Rings and Fields (Definitions and Examples).

4. ORDER RELATIONS AND STRUCTURES
Partially ordered sets – External Elements of partially ordered sets – Lattices – Finite Boolean algebra – Functions of Boolean Algebra – Circuit Designs.

5. GRAPHS
Graphs – Undirected Trees – Minimal spanning Trees – Euler Paths and Circuits – Hamiltonian Paths and Circuits – Transport Networks.

TEXT BOOKS

1. Trembly, J.P. and Manohar, R., "Discrete Mathematical Structures with Applications to Computer Science", McGraw Hill Publication Company, New Delhi, 2002. (for the Units Logic and Graphs)
2. Kolman, B., Busby and Ross, S.C., "Discrete Mathematical Structures", Pearson Education, New Delhi, 2002 (for all the other Units)

REFERENCE

1. Grimaldi, R.P., "Discrete and Combinatorial Mathematics", Pearson Education, New Delhi, 2002.

109PITT02 – WIRELESS TECHNOLOGY

UNIT – 1

Characteristics of the Wireless Medium – Introduction – Radio Propagation Mechanisms – Path Loss Modeling and Signal Coverage – Channel Measurement and Modeling Techniques – Simulation of the radio Channel – What is db. Applied Wireless Transmission Techniques. Short distance Base Band – UWB Pulse – carrier modulated – Digital Cellular Transmissions – Spread spectrum Transmissions. High speed modems for spread spectrum Technology coding Techniques for wireless Transmissions.

UNIT – 2

Wireless Medium Access Alternatives – Fixed Assignment Access for Voice-Oriented Networks. Random access for data oriented Networks - Integration of Voice and Data Traffic.

Introduction to Wireless Networks – Wireless Network Topologies – Cellular Topology - Cell fundamentals - Capacity expansion techniques – Network Planning for CDMA Systems.

UNIT – 3

Mobility Management – Radio Resources and Power Management – Security in Wireless Networks GSM and TDMA Technology - Introduction to GSM – Mechanisms to support a mobile environment – communications in the infrastructure.

UNIT – 4

CDMA technology – Reference Architecture – IMT 2000 - Mobile Data Networks – Data oriented CDPD Network – GPRS and Higher data rates - SMS in GSM – Mobile Application Protocols.

UNIT – 5

IEEE 802.11 WLAN – Physical layer – MAC sub layer – MAC Management Sub layer - Adhoc Networking – IEEE 802.15 – Home RF – Bluetooth – Wireless Geo location – Wireless Geo location System Architecture.

TEXT BOOK

1. Kaveh Pahlavan, Prashant Krishnamurthy "Principles of Wireless Networks", Pearson Education, Delhi, 2002.

REFERENCES

1. Theodore S.Rappaport, "Wireless Communications : Principles and Practice", Pearson Education, Delhi, 2002.
2. William Stallings, "Wireless Communications and Networks", Pearson Education, Delhi, 2002.
3. Martyn Mallick, "Mobile and Wireless Design Essentials", Wiley, 2003.
4. Kamilia Feher, "Wireless Digital Communications", Prentice Hall of India, Delhi, 2002.

109PITT03 – ADVANCED COMPUTER ARCHITECTURE

UNIT – 1

Fundamentals of Computer Design – RISC vs CISC – Performance related issues – Performance Parameters – Measuring Performance. Instruction Set Architecture – Design Issues.

UNIT – 2

Instruction Pipelining – Hazards and Remedies – Instruction Set Design & Pipelining. Instruction Level Parallelism – Concepts.

UNIT – 3

Dynamic Scheduling – Dynamic Hardware Branch Prediction – Super scalar, VLIW and Vector Processors – Performance issues.

UNIT – 4

Multiprocessor Architectures – Centralized Shared Memory Architectures, Distributed Shared Memory Architectures – Synchronization – Memory Organisation and Cache Coherence Issues.

UNIT – 5

Interconnection Networks – Examples – Internetworking. Case Studies of Typical Architectures.

TEXT BOOK

1. Joha L. Hennessy & David A.Patterson, "Computer Architecture A Quantitative Approach", 2nd Edition, Harcourt Asia, Morgan Kaufmann, 2000.

REFERENCES

1. K.Hwang, "Advanced Computer Architecture – Parallelism, Scalability & Programmability", McGraw Hill, 1993.

2. Richard Y.Kain, " Advanced Computer Architecture, A System Design Approach", Prentice Hall of India, Delhi, 1999.

109PITT04 – NETWORK PROTOCOLS

UNIT – 1

Internet Protocol: Routing IP Datagram's – Error and Control Messages (ICMP), Reliable Stream Transport Service (TCP) : TCP State Machine, Response to congestion – congestion, Tail Drop and TCP – Random Early Discard, Routing : Exterior Gateway Protocols and Autonomous Systems (BGP)

UNIT – 2

Internet Multicasting – Mobile IP – Bootstrap And Auto configuration (BOOTP, DHCP).

UNIT – 3

The Domain Name System (DNS) – Applications : Remote Login (TELNET, Rlogin) – File Transfer and Access (FTP, TFTP, NFS).

UNIT – 4

Applications: Electronic Mail (SMTP, POP, IMAP, MIME) – World Wide Web (HTTP) – Voice and Video over IP (RTP).

UNIT – 5

Applications: Internet Management (SNMP) – Internet Security and Firewall Design (Ipsec) – The Future of TCP / IP (IPV6).

TEXT BOOK

1. Douglas E.Comer, "Internetworking with TCP / IP – Principles, Protocols and Architectures, Fourth Edition, Prentice – Hall of India Private Limited, 2002.

REFERENCES

1. Uyless Black, 'Computer Networks – Protocols, Standards and Interfaces", Second Edition, Prentice Hall of India, Delhi, 2002.

2. Udupa, "Network Management System essentials", McGraw Hill, 1999.

109PITT05 – OBJECT ORIENTED PROGRAMMING

1. C++ PROGRAMMING

Introduction to C++ - Tokens, expressions and control structures – Functions in C++ - Classes and Objects – Constructors – Destructors – Operator Overloading and Type conversions.

2. INHERITANCE, POLYMORPHISM AND FILES

Inheritance – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Virtual base class – Abstract class –Virtual functions – pure virtual functions – File stream operations – Sequential Input and Output operations – Random Access – Error handling during file operation.

3. TEMPLATES AND EXCEPTION HANDLING

Templates – Function templates – class Templates – Overloading of Template Functions – Member function Templates – Exception handling – basics – Exception handing mechanism – Throwing mechanism catching mechanism – Rethrowing an exception – specifying exceptions.

4. INTRODUCTION TO JAVA

Overview of Java language – Implementing a Java Program – Java virtual Machine – Operators and expressions – Classes, Objects and methods – Constructors – Overriding methods – Final class – Finalizer methods – Abstract classes and methods – Visibility controls – Arrays – Strings and vectors.

5. INTERFACES, PACKAGES AND THREADS

Interface – Extending Interface – Implementation Interfaces – Accessing Interface variables – Java API packages – creating packages – Accessing and using packages – Adding and Hiding classes – creating threads – Extending the Thread class – Stopping and Blocking a Thread – Life cycle of a thread – Thread priority – Synchronization.

TEXT BOOKS

1. E. Balagurusamy, "Object Oriented Programming", 2nd Edition, Tata McGraw Hill Pub. Co., Delhi, 2001.
2. E. Balagurusamy, "Programming with Java, A Primer", Tata McGraw Hill Pub. Co., Delhi, 2000.

REFERENCES

1. Herbert Schildt, "C++ : The Complete Reference", Tata McGraw Hill, 1999.
2. Herbert Schildt, "Java 2 : The Complete Reference", Fourth Edition, Tata McGraw Hill, 2001.
3. Kamthane, A.N., "Object Oriented Programming with ANSI and Turbo C++, Pearson Education, Delhi, 2003.

109PITT06 – ADVANCED DATABASE MANAGEMENT SYSTEMS

UNIT – 1

Introduction **-** Relational Database Concepts – Query Processing – Query Optimization – Transaction Concepts - Properties of Transactions – Serializability – Concurrency Control – Lock Based Protocols – Time Stamp Based Protocols – Recovery Systems – Log Based Recovery – Advanced Recovery Techniques.

UNIT – 2

Distributed And Parallel Databases - Homogeneous and Hetrogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency Control – Distributed Query Processing – Parallel Databases – I/O Parallelism – Inter Query and Intra Query Parallelism – Inter and Intera Operation Parallelism – Design of Parallel Systems.

UNIT – 3

Object-Based Databases And XML - Object Oriented Databases – Complex Data Types – 00 Data Model – 00 Languages – Persistence – Object Relational Databases – Nested Relations – Inheritance – Reference Types – Querying with Complex Types – Functions and Procedures – XML – Structure of XML - Data XML Document Schema – Querying and Transformation – Application Program Interface – Storage of XML Data – XML applications.

UNIT – 4

Administration advanced Querying and retrieval - Performance Turing – performance Benchmarks – Decision support Systems – Data Analysis and OLAP – Data Mining – Data Warehousing – Information Retrieval Systems.

UNIT – 5

Special Purpose Databases - Temporal Databases – Deductive Databases – Mobile Databases – Multimedia Databases – Spatial Databases – Active Databases.

TEXT BOOK

1. Abraham Silberschatz, Henry F.Korth and S.Sudarshan, "Database System Concepts", Fourth Edition, McGraw Hill, 2002.

REFERENCES

1. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems", McGraw Hill, 2000.
2. Ramez Elmasri and Shamkant B.Navathe, "Fundamentals of Database Systems", Pearson Education Asia, 2002.

PRACTICALS

109PITP01 - OBJECT ORIENTED PROGRAMMING LAB

1. Create a complex number class with all possible operators
2. Create a vector class
3. Create a string class
4. Create a time class
5. Create a data class
6. Create a matrix class
7. Create an employee class with derived classes
8. Create Lists

109PITP02 - RDBMS LAB

1. Library Information Processing
2. Students Mark sheet processing
3. Telephone Directory maintenance
4. Gas booking and delivering system
5. Electricity Bill Processing
6. Bank Transactions.
7. Pay roll processing
8. Personal Information System
9. Question Database and Conducting quiz.

209PITT01 - MOBILE COMPUTING
(II SEMESTER)

1. INTRODUCTION

Mobile and Wireless Devices – Simplified Reference Model – Need for Mobile Computing – Wireless Transmissions – Multiplexing – Spread Spectrum and Cellular Systems – Medium Access Control – Comparisons.

2. TELECOMMUNICATION SYSTEMS

Telecommunication Systems – GSM – Architecture – Sessions – Protocols – Hand Over and Security – UMTS and IMT-2000 – Satellite Systems.

3. WIRELESS LAN

IEEE S02.11 – Hiper LAN – Bluetooth – MAC layer – Security and Link Management.

4. MOBILE IP

Goals – Packet Delivery – Strategies – Registration – Tunneling and Reverse Tunneling – Adhoc Networks – Routing Strategies.

5. WIRELESS APPLICATION PROTOCOL

Wireless Application Protocol (WAP) – Architecture – XML – WML Script – Applications.

TEXT BOOK

1. Jochen Schiller, "Mobile Communications", Pearson Education, Delhi, 2000.

REFERENCE

1. Sandeep Singhal, Thomas Bridgman, Lalitha Suryanarayana, Danil Mouney, Jari Alvinen, David Bevis, Jim Chan and Stetan Hild, "The Wireless Application Protocol : Writing Applications for the Mobile Internet", Pearson Education Asia, 2001.

209PITT02 – DISTRIBUTED OPERATING SYSTEM

UNIT – 1

Fundamentals – evolution – System Models – Distributed operating System – Issues – Distributed Computing environment Message passing – Introduction – Features – Issues – Synchronization – Buffering – Message – Encoding – Decoding – Process addressing – Failure Handling.

UNIT – 2

Remote Procedure calls – Introduction – Model – Transparency – Implementation – Stub Generation – Messages – Marshaling Arguments and results –server Management – Parameter passing Semantics - Call Semantics – Communication Protocols – Complicated RPC's – Client – Server Binding – Exception handling – Security

Distributed shared Memory – Introduction – Architecture – Issues – Granularity Structure – Consistency Models – Replacement Strategy – Thrashing.

UNIT – 3

Synchronization – Introduction – Clock Synchronization – Event ordering – Mutual Exclusion – Deadlock – Election Algorithms.

UNIT – 4

Resource Management – Introduction – Features – Task Assignment approach – Load-Balancing Approach - Load - Sharing Approach Process Management – Introduction – Process Migration – Threads.

UNIT – 5

Distributed File Systems – Introduction – Features – File Models – Accessing Models – Sharing Semantics – Caching Schemes – File Replication – Fault Tolerance – Atomic Transactions – Design Principles Naming – Introduction – Features – Terminologies – Concepts.

TEXT BOOK

1. Pradeep K. Sinha, "Distributed Operating Systems, Concepts and Design" Prentice Hall of India, New Delhi, 2001.

REFERENCES

1. Andrew S. Tanenbaum "Distributed Operating Systems", Pearson Education, Delhi, 2002.
2. Mukesh Singhal and Nirajan G.Shivaratri "Advanced Concepts in Operating Systems", Tata McGraw Hill Publishing Company, New Delhi, 2001.

209PITT03 - VISUAL PROGRAMMING

UNIT – 1

Introduction to Widows Programming – Event Driven Programming – Data Types – Resources – Window Message – Device Context – Document Interfaces – Dynamic Linking Libraries – Software Development Kit (SDK) Tools – Context Help.

UNIT – 2

Visual Basic Programming – Forum Design – VBX Controls – Properties – Event Procedures – Menus and Toolbars – Using Dialog Boxes – Working with Control Arrays – Active X Controls – Multiple Documents Interface (MDI) – File System Controls – Data Control – Database Applications.

UNIT – 3

Visual C++ Programming – Frame Work Classes – VC++ Components – Resources – Event Handling – Message Dispatch System – Model and Modeless Dialogs – Important VBX Controls – Document view Architecture – Serialization – Multiple Document Interface – Splitter Windows – Coordination Between Controls.

UNIT – 4

Database Connectivity – Min Database Applications – Embedding Controls in View – Creating user defined DLL's – Dialog Based Applications – Dynamic Data Transfer Functions – Data Base Management with ODBC – Communicating with other applications – Object Linking and Embedding.

UNIT – 5

Basics of GUI Design – Visual Interface Design – File System – Storage and Retrieval System – Simultaneous Multi Platform Development.

TEXT BOOKS

1. Petzold, "Windows Programming", Microsoft Press, 1995.
2. Marion Cottingham, "Visual Basic", Peachpit Press, 1999.
3. Kate Gregory, "Using Visual C++", Prentice Hall of India Pvt. Ltd. 1999.

REFERENCES

1. Pappar and Murray, "Visual C++: The Complete Reference", Tata McGraw Hill, 2000.
2. Brian Siler and Jeff Spotts, "Using Visual Basic 6", Prentice Hall India, 2002.

209PITT04 - OBJECT ORIENTED ANALYSIS AND DESIGN

UNIT – 1: OBJECT BASIS

Object Oriented Philosophy – Object – Object State, behaviors and methods. Encapsulation and information hiding Class Relationship among classes polymorphism, aggregation, object containment, meta classes.

UNIT – 2: OBJECT ORIENTED METHODOLOGIES

Rumbaugh object Model, Booch methodology Jacobson methodology, patterns, frame works and unified approach.

UNIT – 3: OBJECT ORIENTED ANALYSIS

Business object analysis use case driven approach – use case model. Object analysis – CRC cards – Noun phrase approach Identifying object relationships and methods.

UNIT – 4: OBJECT ORIENTED DESIGN

On design process – Design axioms – design patterns – designing classes.
Case study.

UNIT – 5: UML AND PROGRAMMING

Introduction to unified modeling language – UML diagrams – class diagrams and use case diagrams – State and dynamic models. Case study to inventory, sales and banking.

TEXT BOOK

1. Ali Bahrami, "Object Oriented Systems Development" Irwin-McGraw Hill, New Delhi, International editions, 1999.

REFERENCES

1. Martin Fowler, Kendall Scott, "UML Distilled-Applying the standard Object Modeling Language", Addition Wesley 1977.
2. Gredy Booch, "Object Oriented Analysis and Design with applications", II edition, Addition Wesley, 1994.

209PITT05 - SOFTWARE PROJECT MANAGEMENT

UNIT – 1

Introduction – Product Life – Project life cycle models - water fall model – Prototyping model – RAD model – Spiral Model – Process Models – Matrics.

UNIT – 2

Software Configuration Management – Definitions and terminology – processes and activities – Configuration audit – Matrics – Software Quality assurance – definitions – quality control and assurance – SQA Tools – Organisation of Structures - Risk Management – Risk Identification, quantification Monitoring – Mitigation.

UNIT – 3

Project initiation – Project Planning and tracking – what, cost, when and how – organisational processes – assigning resources – project tracking – project closure – when and how.

UNIT – 4

Software requirements gathering – steps to be followed – skills sets required – challenges – matrics – Estimation 3 phases of estimation – formal models for size estimation – translating size estimate to effort schedule estimate, matrics – Design and Development phases – reusability, Technology choices, Standards, Portability user interface – testability – diagonosability etc.

UNIT – 5

Project Management in testing phase – in the maintenance phase – Impact on internet on project Management.

TEXT BOOK

1. Gopalaswamy Ramesh, "Managing Global Software Projects", Tata McGraw Hill Publishing Company Ltd., New Delhi, 2002

REFERENCE

1. Bob Hughes and Mike Cotterell "Software Project Management"2nd edition, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2002.

ELECTIVES

209PITT06 - DIGITAL SIGNAL PROCESSING

1. DISCRETE TIME SIGNALS AND SYSTEMS

Discrete time signals – Operation on sequences – sampling of continuous time signals – aliasing – Discrete time systems – Time domain characterization of discrete time systems – state space representation – Discrete random signals – Mean, variance, covariance and power spectral density.

2. FREQUENCY DOMAIN ANALYSIS

Discrete Time Fourier Transform (DTFT) – Discrete Fourier Transform (DFT) – Computation of DFT using FFT algorithms – DIT – FFT and DIF FFT – Linear convolution using FFT – Z-Transform and inverse Z-Transform – Frequency response of discrete time systems.

3. DIGITAL FILTERS

Butterworth, Chebyshere, Elliptic approximations for filters – design of IIR low pass and high pass filters using impulse invariance and bilinear Z-transform – Principles of frequency transform – FIR digital filters – design of ideal low pass and high pass FIR digital filters – design of ideal low pass and high pass FIR filter design using Hamming, Hanning and Blarkmann windows – Linear phase condition.

4. DIGITAL FILTER STRUCTURES

Block diagram representation – signal Flow graph representation – Basic FIR Digital filter Structures – transversal and poly phase – Direst form I, Direst form II, cascade and parallel structures for IIR filters.

5. ALGORITHM IMPLEMENTATION AND FINITE WORD LENGTH EFFECTS

Number representation – Fixed point and Floating point – Quantization error analysis – overflow error – truncation error – coefficient quantisation error – Limit cycle oscillations – Dynamic range scaling – Round off errors in FFT algorithms.

TEXT BOOK

1. Digital Signal Processing – Sanjit K. Mitra, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1998.

REFERENCE

1. Discrete-Time Signal Processing – Alan V. Oppenheim, Ronald W.Schafer, Prentice Hall of India, New Delhi, 1992.

209PITT07 - IMAGE PROCESSING

UNIT – 1

Introduction – Problems and applications – Two dimensional systems and mathematical preliminaries Linear systems and shift invariance – Fourier transform – Properties – Fourier series – Matrix theory results – Block matrices and kronecker products.

UNIT – 2

Image perception – light, luminance, brightness and contrast – MTF of visual systems – Monochrome vision models – Image fidelity criteria – color representation.

Digital image sampling and quantization – 2D sampling theory – Image reconstruction from samples, Band limited images, sampling theorem, Nuquist rate, Abasing and filled over frequencies – Image quantization – Optimum mean square quantizer.

UNIT – 3

Image enhancement – point operations – contrast structuring, clipping and thresholding etc – Histogram modeling – Spairal operations – special averaging and low pass filtering, Directorial smoothing, median filtering, Replication, Linear interpolation, Magnification and interpolation (Zooming) – false color and pseudo color.

UNIT – 4

Image restoration – Image observation models – Inverse and wiener filtering – Least square filters – Image analysis – Edge detection – Boundary extraction – Boundary representation – Region representation – Image segmentation – Classification techniques – Image understandings.

UNIT – 5

Image data compression – Pirel coding – PCM, Entrophy coding, Runlength, Bitplane extraction – Predictive techniques – Delta modulation line by line DCPM etc – Interface – Coding of two tone images.

TEXT BOOK

1. Anil K.Jain, "Fundamentals of digital image processing", Prentice Hall information and System Science series, 1989.

REFERENCES

1. Pratt W.K.,"Digital Image Processing", 2nd Edition, John Wiley & Sons, 1991.
2. Rosenfied A. & Kak, A.C., "Digital Picture Processing", Vol. I & II, Academic press, 1982.
3. Nick Efford – Digital Image Processing: A Practical introduction using Java – Addison Wesley / Benjamin Cummings, 2000.

209PITT08 – EXTREME PROGRAMMING

UNIT – 1

Introducing C# - Understanding .Net: The C# environment – Overview of C# - Literals, Variables and Data Types – Operators and Expressions.

UNIT – 2

Decision Making, Branching and Looping – if, if…else, switch, …? : operators, while, do, for, foreach and jump in loops, Methods in C# - declaring methods, the main method, invoking methods, nesting methods, method parameters, pass by value and pass by reference, output parameters, Variable argument lists – Overloading methods.

UNIT – 3

Arrays – Creating an array, Variable size arrays, Array list class – Manipulating Strings – Structures, Nested Structures – Enumerations, Initialization, base types and type conversion.

UNIT – 4

Classes and Objects – Definition, Creating objects, Constructors and destructors, Nesting, Overloaded constructors, Inheritance and Polymorphism – classical, multilevel, hierarchical inheritances, Subclass, Subclass constructors, Overriding methods, Abstract Classes and Methods, Interfaces, Interfaces and Inheritance – Operator Overloading.

UNIT – 5

Delegates – Declaration Methods, Initialization and Invocation, Multicast delegates, I/O operations – Console Input/Output, Formatting, Errors and Exceptions, Type of Errors – Exceptions – Exception for debugging.

TEXT BOOK

1. E. Balagurusamy, Programming in C#, Tata Mc-Graw Hill Publishing Company, New Delhi, 2002.

REFERENCES

1. Selvi, T. A Text book on C# : A Systematic approach to object oriented programming, Pearson Education, Delhi, 2003.
2. Lippman, C# Primer, 3rd Edition, Pearson Education, Delhi, 2002.
3. Liberty, J. Programming C#, Second Edition, O'Reilly & Associates Inc., California, 2002.
4. Albahari, B. Prayton, P. and Marill, B. C# Essentials, O'Reilly & Associates Inc., California, 2002.

209PITT09 - DESIGN AND ANALYSIS OF ALGORITHMS

UNIT – 1

Introduction – Algorithm – Specification – Performance Analysis – Divide – And Conquer – General Method – Binary Search – Finding the Maximum and Minimum – Merge Sort – Quick Sort.

UNIT – 2

The Greedy Method – General Method – Knapsack Problem – Tree Vertex Splitting Dynamic Programming – General Method – Multistage Graphs – All pairs shortest paths – Single – Source Shortest paths – The traveling salesperson problem – Flow shop scheduling.

UNIT – 3

Basic Traversal and Search Techniques – Binary Trees – Graphs – Connected Components and Spanning Trees – Biconnected Components.

UNIT – 4

Backtracking – General Method – 8 Queens Problem – Graph Coloring
Branch and Bound – Method – 0/1 Knapsack Problem

UNIT – 5

NP-Hard and NP-Complete Problem – Basic Concepts – Cooke's Theorem – NP-Hard Problems – Clique Decision Problem - Job Shop Scheduling – Code generation with Common Subexpressions – Approximation Algorithms – Introduction – Absolute Approximations – E-Approximations .

TEXT BOOK

1. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, "Computer Algorithms", Galgotia Publications Pvt. Ltd., 2002

REFERENCES

1. Sara Baase and Allen Van Gelde "Computer Algorithms, Introduction to Design and Analysis", III edition, Pearson Education, Delhi, 2002.
2. Aho, Hoporoft and Ullman "The Design and Analysis of Computer Algorithm" Pearson Education, Delhi, 2001.

PRACTICALS

209PITP01 - VISUAL PROGRAMMING LAB

1. Building Simple Applications.
2. Working with Intrinsic Control and Active X Controls.
3. Application with multiple forms.
4. Application with Dialogs.
5. Application with Menus.
6. Application with Data Controls.
7. Application using Common Dialogs.
8. Drag and Drop Events.
9. Database Management.
10. Creating Active X Controls.

209PITP02 - CASE TOOLS AND UML LAB

1. Familiarization of features of any one of the standard UML case tools.
2. Capturing key functional requirements as Use cases and class diagram for online ticket / hotel reservation systems, student information system, sales and marketing system, banking system and inventory tracking system.
3. Interacting diagrams, state chart diagrams etc for systems in 2.
4. Implementation using any one of object oriented languages like Java, C++ for systems in 2.
5. Component diagrams, deployment diagrams for system in 2.
6. Unit test case, integration test case for systems in 2.

(III SEMESTER)
309PITT01 – MULTIMEDIA SYSTEMS

UNIT – 1
Overview – Multimedia and Personalized computing – emerging applications – convergence of computers. Communication and entertainment products – perspective and challenges – Architecture and issues for distributed multimedia systems – synchronization and QOS – Standards and framework.

UNIT – 2
Digital Audio representation and processing – representation, Transmission and processing of saved – audio signal processing – digital music making – Brief survey of speech recognition and generation Video Technology – raster scanning – colour fundamentals and Video performance measurements – Artifacts – Video equipment – TV standards.

UNIT – 3
Digital Video and image compression – introduction – video compression techniques – JPEG – H.261 – MPEG – DVI Technology –Time Based media representation and delivery – models of time – Time and multimedia requirements – support.

UNIT – 4
O.S. support for continuous media applications – limitations in workstation O.S. – New OS support – experiments using real time mach – middle ware system services architecture – media stream protocol.

UNIT – 5
Multimedia Devices, Presentations services and the user interface – multimedia services and window system, client, device control – Tool kits – Multimedia file systems and information models – File system support – data models – multimedia presentation and authoring – current state of the industry – Design paradigms and user interfaces.

TEXT BOOK

1. John F. Koegel Bufend , "Multimedia systems", Pearson Education, Delhi, 2002.

REFERENCES

1. Vaughan. T, "Multimedia making it work", Fifth edition, Tata McGraw Hill, 2001.
2. K.R. Rao, Zoron S. Bojkovil, Dragarad A. Milovanovic, "Multimedia Communication Systems", Printice Hall, India, Pvt. Ltd., 2002.

309PITT02 – UNIX AND NETWORK PROGRAMMING

UNIT – 1
INTRODUCTION & FILE SYSTEM

Overview of UNIX OS - File I/O – File Descriptors – File sharing - Files and directories – File types - File access permissions – File systems – Symbolic links - Standard I/O library – Streams and file objects – Buffering - System data files and information - Password file – Group file – Login accounting – system identification.

UNIT – 2
PROCESSES

Environment of a UNIX process – Process termination – command line arguments - Process control – Process identifiers - Process relationships terminal logins – Signals -threads.

UNIT – 3
INTERPROCESS COMMUNICATION

Introduction - Message passing (SVR4)- pipes – FIFO – message queues - Synchronization (SVR4) – Mutexes – condition variables – read – write locks – file locking – record locking – semaphores –Shared memory(SVR4).

UNIT – 4
SOCKETS

Introduction – transport layer – socket introduction - TCP sockets – UDP sockets - raw sockets – Socket options - I/O multiplexing - Name and address conversions.

UNIT – 5
APPLICATIONS

Debugging techniques - TCP echo client server - UDP echo client server - Ping - Trace route - Client server applications like file transfer and chat.

TEXT BOOKS

1. W.Richard Stevens, Advanced programming in the UNIX environment, Addison Wesley, 1999.(Unit 1,2 &3)
2. W. Stevens, Bill Fenner, Andrew Rudoff, "Unix Network Programming", Volume 1, The Sockets Networking API,3rd Edition, Pearson education, Nov 2003. (unit 4 & 5)

REFERENCE BOOKS

1.Meeta Gandhi,Tilak Shetty and Rajiv Shah – The 'C' Odyssey Unix –The open Boundless C ,1st Edition ,BPB Publications, 1992.

309PITT03 – MIDDLEWARE TECHNOLOGIES

UNIT – 1
CLIENT / SERVER CONCEPTS

Client – Server – File Server, Database server, Group server, Object server, Web server .Middleware – General middleware – Service specific middleware. Client / Server Building blocks – RPC – Messaging – Peer – to- Peer.

UNIT – 2
EJB ARCHITECTURE

EJB – EJB Architecture – Overview of EJB software architecture – View of EJB – Conversation – Building and Deploying EJBs – Roles in EJB.

UNIT – 3
EJB APPLICATIONS

EJB Session Beans – EJB entity beans – EJB clients – EJB Deployment – Building an application with EJB.

UNIT – 4
CORBA

CORBA – Distributed Systems – Purpose - Exploring CORBA alternatives – Architecture overview – CORBA and networking model – CORBA object model – IDL – ORB - Building an application with CORBA.

UNIT – 5
COM

COM – Data types – Interfaces – Proxy and Stub – Marshalling – Implementing Server / Client – Interface Pointers – Object Creation, Invocation , Destruction – Comparison COM and CORBA – Introduction to .NET – Overview of .NET architecture – Marshalling - Remoting.

TEXT BOOKS

1. Robert Orfali, Dan Harkey and Jeri Edwards, "The Essential Client/Server Survival Guide", Galgotia Publications Pvt. Ltd., 2002. (Unit 1)
2. Tom Valesky,"Enterprise Java Beans",Pearson Education, 2002. (Unit 2 & 3)
3. Jason Pritchard,"COM and CORBA side by side", Addison Wesley, 2000. (Unit 4 & 5)
4. Jesse Liberty, "Programming C#", 2nd Edition, O'Reilly Press, 2002. (Unit 5)

REFERNCES

1. Mowbray, "Inside CORBA", Pearson Education, 2002.
2. Jeremy Rosenberger," Teach yourself CORBA in 14 days", Tec media, 2000

309PITT04 – WEB TECHNOLOGY

UNIT – 1
INTRODUCTION

Introduction – Network concepts – Web concepts – Internet addresses - Retrieving Data with URL – HTML – DHTML: Cascading Style Sheets - Scripting Languages: Javascript – Vbscript.

UNIT – 2
COMMON GATEWAY INTERFACE

Common Gateway Interface: Programming CGI Scripts – HTML Forms – Custom Database Query Scripts – Server Side Includes – Server security issues – XML.

UNIT – 3
JAVA PROGRAMMING

Java fundamentals: Classes – Inheritance – Packages – Interfaces – Exceptions Handling – Multi threading – Applets

UNIT – 4
SERVER SIDE PROGRAMMING

Server side Programming – Active server pages – Java server pages – Java Servlets: Servlet container – Exceptions – Sessions and Session Tracking – Using Servlet context – Dynamic Content Generation – Servlet Chaining and Communications.

UNIT – 5
APPLICATIONS

Simple applications – Internet Commerce – Database connectivity – Online databases – EDI Applications in Business – Plug-ins – Firewalls

REFERENCES:

1. Deitel, Deitel and Neito, "INTERNET and WORLD WIDE WEB – How to program", Pearson education Asia, 2001
2. D.Norton and H. Schildt, "Java 2: The complete Reference", TMH, 2000.
3. Elliotte Rusty Herold , "Java Network Programming", O'Reilly Publications, 3rd Edition, 2004.
4. Eric Ladd and Jim O'Donnell, et al, "USING HTML 4, XML, and JAVA1.2", PHI publications, 2003.
5. Jeffy Dwight, Michael Erwin and Robert Nikes "USING CGI", PHI Publications, 1997

309PITT05 - ADVANCED SOFTWARE ENGINEERING

UNIT – 1: INTRODUCTION

A Generic View Of Processes – Process Maturity – Process Models – Agile Process And Models – Software Cost Estimation –Risk Analysis – Software Project Planning & Scheduling.

UNIT – 2: REQUIREMENT ANALYSIS

System Engineering Hierarchy – Requirement Engineering: Tasks, Initiating The Process, Eliciting Requirements, Developing Use Cases – Negotiating Requirements – Validating Requirements – Building The Analysis Models: Concepts – Object Oriented Analysis – Scenario Based Modeling – Data & Control Flow Oriented Model – Class Based Model – Behavioral Model.

UNIT – 3: SOFTWARE DESIGN

Design Concepts – Design Models – Pattern Based Design – Architectural Design – Component Level Design – Class Based And Conventional Components Design – Real-time System Design - User Interface: Analysis And Design.

UNIT – 4: SOFTWARE TESTING

Software Testing – Strategies – Issues – Test Strategies For Conventional And Object Oriented Software – Validation And System Testing - Testing Tactics: White Box Testing, Basis Path Testing – Control Structure Testing – Black Box Testing - Object Oriented Testing – Testing GUI – Testing Client/Server – Test Documentation.

Study of testing tools for function testing, performance testing, load testing, web testing, web services testing - load runner, winrunner, Qengine webload, silkperformer, rational. etc

UNIT – 5: SOFTWARE QUALITY ASSURANCE

Software Quality Concepts – Quality Assurance – Software Technical Reviews – Formal Approach To Software Quality Assurance - Reliability – Quality Standards – Software Quality Assurance Plan – Software Maintenance - Software Configuration Management

TEXTBOOKS

1. Roger S. Pressman., Software Engineering: A Practitioner's Approach (Sixth Edition), McGraw Hill, 2005.
2. I.Sommerville, Software Engineering, V Edition: Addison Wesley, 1996.

REFERNCES

1. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
2. James F Peters and Witold Pedryez, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000**.**
3. Fairely, "Software Engineering Concepts", McGraw Hill, 1995

ELECTIVES

309PITT06 – HUMAN RESOURCE MANAGEMENT

1. LEADERSHIP

Technical Leadership - Leader's Goal, Conviction, Vision - Transformational and Transactional Leadership - Leader's Vision - Professionalism : Importance, Elements - Managing Awareness - Performance - Manager's Role in Professionalism.

2. MANAGING TECHNICAL AND PROFESSIONAL PEOPLE

Goals of Engineers and Scientists - Work Assignment - Need for Influence - Professional Career and Goals - Age and Creativity - Performance - Motivation - Employee Partnership - Career Risks - Technical Competence - Professional Discipline - Manager's Role in Professional Discipline - Guidelines.

3. IDENTIFICATION AND DEVELOPMENT OF TALENTED PEOPLE

Talented Professionals – Importance - Characterization - Identification – Assessment and Recognizing Talent - Development - Development Needs - Counseling.

4. INNOVATION

The Importance of Innovation - Risk of Failure - Nature of Creativity - Imagination - Managing Innovative Teams - Needs of Creative Teams - Team Dynamics - A Software Development Example - Manager's Responsibility - Team's Personal Needs - Political versus Technical Solutions - Team Synergism.

5. TEAM ENVIRONMENT AND RECOGNITION

Innovative Team Environment -Award Programs - Recognition Programs - An Example Award Plan - Industry Award Plans - Award Guidelines - Incentive Plans - A Caution on Recognition Programs

TEXT BOOKS

1. Watts S. Humphrey, "Managing Technical People: Innovation, Teamwork, and the Software Process", Addison-Wesley, 1996.

REFERENCES

1. Biswajeet Pattanayak, "Human Resource Management", Prentice Hall of India, 2002.
2. K. Aswathappa, Human Resource and Personnel Management text and cases, Tata Mc-Graw Hill publishing Co. Ltd., 2002.

309PITT07 – E COMMERCE

1. INTRODUCTION

Networks and Commercial Transactions - Internet and Other Novelties - Electronic Transactions Today - Commercial Transactions - Establishing Trust - Internet Environment - Internet Advantage - World Wide Web.

2. TECHNOLOGIES

Why Internet Is Unsecure - Internet Security Holes - Cryptography: Objective - Codes and Ciphers - Breaking Encryption Schemes - Data Encryption Standard - Trusted Key Distribution and Verification - Cryptographic Applications - Encryption - Digital Signature - Nonrepudiation and Message Integrity.

3. ELECTRONIC PAYMENT METHODS

Traditional Transactions : Updating - Offline and Online Transactions - Secure Web Servers - Required Facilities - Digital Currencies and Payment Systems - Protocols for the Public Transport - Security Protocols - SET - Credit Card Business Basics.

4. ELECTRONIC COMMERCE PROVIDERS

Online Commerce Options - Functions and Features - Payment Systems: Electronic, Digital and Virtual Internet Payment System - Account Setup and Costs - Virtual Transaction Process - InfoHaus - Security Considerations – CyberCash: Model - Security - Customer Protection - Client Application - Selling through CyberCash.

5. ONLINE COMMERCE ENVIRONMENTS

Servers and Commercial Environments - Payment Methods - Server Market Orientation - Netscape Commerce Server - Microsoft Internet Servers - Digital Currencies - DigiCash - Using Ecash - Ecash Client Software and Implementation - Smart Cards - The Chip - Electronic Data Interchange - Internet Strategies, Techniques and Tools.

TEXT BOOKS

1.Pete Loshin, "Electronic Commerce", 4th Edition, Firewall media, An imprint of laxmi publications Pvt. Ltd., New Delhi, 2004.

REFERENCES

1. Jeffrey F.Rayport and Bernard J. Jaworski, "Introduction to E-Commerce", 2nd Edition, Tata Mc-Graw Hill Pvt., Ltd., 2003.
2. Greenstein, "Electronic Commerce", Tata Mc-Graw Hill Pvt., Ltd., 2000.

309PITT08 – SCRIPTING LANGUAGES

UNIT – 1: Introduction to LINUX

LINUX - The operating System; Compiling the Kernel; Introduction to the Kernel: Important data structures, Main algorithms, Implementing System Calls. LINUX Architecture-independent memory model, Virtual address space for a process, Block device caching, Pages under LINUX.

UNIT - 2: IPC, File System

IPC: Synchronization in the Kernel, Communication via files, Pipes, Debugging using ptrace, System V IPC, IPC with sockets. File System: Basic Principles, Representation of file system in the Kernel, The Proc file system and Ext2 file system.

UNIT – 3: HTML and FORMS

HTML tags; sending data to the server; Designing applications using forms in HTML. Creating dynamic pages, CGI Examples with postscript. The gd graphics library. CGI Examples with gnuplot and pgperl. Animation. Advanced form applications- Guestbook, Survey/poll and pie graphs, quiz/test form application, Security.

UNIT – 4: PHP

Introduction to PHP: Open source Programming PHP, Apache, MySQL, Postgress, SQL and Perl- Overview of PHP - Variables, operations, Constants, control structures arrays, Functions, classes - Handling files.

UNIT – 5: JavaScript - VB Script

Introduction to JavaScript, VB Script - usage in Web Page development, sending an email – multipart message - storing images - getting confirmation - Session tracking Graphics Input Validators - cookies.

TEXT BOOKS

1. M. Bek et al : LINUX Kernel Internals, Addison-Wesley, 1997. (Chapters 1 to 9, Appendices A,B,C,D)
2. Remy Card et al: The LINUX Kernel book, John Wiley, 1998.

REFERENCES

1. Shishir Gundavaram - CGI Programming on the World Wide Web, O' Reilly and Associates - Shroff publishers - 2004. (Chapters 1 to 7).
2. Core PHP programming, Leon Atkinson and Zeev Suraski, Pearson Education, Delhi, 2004,3rd Edition

309PITT09 – PERVASIVE COMPUTING

UNIT – 1: Introduction

Introduction to wireless enterprise applications – Wireless Devices: Hardware platforms, networking technologies, service technologies, middleware, and content delivery.

UNIT – 2: Developing WML Applications

Developing WML Applications: WML documents, developing a WML application, WML tags, registration WML listing and WML script.

UNIT – 3: MIDP Programming

MIDP Programming: J2ME MIDP user interface, MIDP application, developing a MIDP application, MIDP Classes: MIDlet class, MIDP GUI classes, MIDlet high-level events, low-level APIs and event handling.

UNIT – 4: Advanced MIDP Programming

Advanced MIDP Programming: Network programming, MIDP database programming, MIDlet provisioning, bluetooth application.

UNIT – 5: Developing VoiceXML Applications

Developing VoiceXML Applications: VoiceXML applications, VoiceXML TAGS, ECMAScript - Java Card Application: Java card VM, APDUs, java card API, host applications.

TEXT BOOKS

1. Jochen Burkhardt, Dr. Horst Henn, Stefan Hepper – Pervasive Computing Technology and Architecture of Mobile Internet Applications – Pearson Education, 2005.

REFERENCES

1. Dan Harkey, Shan Appajodu, Mike Larkin – Wireless Java Programming for Enterprise Applications – Wiley Publishing, Inc., 2001.

309PITT10 – NETWORK SECURITY

UNIT – 1

Introduction – Primer on a Networking – Active and Passive Attacks – Layers and Cryptography – authorization – Viruses, worms. The Multi level Model of Security – Cryptography – Breaking an Encryption Scheme – Types of Cryptographic functions – secret key Cryptography – Public key Cryptography – Hash algorithms.

Secret key cryptography – Data encryption standard – International Data Encryption Algorithm (IDEA) Modes 4 Operations – Encrypting a Large message – Electronic code book, cipher block chaining, OFB, CFB, CTR – Generating MACs – Multiple Encryption DES.

UNIT – 2

Introduction to public key algorithms – Model of arithmetic – Modular addition, Multiplication, Exponentiation. RSA – RSA Algorithm – RSA Security – Efficiency of RSA – Public Key cryptography Standard (PKCS) - Digital Signature Standard – DSS Algorithm – Working of Verification procedure – Security and DSS – DSS controversy – Zero Knowledge proof systems.

UNIT – 3

Authentication – Overview of authentication systems – password based authentication – Add nets based authentication – cryptographic authentication protocols – who is seeing authenticate – passwords as cryptographic keys – Eaves dropping and server database reading – Trusted intermediaries – Session key establishment.

Authentication of people – passwords – online – off line password of using – Eavesdropping – passwords and careless users – Initial Password distribution – Authentication tokens.

UNIT – 4

Standards and IP security – Introduction to Kerberos – Tickets and Ticket granting tickets. Configuration - logging into the network – replicated KDCs.

Overview of IP security – security associations – security association database - security policy database, AH and ESP – Tunnel Transport mode why protect - IP Header IPV4 and IPV6, NAT, Firewalls, IPV4, IPV6 Authentication Header – ESP - reason for having Authentication Header.

UNIT – 5

Network Security Application – Email Security – distribution lists – store and forward – security services for email – establishing keys privacy – authentication of the source – massage Integrity – Non-Repudiation – Proof of submission – Proof of delivery. Message flow confidentially – Anonymity – Names and Addresses.
Firewalls – packet filters – application level gateway – encrypted tunnels – comparisons why firewalls don't work – denial of service attacks. Web security – Introduction – URLs/URIs – HTTP – HTTP digest authentication. Cookies – other web security problems.

TEXT BOOK

1. Charlie Kaufman, Radia Perlman and Mike Speciner "Network Security : Private Communication in a Public Work", Second Edition, Pearson Education, 2002.

REFERENCES

1. William Stallings, "Network Security : Essentials Applications and Standards", Pearson Education, 2002.
2. Hans, "Information and Communication Security", Springer Verlag, 1998.
3. Derek Atkins, "Internet Security", Tech media, 1998.

309PITT11 – NETWORK ADMINISTRATION

UNIT – 1

Network services – Names and Addresses – The Host Table – DNS – Mail services – File and Print servers – configuration servers – summary - Getting started – connected and Non-connected Networks – Basic information – planning Routing – Planning Naming Service – Other services – Informing the Users – summary - Basic Configuration - Kernel – configuration – Using Dynamically Loadable Modules – Recompiling the Kernel – Linux Kernel configuration – Startup Files – The Internet Daemon – The Extended Internet Daemon.

UNIT – 2

Configuring the Interface – The ifconfig command – TCP / IP over a Serial Line – Installing PPP - Configuring Routing – common routing configuration – The minimal routing table – Building a static routing table – configuring DNS – BIND : Unix name service – configuring the Resolver – configuring named – using ns lookup

UNIT – 3

Local Network Services – the Network File system – Sharing Unix printers – using samba to share resources with windows – Network Information – service – DHCP – Managing Distributed servers – Post office servers – send mail – sendmail's function – running sendmail as a Daemon – Sendmail Aliases – Modifying a sendmail of File – Testing Sendmail.

UNIT – 4

Configuring Apache – Installing Apache software – configuring the Apache server – understanding an Lttpd. Conf File – Web server security - Managing your web server – Network Security – Security planning – user Authentication – Application security – Security Monitoring – Access control – Encryption – Firewalls.

UNIT – 5

Trouble shooting TCP / IP Applications a problem – Diagnostic Tools – Testing Basic connectivity – Troubleshooting Network Access – Checking Routing – Checking Name Service – Analyzing Protocol problems – Protocol case study - Applications : Internet Management – Introduction – The level of Management Protocols – Architectural Model – Protocal Framework – Examples of MIB variables – The structure of Management Information – Formal Definitions using ASN 1 – Structure and Representation of MIB object names – Simple Network Management Protocol – SNMP message format – Example encoded SNMP message – New features in SNMPv3 - Summary.

TEXT BOOK

1. Craig Hunt, "TCP / IP Network Administration", 3rd Edition, O'Reilly Networking, 2002.
2. Douglas E Comer, "Internetworking with TCP / IP – Principles, Protocols and Architectures", Fourth Edition, Prentice – Hall of India Pvt. Ltd., 2002.

REFERENCES

1. Steven Graham, Steve Shah, "LINUX Administration A beginner's Guide", 3rd Edition, McGraw Hill, 2002.
2. Nicholas wells, "Guide to Linux Installation and administration", Vikas Publishing house, 2000.
3. Red Hat, "Official Red Hat Linux 8 Administrator's Guide", Wiley – Dreamtech India Pvt. Ltd., 2002.
4. Steve Maxwell, "UNIX system Administration, A beginner's Guide", Tata McGraw Hill Edition, 2002.

309PITP01 UNIX AND NETWORK PROGRAMMING LAB

1. Program using basic network commands
2. Program using system calls : create, open, read, write, close, stat, fstat, lseek
3. Program to implement inter process communication using pipes
4. Program to perform inter process communication using message queues
5. Program to perform inter process communication using shared memory
6. Program to perform synchronization using semaphores
7. Program to capture packets : sniffer
8. Program using TCP sockets (Client and Server)
9. Program using UDP sockets (Client and Server)
10. Program using URL class to download web pages

309PITP02– MIDDLEWARE AND WEBTECHNOLOGY LAB

MIDDLEWARE LAB

1. Create a distributed application to download various files from various servers using RMI
2. Develop an Enterprise Java Bean for Banking operations
3. Create an Active-X control for File operations
4. Develop a component for converting the currency values using COM / .NET
5. Develop a component for retrieving information from message box using DCOM / .NET
6. Develop a middleware component for retrieving Weather Forecast information using CORBA

WEB TECHNOLOGY LAB

7. Designing a web site using HTML, DHTML and Client side Scripting
8. Write a program in java for getting time and data information from the server using TCP/UDP
9. Write a program in java to implement Database Connectivity
10. Write a JSP program for order processing
11. Write a ASP program using the components

PROJECT:

No. of copies / distribution of Project:

The students should prepare three copies of Project and submit the same for the evaluation by Examiners. After evaluation one copy is to be retained in the college library and one copy is to be submitted to the University (Register) and the student can hold one copy.

Format to be followed:

The formats / certificate for Project to be submitted by the students are given below.

Format for the preparation of project work:

(a) Title page
(b) Bona fide certificate
(c) Acknowledgement
(d) Table of contents

Chapter No:	TITLE	Page no.
1	Introduction	
2	Review of Literature	
3	Materials and Methods	
4	Results	
5	Discussion	
6	Summary	
7	References / Bibliography	

Format of the Title Page:

TITLE OF THE PROJECT

Project submitted in part fulfillment of the requirement for the
Degree of Master of Science in Information Technology to
St. Peter's University, Distance Education, chennai.

By

Student Name
Register Number
Enroll Number

Under the guidance of

_____ with official Address

Name of the Study Centre with Code

Year

Format of the Certificate:

CERTIFICATE

This is to certify that the Project entitled …… …….. submitted in part fulfillment of the requirement of the degree of MASTER OF SCIENCE IN INFROMATION TECHNOLOGY to St. Peter's University, Distance Education, Chennai is a record of bonafide research work carried out by…….…… under my supervision and guidance and that no part of the Project has been submitted for the award of any degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journals or magazines.

Signature of the Candidate **Signature of the Guide**

Study Centre - Coordinator **Director**

Examiner 1 : Examiner 2 :