

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (Information & Communication Technology)**

**Effective from July 2005**

**Semester III**

**Teaching and Evaluation Scheme**

| Paper Sr. No. | Paper Title                                                                                | Teaching Schedule (Hours/Week) |      | University Exam Theory / Practical Duration |       | Internal Exam Theory / Practical Duration |       | Total Theory / Practical |
|---------------|--------------------------------------------------------------------------------------------|--------------------------------|------|---------------------------------------------|-------|-------------------------------------------|-------|--------------------------|
|               |                                                                                            | Lect                           | Prac | Hrs.                                        | Marks | Hrs.                                      | Marks |                          |
| ICT301        | Advance Computer Networks - II                                                             | 4                              | -    | 3                                           | 70    | 2                                         | 30    | 100                      |
| ICT302        | WADT - III                                                                                 | 4                              | -    | 3                                           | 70    | 2                                         | 30    | 100                      |
| ICT303        | Elective - I<br>1. ISA<br>2. DSS<br>3. IT & Cyber Low                                      | 4                              | -    | 3                                           | 70    | 2                                         | 30    | 100                      |
| ICT304        | Elective - II<br>1. Data Warehousing<br>2. Language Processors<br>3. Distributed Computing | 4                              | -    | 3                                           | 70    | 2                                         | 30    | 100                      |
| ICT306        | Project                                                                                    | -                              | 14   | -                                           | 140   | -                                         | 60    | 200                      |
| <b>Total</b>  |                                                                                            | <b>30</b>                      |      | <b>420</b>                                  |       | <b>180</b>                                |       | <b>600</b>               |

**WADT:** Web Application Development Techniques

**ISA:** Information Security & Applications

**DSS:** Decision Support Systems

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (Information & Communication Technology)**

**Semester III**

**Paper No : ICT301**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Advance Computer Networks - II**

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**1. Introduction**

TCP/IP Architecture, TCP/IP Addressing, Services, FTP, SMTP, TFTP, SNMP, Network File System, Domain Name System, Transport Layer Protocols, User Datagram Protocol, Transmission Control Protocol

**2. Interprocess Communication**

File and Record Locking, Pipes, FIFOs, Streams and Messages, Message Queues, Semaphores

**3. Sockets**

Socket System Calls, Reserved Ports, Stream Pipes, Socket Options, Asynchronous I/O, Sockets and Signals

**4. Transport Layer Interface**

Elementary TLI Functions, Streams and Stream Pipes, Asynchronous I/O, I/O Multiplexing

**5. Remote Procedure Calls**

Remote Login, Remote Command Execution, External Data Representation, 'rpcgen' Compiler

**Main Readings:**

1. Richard Stevens, W., "Unix Network Programming", Prentice-Hall , 1990
2. Richard Stevens, W., "TCP/IP Illustrated Volume 2 & 3" , Pearson Education

**Supplementary Readings:**

1. Martin, J., "TCP/IP Networking - Architecture, Administration, and Programming", Prentice-Hall, 1994
2. Loshin, P., "TCP/IP for Everyone", Academic Press Limited, 1995

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (Information & Communication Technology)**

**Semester III**

**Paper No : ICT302**

**L: 4, T:0, P:0 Hrs**

**Paper Title : (WADT - III)**

**(Web Application Development Techniques - III)**

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**1 Introduction to LINUX**

**2 The GNU Projects, free software foundation and Linux distribution**

**3. LINUX Architecture**

**4. Introduction to PHP**

**5. Language features**

Language constructs, Variables, declarations and types, Constants,  
Use of Operators, Control Structures, Functions

**6. Object Oriented Features of PHP**

Classes and Objects, Use Of constructors, Serialization

**7. PHP inbuilt Functions**

String Functions, Array Functions, Mathematical Functions, Graphics Library (GD support), File System Functions, Date and Time Functions, Misc. Functions

**8. Database concepts with PHP**

**9. Perl Basic**

Introduction, Data types, Operators, Control statements, Arrays

**10. Functions**

String Functions, Array Functions, Mathematical Functions, Time/Date Functions,  
File Handling, Understanding files & Directories, Opening & Closing files, Working  
with Directory

**11. Database Connectivity**

Database access using perl, ODBC object method

**12. MySQL Database Server**

Configuring the MySQL Server, Starting MySQL Server, MySQL Tables,  
Displaying MySQL Database, Adding and removing user access, Checking and fixing  
database

**13. Red Hat Linux Network and Server Setup**

**14. Setting up a Local Area Network**

### **15. Print Server**

Choosing CUPS or LPRng Print Services, Setting up printer, Working with CUPS printing, Managing printers, Using printing commands, Configuring print servers

### **16. File Server**

NFS , Samba, Netware

### **17. Mail Server**

Introduction to SMTP and sendmail, Installing and running sendmail, Configuring sendmail, Introducing Postfix, Getting mail from the server (POP), Administering a mailing list

### **18. FTP Server**

Understanding FTP server, Secure FTP server (vsFTPD)

### **19. Web Server**

Introduction to web server, Configuring Apache web server, Starting and stopping web server, Monitoring server activities

### **Main Readings:**

1. Red Hat Linux Bible – Nigus – Wiley
2. Linux in NutShell – Ellen Siever
3. Linux Application Development – Michal K Jhonson

### **Supplementary Readings:**

1. Linux Complete – Grant Tatlor
2. Integrating Linux & Windows – Mike
3. Installing Red Hat Linux – William Van Hagen
4. Red Hat Linux System Administration Unleashed – Thomas

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**M.Sc. (Information & Communication Technology)**

**Semester III**

**Paper No : ICT303** **L: 4, T:0, P:0 Hrs**  
**Paper Title : Elective – I**  
**ISA (Information Security And Applications)**

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**1. Introduction :**

Security Attacks on Data/Software, Hardware, Network

**2. Classical Encryption Techniques**

Caesar cipher ,Mono alphabetic cipher, Poly alphabetic cipher, Transposition techniques – Private key cryptography and Data Encryption Standard using biometrics- Public key cryptography and diffie- Hellman key exchange – Hashing and Digital Signatures – Authentication Protocols

**3. Network Security**

Firewall Design Principles, IP Security Policy.

**4. Introduction to E-Commerce-Electronic Voting/Polling systems**

Standards and Applications .

**Main Readings :**

1. William Stallings : Cryptography and Network Security - Principles and Practice, Prantice Hall.
2. Bruce Schneier : Applied Cryptography , John Wiley.

**Supplementary Readings :**

1. Ranjan Bose : Information Theory Coding & Cryptography, TMH
2. Ryan Russel : Network Security, 2nd Edition, SPD
3. Ryan Russel and at: Stealing the Network , SPD

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**M.Sc. (Information & Communication Technology)**

**Semester III**

**Paper No : ICT303**  
**Paper Title : Elective – I (Decision Support System)**

**L: 4, T:0, P:0 Hrs**

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- 1. The Problem Solving Process.**
- 2. The Analytic Modeling Process.**
- 3. Descriptive Assessment -- Criteria and Weights.**
- 4. Descriptive Assessment -- Alternatives and Ranking.**
- 5. Values and Normative Choice.**
- 6. Choices Under Uncertainty.**
- 7. Uncertainty and Normative Choice.**
- 8. Sequential Decision Making.**
- 9. Multi-Actor Decision Making.**
- 10. Constraint-Based Policy Optimization. Solutions to Problems.**

**Main Readings:**

1. Efram G. Mallach : Decision Support and Data Warehouse Systems –TMH

**Supplementary Readings:**

1. Efrain Turban & Jay Aronson : DSS and Intelligent Systems, PHI

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**Semester III**

**Paper No : ICT303**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Elective -I**

**(Information Technology and Cyber Law )**

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**1. Information Technology And Legal Response**

Introduction, Objective, Cyberspace and Our Lives, The Nature of the Net  
Features of the Net, Geographical Indeterminacy, Information technological  
revolution and societal impact

**2. Sources of the Law**

Introduction, Objective, Sources of law, The Significance of Legislation,  
The common law or uncodified law, Precedent as a Source of law  
Branches of law

**3. The Judicial System**

Introduction, Objective, Institutions of the Judicial System, Courts  
Tribunals, Procedure in Civil Cases, Procedure in Criminal Cases  
Officers of Court

**4. Structure of Government**

Introduction, Objective, Framing of the Constitution, Government Functions  
Processing of Bills, Legislation: Subject to judicial review, Public interest litigation

**5. Information Technology and the Attempted Legal Response**

Introduction, Objective, Primary assumptions of a legal system, Sovereignty  
Territorial Enforcement, Notion of Property, Real Relationships  
Paper Based Transactions, Role of the Judiciary in the evolving legal framework

**6. Cyber Crimes**

Introduction, Objective, Cyber Crime – A perspective, The Problem: Current Forms  
of Computer Crime, Infringements of Privacy, Economic offences, Computer  
Hacking, Computer Espionage, Software Piracy and other forms of Product Piracy,  
Computer Sabotage and Computer Extortion, Computer Fraud, Illegal and harmful  
contents, Other offences, Attacks on Life, Organized Crime, Electronic Warfare,  
Classification of Cyber Crimes in I.T. Act, 2000

**7. Cyber Contracts**

Introduction, Objective, Cyber Contract, Essentials of a contract, Intention to be  
bound, Offer and Acceptance, Concept of offer, Offer by and to whom, Statements  
which are not offers, Termination of offer, Quality of acceptance, Consideration,  
Capacity of the parties, Consent, Unlawful agreements, Persons bound by contract,  
Performance and frustration, Subsequent Events and Frustration, Remedies for Breach  
of Contract, Damages, Specific performance, Injunctions

## **8. Cyber Privacy**

Introduction, Objective, Cyber Privacy – A perspective, Policy approaches to privacy concerns, Market approach, Human rights approach, Contract approach, Platform for Privacy Preferences Project (P3P):

## **9. Cyber Intellectual Property Rights1**

Introduction, Objective, Concept of Intellectual Property Rights, Role of Intellectual Property in Developing Countries, The Impact of Electronic Commerce on Intellectual Property, The Protection Of Copyright And Related Rights In The Digital Environment, Overview of the Issues, Technological protection measures, Future Work in the protection of Copyright and related rights, PATENTS, Patentable Subject Matter, Prior Art Effect, Enforcement of Rights, TRADEMARKS AND UNFAIR COMPETITION, Trademarks, Establishment and Maintenance of Trademark Rights, Infringement of Trademark Rights Through Use of a Sign on the Internet, Global Effect of Injunctions

Well-Known Marks, Unfair Competition, DOMAIN NAMES, Background WIPO Internet Domain Name Process, Uniform Administrative Procedure Concerning Abusive Domain Name Registrations. , Exclusions for Famous and Well-known Marks, Outstanding Issues in Domain Name Process

## **10. Information Technology Act, 2000 (I.T. Act, 2000 )**

Introduction, Objective, The Information Technology Act, 2000: An overview, Transmission of electronic documents, Evidentiary presumptions of a secured electronic document, Certifying Authority (CA) , Controller of Certifying , Authorities. , Suspension of Certifying Authority, Digital Signature, Digital Signatures: Power of Central Government to make rules, Digital Signature Certificate, Revocation of Digital Signature Certificate

## **11. Penalties and adjudication**

Introduction, Objective, Penalties and adjudication: A brief overview, Penalty for damage to computer, computer system, etc, Penalty for failure to furnish , information, return, etc. , Residuary penalty(Section 45) , Power to adjudicate, Cyber Regulations Appellate Tribunal, Composition of the Cyber Appellate , Tribunal, Right of Appeal to Cyber Regulations Appellate Tribunal, Procedures and powers of the Cyber Appellate Tribunal, Compounding of Contravention  
Jurisdiction of Civil Courts, Appeal to High Court on order of Tribunal

## **12. Amendments to current legal provisions**

Introduction, Objective, Amendments to the Indian Penal Code, Amendments to the Indian Evidence Act , 1872, Amendment to the Bankers Books Evidence Act, 189, Amendment to the Reserve Bank of India Act, 1934

## **Main Readings:**

1. Cyber Laws. Krishna Kumar Dominant Publishers  
Project preferably in Industry

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (Information & Communication Technology)**

**Semester III**

**Paper No : ICT304**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Elective-II  
(Data Warehousing)**

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- 1. Overview and Concepts**  
Need for Data Warehousing  
Building Blocks  
Trends in Data Warehousing
- 2. Planning and Requirements**  
Planning and Project Management  
Defining the Business Requirements
- 3. Architecture and Infrastructure**  
The Architectural Components  
Infrastructure  
Role of Metadata
- 4. Data Design and Data Preparation**  
Principles of Dimensional Modeling  
Data Extraction, Transformation & Loading
- 5. Information Access and Delivery**  
Target Users  
OLAP  
Data Warehousing and the Web  
Data Mining Basics
- 6. Implementation and Maintenance**

**Main Readings:**

1. Paulraj Pulliah : Data Warehousing Fundamentals – Wiley

**Supplementary Readings:**

1. R. Kinball: Data Warehouse Toolkit – John Wiley & Sons
2. Efrem G. Mallach : Decision Support and Data Warehouse Systems – TMH
3. S. Anahory & D. Murray: Data Warehousing in the real world – Addison Wesley
4. R. Kinball, L.Reeves : The Data Warehouse Lifecycle Toolkit – John Wiley & Sons

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**Semester III**

**Paper No : ICT304**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Elective – II**  
**(Language Processor)**

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- 1. Introduction to System software, utility Software, systems programming.**
  - 2. Assemblers:**  
Introduction, Cross assembler, Micro Assembler , Meta Assemble, Single pass Assembler, Two Pass Assembler , Design of Operation code table , Symbol table , Literal table.
  - 3. Macro processor**  
Introduction of Macros, macro processor design, Forward reference, Backward reference, positional parameters, keyword parameters, conditional assembly, Macro calls within Macros, Implementation of macros within Assemblers. Designing Macro name table, Macro Definition table, Kew word parameter table, Actual parameter table, Expansion time variable storage etc.
  - 4. Compilers**  
Introduction, Analysis of the programme, Lexical Analysis, syntax analysis, phase of a compiler, Scanning, Parsing, Type checking and conversion, Storage organization and allocation strategies, Symbol tables, parameter passing, local and non local variables, Intermediate code generation of declaration, Assignment statement. Boolean Expression, Conditional Statement etc., Code generation, Code optimization, Compiler writing tools e.g. (Lex , Yacc ) , Incremental Compiler , Interpreter.
  - 5. Loader and Linkage Editor**  
Absolute Loader , Relocation - Relocating loader , Dynamic loader , Bootstrap loader , Linking loader , Program relocatibility , design of Absolute Loader , Design of direct - linking editor , other loader scheme e.g. ( Binders , Linking Loaders , Overlays , Dynamic Binders etc .)
1. D.M. Dhamdhare : systems Programming & Operating System , TMH Edition , 2 nd edition , 1996.

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**Supplementary Readings:**

1. John J . Donovan : Systems Programming , McGraw-Hill International Edition , 1993 Reprint.
2. Houlb : Compiler Design in C , PHI , EEE , 1995.

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**Semester III**

**Paper No : ICT304**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Elective – II**  
**(Distributed Computing)**

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**1. Distributed Computing:**

Distribution of Data and Control: Clock Synchronization, distributed termination problem, load distribution, distributed elections, agreement problem, Deadlock in distributed systems, Introduction to Fault-tolerant computing.

**2. Advanced Distributed Computing**

High level language support for distributed computing: message passing primitives, atomic action, RPC mechanisms, Implementation of these features, Case study of some distributed languages as well as distributed programming architectures like LINDA and CORBA.COM etc.

**Main Readings :**

1. G F Colouris and J Dollimore: Distributed Systems : Concepts & Design Addison Wesley,1988.
2. S Mullender (ED): Distributed Systems, Addison Wesley,1988.

**VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT**  
**M.Sc. (I.T.) [Five Year Integrated Course]**  
**B.Sc. (Information Technology)**  
**Effective from July 2004**

**Semester III**

**Paper No : 305**

**L: 4, T:0, P:0 Hrs**

**Paper Title : Business System - II (Human Resource Development)**

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1. **Importance of Human Factor** - Characteristics of HRD - Objectives and Need for HRD - Difference between Personnel Management and HRD - HRD Process -HRD methods and mechanism - Outcomes of HRD.
2. **Planning the HRD System** - Organizing the HRD System - Role and Responsibilities of Line Manager, HRD Manager and Top Management.
3. **Concept of Manpower Planning** - Objectives and Importance of Manpower Planning - Techniques of Manpower Planning - Process of Manpower Planning.
4. **Recruitment** - Sources of Recruitment - Selection - Selection Process - Placement and Induction.
5. **Concept of Training and Development** - Objectives and Importance of Training and Development - Identification of Training Needs - Planning and Designing T & D Programmers - Training Methods - Factors affecting in selection of Training methods - Evaluation of Training and development.
6. **Concept of Performance Appraisal** - Objectives and Importance of Performance Appraisal - Process of Performance Appraisal - Methods of Performance Appraisal - Limitation of Performance Appraisal.
7. **Concept of Career** - Career stages - Concept of career Planning - Career Planning Process - Career Development - Individual Development and Organizational development.
8. **Application of Information System In HRD** - Personnel Application - Salary administration - Time Keeping Management - Skill Inventory - Medical History - Accident Monitoring - Performance Appraisal - Training and Development - Manpower Planning - Recruitment - Career Planning.

**Main Readings :**

1. Human Resource Development: P.C. Tripathi: Sage Publication, New Delhi.

**Supplementary Readings :**

1. Designing & Monitoring HRD System: Dr. T. V. Rao
2. HRD Policies: as Simulation & Implications: B. S. Bhatia
3. HRD In New Economic environment: D. M. Silvenia & T.V. Rao,
4. Human Resource Development: Laxmi Devi

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**Semester III**

**Paper No : ICT306**  
**Paper Title : Project**

**L: 0, T:0, P:12 Hrs**

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**The students are required to carry out project work for part time during the semester based upon the Theory subjects.**