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| SRI RAMAKRISHNA P.G. (AUTONOMOUS) COLLEGE :: NANDYAL |
| DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS |
| DETAILED SYLLABUS FOR M.Sc.[Computer Science] – III SEMESTER |
| (w.e.f. 2010-2011 Batch) |

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| --- | --- | --- | --- | --- |
| S.No. | Paper Code | Paper Title | Workload per Week in Hours (For 16 Weeks) | Maximum Marks |
| Internal Assessment | Semester End  | Total |
| 1 | MSC3T1 | Data Mining | 4 | 25 | 75 | 100 |
| 2 | MSC3T2 | Object Oriented Analysis and Design Through UML | 4 | 25 | 75 | 100 |
| 3 | MSC3T3 | Unix Network Programming | 4 | 25 | 75 | 100 |
| 4 | MSC3T4 | Cryptography and Network Security | 4 | 25 | 75 | 100 |
| 5 | MSC3T5 | The .NET Technologies | 4 | 25 | 75 | 100 |
| 6 | MSC3P1 | Unix Network Programming and UML Lab | 4 | 25 | 75 | 100 |
| 7 | MSC3P2 | Data Mining and The .NET Lab | 4 | 25 | 75 | 100 |
|   | 32 | 175 | 525 | 700 |

**MSC3T1: DATA MINING**

**UNIT- 1**

Data Mining, Data Mining Functionalities classification - Data Mining Task Primitives - Integration of a Data Mining System with a Database - Major issues in Data Mining - Descriptive Data Summarization - Data Cleaning

**UNIT -2**

Data Integration and transformation - Data reduction, Data Discretization - concept Hierarchy Generation.

**UNIT -3**

What is Data Warehouse? - Multidimensional Data Model - Data Warehouse Architecture - Data Warehouse Implementation -From Data Warehouse to data mining.

**UNIT -4**

Basic Concepts of frequent patterns - Frequent Item sets -mining methods - Association rules - what is classification and Prediction? - Classification By Decision Tree Induction - Bayesian Classification - Rule-Based Classification.

**UNIT - 5**

Cluster analysis - Types, Partitioning methods, Hierarchical methods, Density Based methods, Grid Based methods, and Model-Based Clustering methods, Outlier analysis

# TEXT BOOK:

Data Mining Concepts & Techniques By Jiawei Han, Micheline & Kamber (2nd Edi.) Morgan Kaufmann Publisher (Elsevier)

**REFERENCE BOOKS:**

1. Data Mining Introductory and advanced topics –Margaret H Dunham,  Pearson Education
2. Data Mining Techniques – ARUN K PUJARI, University Press.
3. Data Warehousing in the Real World – Sam Anahory & Dennis Murray. Pearson Education Asia.
4. The Data Warehouse Life cycle Tool kit – Ralph Kimball Wiley Student Edition
5. Data Warehousing by S Mohanthy (TMH)

**MSC3T2: OBJECT ORIENTED ANALYSIS AND DESIGN THROUGH UML**

UNIT – 1

Introduction – OO Themes – Modeling as a design technique: Modeling – Abstraction – The three models – Class Modeling: Object and Class concepts – Link and association concepts – Generalization and Inheritance – A sample class model – Navigation of Class Models

**UNIT - 2**

Advanced Class Modeling: Advanced object and class concepts – association ends – N-ary associations – Aggregation – abstract classes –multiple inheritance – metadata – Reification –constraints –derived data – packages. (Chapters 1,2,3,4)

## **UNIT – 3**

State Modeling: events – states – transitions and conditions – state diagram behavior

Advanced state modeling: nested state diagrams – nested states – signal generalization –concurrency – a sample state model – relation of class and state models – Interaction modeling: Use case models – sequence models – activity models. (Chapters 5,6,7)

## **UNIT – 4**

Process overview: Development stages – life cycle System conception: devising a system concept – elaborating a concept – preparing a problem statement

Domain analysis: Overview of analysis – domain class, state and interaction models – iteration the analysis

Application analysis: Application interaction, class and state models – adding operations

(Chapters 10,11,12,13)

## **UNIT- 5**

System design: Overview of system design – Estimation performance – making a reuse plan – breaking a system into subsystems – identifying concurrency – allocation of subsystems – management of data storage – handling global resources – choosing a software control strategy – handling boundary conditions – common architectural styles – architecture of the ATM system

Class design: Overview of Class design – bridging the gap – realizing use cases – designing algorithms – design optimization –organizing a class design – ATM example. (Chapters 14,15)

**TEXT BOOK**:

Object –Oriented Modeling And Design with UML by Michael Blaha & James Rumbaugh, 2nd edition Pearson Education, 2006

# REFERENCE BOOKS:

1. Applying UML and Patterns by Craig Larman, Pearson Education, 2000
2. Object Oriented Analysis & Design by Atul Kahate, Tata McGraw Hill
3. Object Oriented Analysis and Design by Mahesh P.Matha, PHI 2008
4. The Unified Modeling Language Reference Manual by James Rumbaugh, Ivar Jacobson and Grady Booch, Pearson Education, 2006
5. Object-Oriented Systems Analysis and Design using UML by Simon Bennett, Steve McRobb and Ray Farmer, TMH, 2004
6. Fundamentals of Object-Oriented Design in UML by Page Jones, Pearson Education
7. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh & Ivar Jacobson, Pearson Education

8 Object-Oriented Analysis and Design with Applications 3rd edition by Grady Booch, Robert A.Maksimchuk, Michael W.Engle , Pearson Education

**MSC3T3: UNIX NETWORK PROGRAMMING**

**U N I T – 1**

UNDERSTANDING THE UNIX COMMAND**:** Locating Commands, Internal and External Commands, Command Structure, Flexibility of Command Usage

THE vi EDITOR**:** Vi editorBasics

THE SHELL:commands**,** Pattern Matching, Escaping and Quoting, Redirection, Pipes, Tee command, Command Substitution, Shell Variables.

**U N I T – 2**

PROCESS:Process Basics, System Processes, Mechanism of Process Creation, Internal and External Commands

CUSTOMIZING THE ENVIRONMENT:Environment Variables, Aliases, Command History, In-Line Command Editing

ESSENTIAL SHELL PROGRAMMING:Shell Scripts, Using Command Line Arguments, The Logical Operators, control statements

  **U N I T – 3**

INTERPROCESS COMMUNICATION:Introduction,  File  and  Record Locking,  Simple  Client-Server  Pipes, FIFO's, Streams and Messages, Name Spaces, System V IPC, Message Queues, Semaphores, Shared Memory, Socket and TLI.

**U N I T – 4**

A NETWORK PRIMER:Communication Protocols: Introduction, TCP/IP, XNS, SNA, NetBIOS, OSI Protocol, UUCP, Protocols Comparisons.

**U N I T – 5**

BERKELEY SOCKETS:Introduction, Overview, Unix Domain Protocols, socket   Addresses, Elementary Socket System Calls, Simple Examples, Advanced Socket, System Calls,  Reserved Ports, Stream Pipes, Passing File  Descriptors,  Socket Options,  Asynchronous I/O, Input/Output Multiplexing, Out-of-Band  and Data, Sockets and Signals, Internet Superserver, Socket Implementation.

**TEXT BOOKS:**

1. Unix Network Programming By W Richard Stevens, PHI

# 2. Unix V.3 Concepts And Applications By    Sumitabha Das (Tata McGraw Hill)

**REFERENCE BOOK**:

1. Introduction to UNIX & SHELL Programming by M.G.Venkateshmurthy, Pearson Education

**MSC3T4: CRYPTOGRAPHY AND NETWORK SECURITY**

**UNIT-1**

Introduction**:** Attacks, Services, and Mechanisms, Security Attacks, Security Services, A Model for Network Security.

Conventional Encryption Classical Techniques**:** Conventional Encryption Model, Steganography, and Classical Encryption Techniques.

**UNIT - 2**

Conventional Encryption Modern Techniques: Simplified DES, The Block Cipher Principles, The Data Encryption Standard, The Strengths of DES, Differential and Linear Crypt analysis, Block Cipher Design Principles, Block Cipher Modes of Operation.

**UNIT-3**

Conventional Encryption Algorithms**:** Triples DES, International Data Encryption Algorithm, Blowfish, RC5, CAST, RC2, Characteristics of Advanced Symmetric Block Ciphers.

Confidentiality Using Conventional Encryption**:** Traffic Confidentiality.

Public-Key Cryptography**:-** Principles of Public-Key Cryptosystems, The RSA Algorithm, Diffie-Hellman Key Exchange, Elliptic Curve Cryptography.

**UNIT- 4**

Message Authentication And Hash Functions**:-** Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions and MAC’s.

Digital Signatures And Authentication Protocols: Digital Signatures, Authentication Protocols, Digital Signature Standard.

**UNIT-5**

Electronic Mail Security:Pretty Good Privacy, S/MIME**.**

IP Security: IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Payload, Key Management.

Firewalls: Firewall Design Principles, Trusted Systems.

**TEXT BOOK:**

Cryptography and Network Security Principles And Practice Second Edition 2002, By William Stallings

**REFERENCE BOOKS:**

1. Security in Computing by Charles P.Pfleeger & Shari Lawrence Pfleeger, 3rd edition, Pearson education
2. Security for Computer Networks by Davies & Price, Security Wiley (1984)
3. Cryptography & Network Security by Behrouz A.Forouzan, Tata McGraw Hill
4. Information Security Intelligence : Cryptographic Principles & Applications by Calabrese, Thomson India Edition

**MSC3T5: THE .NET TECHNOLOGIES**

**UNIT - 1**

Welcome To Visual Basic 2005: Windows Vs Dos Programming – Installing Visual Basic 2005 – Visual Basic 2005 IDE – Creating Simple Application

Writing Software: Information and Data – Variables – Comments and White Spaces – Data Types – Storing Variables – Methods.

Controlling the Flow : Making Decisions – The If Statement – Select Case – Loops

**UNIT - 2**

Working with Data Structures:Understanding Arrays – Understanding Enumeration – Understanding Constants – Structures – Working with Collections and Lists – Building Lookup tables with Hash Tables – Advanced Array Manipulation.

**UNIT - 3**

Building Windows Applications: Responding to Events – Building Simple Applications – Creating Complex Applications – Using Multiple Forms

Displaying Dialog Boxes: Message Dialog Box – Open Dialog Control – Save Dialog Control – Font Dialog Control – Color Dialog Control – Print Dialog Control

Creating Menus: Understanding Menu Features – Creating Menus – Context Menus

Building Objects: Understanding Objects – Building Classes – Reusability – Designing Object – Constructors – Inheritance – Objects & Structures -The Frame work Classes.

**UNIT - 4**

Advanced Object Oriented Techniques: Building a Favorites Viewer – An Alternative Favorite Viewer – Using Shared Properties and Methods – Understanding Object Oriented Programming and Memory Management

Programming Customs Graphics: Building a Simple Paint Program – Dealing with Two Colors – Working with Images – More Graphics methods

Accessing Databases: Data Access Components – Data Binding.

Database Programming with SQL Server and ADO.NET: ADO.NET – The ADO.NET classes in action – Data Binding

**UNIT - 5**

Web Forms: Thin Client Architecture – Web Forms Vs Window Forms – Web Applications – Active Server Pages – Building Web Applications

Visual Basic 2005 and XML: Understanding XML – The Address Book Project – Integrating with Address Book Application

Web Services and .NET Remoting – What is a web service – Building a web service – The Picture Server Service – The Picture Server Client - .NET Remoting.

**TEXT BOOK:**

Beginning Visual Basic 2005 By Thearon Willis, Bryan Newsome – Wrox Publishers

**REFERENCE BOOKS**:

1. VB.NET PROGRAMMING BY T. GADDIS (Dreamtech)

 2. Microsoft Visual Basic. Net Step by Step by Halvosrson (PHI)

 3.OOP with Microsoft Visual Basic.Net by Reynold Hacrtte (PHI)

4. Visual Basic .NET Programming 2005 Edition by Steven Holzner, Dreamtech