WITH EFFECT FROM THE ACADEMIC YEAR 2016-2017

SCHEME OF INSTRUCTION AND EXAMINATION

B.E. III-YEAR (REGULAR)

INFORMATION TECHNOLOGY

SEMESTER-II

Sl. No.	Syllabus Ref. No.	Subject	Scheme of Instruction		Scheme of Examination		
			Periods Per week		Duration in Hours	Maximum Marks	
			L	D/P		Univ. Exam	Sessionals
THEORY							
1.	BIT 351	Computer Networks	4	-	3	75	25
2.	BIT 352	Compiler Construction	4	-	3	75	25
3.	BIT 353	Object Oriented Systems Development	4	-	3	75	25
4.	BIT 354	Artificial Intelligence	4	-	3	75	25
5.	BIT 355	Data Warehousing and Data Mining	4	-	3	75	25
6.		ELECTIVE – I	4	-	3	75	25
PRACTICALS							
1.	BIT 381	Compiler Construction/Data Mining Lab	-	3	3	50	25
2.	BIT 382	Network Programming Lab	-	3	3	50	25
3.	BIT 383	Mini Project (Based on Object Oriented Systems Development Concepts) – IV	-	3	-	-	25
		Total		9	24	550	225

ELECTIVE-I

BIT 356 Computer Graphics
BIT 357 Digital Signal Processing
BIT 358 Software Testing
BIT 359 Natural Language Processing

With effect from the Academic Year 2016-2017

BIT 351

COMPUTER NETWORKS

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To understand the basics of computer networks, existing protocol standards, various applications, and security mechanisms.
- To introduce client server programming fundamentals through use of Socket API.

UNIT - I

Introduction: Uses of Computer Networks, Network Hardware, Network Software: Reference Models(ISO - OSI, TCP/IP).

Network Layer: Network Layer Design Issues, Routing Algorithms, Congestion Control **Al**gorithms, Quality of Service.

UNI T - II

Internetworking: Concatenated virtual circuits, Connectionless internetworking, Tunnelling,Internetwork Routing, Fragmentation.

Network layer in the Internet: IP protocol, IP addresses, Internet Control Protocols, OSPF, BGP, InternetMulticasting, Mobile IP, IPv6.

Transport Layer: The Transport Service, Elements of Transport Protocols, the Internet Transport Protocols:UDP, Internet Transport Protocols: TCP.

UNIT - III

Network Programming:

Socket Interface: Sockets, Socket Address, Elementary Sockets, Advanced Sockets, SocketOptions, Out of Band Data, Daemon process and Internet Super Server, IPv4 and IPv6 interoperability.

Remote Procedure Calls: Introduction, Transparency Issues and Sun RPC.

UNIT - IV Application Layer:

Domain Name System: DNS Name Space, Resource Records, Name Servers.

Electronic Mail: Architecture and Services, User Agent, Message Formats, Message transfer and Final Delivery.

World Wide Web: Architectural Overview, Static Web Documents, Dynamic Web Documents, HTTP,Wireless Web.

Multimedia: Digital Audio, Streaming Audio, Voice over IP, Video on Demand.

UNI T - V

Network Security: Cryptography, Symmetric Key Algorithms, Public Key Algorithms, Digital Signatures, Management of Public Keys, Communication Security, Authentication Protocols, E-mail Security, Web Security.

Suggested Reading:

1. Andrew S. Tanenbaurn, Computer Networks, Fourth Edition, Pearson Education.
2. W. Richard stevens, Unix Network Programming" Prentice Hall/Pearson Education,2009.
3. James F. Kurose, Keith W, Ross, Computer Networking, Atop-Down Approach Featuring the Internet, Third Edition, Pearson Education , 2005.
4. William Stallings, Computer Networking with Internet Protocols and Technology, Pearson Education, 2004

BIT 352 *With effect from the Academic Year 2016-2017*

COMPILER CONSTRUCTION

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To understand various phases in Compiler Design.
- To design Parsers and generate code for target machine.
- Understand the role of a symbol table and error recovery strategies

UNIT-I

Introduction: Why compilers?Thetranslation process, Data structuresandissuesin compilerstructure, BootstrappingandPorting.

Scanning: Thescanning process, regularexpressions, FiniteAutomata from regular expressions toDFA's, Implementationof aTINY scanner, use of LEX to generate scanner.

UNIT-II

Context free grammars & Parsing: The parsing process, context-freegrammars,parse tree & abstractsyntax trees,EBNF andsyntax diagrams, propertiesofCFLs, syntaxof the TINY language.

Top down parsing: Recursive descent parsing,LL(l) parsing, first and followsets, arecursivedescent parserfor theTINY language, error recovery in top down parsers.

UNIT-III

Bottom-up Parsing: Overview, LR(O) itemsandLR (0) parsing, SLR(l)Parsing,general LR(l)andLALR(l) parsingYACC,generationof aTINYParser using YACC, error recovery inBottom-upparsers.

SemanticAnalysis: Attributesandattribute grammars, algorithmsforattribute computation,thesymbol table, data typesand typechecking, a semantic analyzerfor the TINYlanguage.

UNIT-IV

Runtimeenvironments: Memory organization during programexecution, fully static runtime environments, stack-based runtime environments, dynamic memory, parameter parsing mechanisms, runtime environment for the TINY language.

UNIT-V

Codegeneration: Intermediate code and data structures for code generation. Basic code generation techniques, code generation of data structure references, codegenerationof control statements and logical expressions, code generation of procedure and function calls, code generation in commercial compilers, a code generation for the TINY language, code optimization techniques.

Suggested Reading:

1.KennethC.Louden*:Compiler Construction Principles and Practices.*Thomson Learning Inc., 1997.
2.RaviSethi,Aho&UllmanJP:*Compilers:Pinciples, Techniquesand Tools,* Addison Wesley PublishingCo.,1986.
3.J.P. Tremblay,andP.S.Sorenson,*The theory and Practice ofCompiler Writing,*TMH, 1995.

BIT 353 *With effect from the Academic Year 2016-2017*

OBJECT ORIENTED SYSTEMS DEVELOPMENT

Instruction	4 Periods per week
Duration of University Examination	3Hours
University Examination	75Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To make students familiarize with the precise vocabulary and powerful notation used in Unified modeling language.
- To learn unified development process for requirement capture, analysis, design, implementation and test.
- To strengthen software development by lucrative UML diagrams.

UNIT-I

UML Introduction: Why we Model, Introducing the UML, Elements of UML.
Basic Structural Modeling: Classes, Relationships, Common Mechanisms, Diagrams, Class Diagrams.
Advanced Structural Modeling: Advanced Classes, Advanced Relationships, Interfaces, Types and Roles, Packages, Instances, Object Diagrams, Components, Case studies on class diagrams.

UNIT-II

Basic Behavioral Modeling: Interactions, Use Cases, Use Case Diagrams, Interaction diagrams, Activity diagrams, Case studies on Use Case diagrams, Interaction diagrams.
Advanced Behavioral Modeling: Events and Signals, State Machines, Processes and Threads, Time and space, State Chart Diagrams, Case studies on State chart diagrams.

UNIT-III

Architectural Modeling: Artifacts, Deployment Collaborations, Patterns and Frame-works, Artifact Diagrams, Deployment Diagrams, Systems and Models, Case studies on Deployment diagrams.

UNIT-IV

Unified Software Development Process: The Unified Process, The Four Ps, A Use-Case Driven Process, An Architecture-Centric Processes, An Iterative and Incremental Process.

UNIT-V

Core Workflows: Requirements Capture, Capturing Requirements as Use Cases, Analysis, Design, Implementation, Test.

Text book:

1. Grady Booch, James Rumbaugh, Ivor Jacobson, "The Unified Modeling Language-User Guide (Covering UML 2.0)", Second Edition, Pearson Education, India, 2007.
2. Ivor Jacobson, Grady Booch, James Rumbaugh, "The Unified Software Development Process", Pearson Education, India, 2008.

Suggested Reading:

3. Martin Fowler, "UML Distilled", Addison Wesley, Third Edition, 2003.
4. Object –Oriented Modeling and Design with UML, Michael Blaha, James Rumbaugh, Prentice-Hall of India, 2nd Edition.

BIT 354 *With effect from the Academic Year 2016-2017*

AFTIFICIAL INTELLIGENCE

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To understand knowledge representation and logical reasoning techniques used in Artificial Intelligence.
- To learn problem solving techniques, natural language processing and build expert systems.
- To design machine learning and neural network systems

Unit-I

Introduction: History of AI, Intelligent Systems, Foundations of AI, Subareas of AI, Applications

Problem Solving – State-Space Search and Control strategies: Introduction, General Problem Solving, Characteristics of Problem, Exhaustive Searches, Heuristic Search Techniques, Iterative - Deepening A*, Constraint Satisfaction

Unit-II

Logic Concepts and Logic Programming: Introduction, Propositional Calculus, Propositional Logic, Natural Deduction System, Axiomatic System, Semantic Tableau System in Propositional Logic, Resolution Refutation in Propositional Logic, Predicate Logic, Logic Programming

Unit-III

Expert System and Applications : Introduction, Phases in Building Expert Systems, Expert System Architecture, Expert Systems vs Traditional Systems, Truth Maintenance Systems, Application of Expert Systems, List of Shells and Tools

Uncertainty Measure- Probability Theory : Introduction, Probability Theory, Bayesian Belief Networks, Certainty Factor Theory, Dempster-Shafer Theory

Unit-IV:

Machine Learning Paradigms: Introduction, Machine Learning Systems, Supervised and Unsupervised Learning, Inductive Learning, Learning Decision trees, Deductive Learning, Clustering, Support Vector Machines.

Artificial Neural Networks: Introduction, Artificial Neural Networks, Single-Layer Feed-Forward Networks, Multi-Layer Feed-Forward Networks, Radial-Basis Function Networks, Design Issues of Artificial Neural Networks, Recurrent Networks

Unit-V:

Knowledge Representation : Introduction, Approaches to Knowledge Representation, Knowledge Representation using Semantic Network, Extended Semantic Networks for KR, Knowledgerepresentation using Frames

Advanced Knowledge Representation Techniques: Case Grammars, Semantic Web

Natural Language Processing: Introduction, Sentence Analysis Phases, Grammars and Parsers

Suggested Reading:

1.Saroj Kaushik, Artificial Intelligence, Cengage Learning, 2011.

2.Russell, Norvig, Artificial Intelligence, A Modern Approach, Pearson Education, Second Edition, 2004.

3.Rich, Knight, Nair: Artificial Intelligence, Tata McGraw Hill, Third Edition 2009

4.NilsJ Nilsson (1998), *Artificial Intelligence, A NewSynthesis.* Elsevier..

BIT 355 *With effect from the Academic Year 2016-2017*

DATA WAREHOUSING AND DATA MINING

Instruction	4 Periods per week
Duration of University Examination	3Hours
University Examination	75Marks
Sessional	25 Marks

COURSE OBJECTIVE

- To introduce the concepts of Data warehouse, Data mining
- To learn various data mining functionalities to handle large data
- To identify Business applications and Trends of Data mining

UNIT-I

Introduction: Fundamentals of Data Mining, Kinds of Patterns can be mined, Technologies Used, Applications and Issues in Data Mining

Types of Data: Attribute types, Basic Statistical descriptions of Data, Measuring data Similarity and Dissimilarity

Data Pre-processing: Need of Pre-processing, Data Cleaning, Data Integration, Data Reduction, Data Transformation

UNIT-II

Data Warehouse and OLAP: Data Warehouse, Data Warehouse Modelling, Data Warehouse Design and Usage, Data Warehouse Implementation, Data Generalization by Attribute-oriented induction

UNIT-III

Mining Frequent Patterns, Associations and Correlations: Market Basket Analysis, Association rule mining, Frequent Item set mining methods, Mining various kinds of association rule, Constraint based frequent pattern mining.

UNIT-IV

Classification : General approach to classification, Classification by Decision Tree Induction , Bayes Classification methods, Bayesian Belief Networks, Classification by Backpropogation, Lazy Learners, Other Classification methods , Prediction, Evaluating the accuracy of classifier, Increseing the accuracy of classifier.

UNIT-V

Cluster Analysis: Basic Clustering methods, Partitioning methods, Density –Based Methods, Grid-based methods, and Evaluation of Clustering, Outlier Analysis and Detection methods

Mining Complex Data, Applications & Trends: Mining Complex Data :Spatial Mining, Text Mining, Multimedia Mining, Web Mining, Data Mining Applications, Data Mining Trends

Suggested Reading:

1. Han J &Kamber M, Data Mining: Concepts and Techniques, Third Edition, Elsiver, 2011.
2. Pang-Ning Tan, Michael Steinback, Vipin Kumar, Introduction to Data Mining, Pearson Education, 2008.
3. Arun K Pujari, Data mining Techniques, Second Edition, University Press,2001.
4. Margaret H Dunham, S.Sridhar, Data mining: Introductory and Advanced Topics, Pearson Education, 2008.
5. Humphires, Hawkins, Dy, Data Warehousing: Architecture and Implementation, Pearson Education, 2009.
6. Anahory, Murray, Data Warehousing in the Real World, Pearson Education, 2008.
7. Kargupta, Joshi,etc., Data Mining: Next Generation Challenges and Future Directions, Prentice Hall of India Pvt Ltd, 2007.

ELECTIVE – I

BIT 356W*ith effect from the Academic Year 2016-2017*

COMPUTER GRAPHICS

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- Acquire knowledge about device level algorithms for displaying two dimensional output primitives for raster graphics system.
- Acquire knowledge about the basic concepts of representing 3D objects in 2D.
- To introduce computer graphics techniques transformations, clipping, curves and surfaces.

COURSE OUTCOMES: On successful completion of course the student will be able to

- Understand the core concepts of computer graphics.
- Understand graphics techniques for rasterization, clipping, curve generation etc.
- Represent pictures using various algorithms.

UNIT-I

Overview of Graphics systems-Video display devices, raster-scansystems, Random-scan system, graphics monitors and workstations, InputDevices, hard copy devices, Graphics Software.
Output Primitives, Line driving, algorithms, Circle generating algorithms, ellipse generating algorithms, pixel addressing, Filled-area primitives, Fill area functions, cell array, character generation.

UNIT-II

Attributes of output primitives: Line attributes, curve attributes, color and Gray scale level, Area fill attributes, character attributes, Bundled attributes, Enquiry function.
Two dimensional Geometric transformations:Basic transformations, Homogeneous coordinates, composite transformations, other transformations, transformations between coordinate systems, affine transformations, transformation functions, Raster methods for transformations.

UNIT-III

Two dimensional viewing: Viewing pipeline, viewing transformation, viewing functions, line clipping-Cohen Sutherland line clippingLiangBarskyline clipping. Sutherland-Hodgmanpolygon clipping, Weller Atherton polygon clipping.

UNIT-IV

Structures and Hierarchical Modeling: Structure concepts, editing structures, Basic modeling concepts, hierarchical modeling with structures.
Graphical user interfaces and Interactive inputmethods : The user Dialogue, logical classification of input devices, input functions and Models, Interactive picture construction techniques.

UNIT-V

Three dimensional object representations: Polygon surface, curved linesand surfaces,splinerepresentations,Bezeircurvesandsurfaces, B-splinecurvesandsurfaces, CSG methods:Octress, BSP Trees.
Three Dimensional Transformation Three dimensional viewing: Viewingcoordinates,projections, visible surfacedetection methods :Back- face Detections, Depth-buffer methods,depth sorting methods,Gourand shading,Phongshading.

Suggested Reading:

1.HeamDonald, PaulineBaker M.,*"Computer Graphics*",2nd edition, PHI,*1995.*
2.HaningtonS.,*"ComputerGraphicsAProgramming Approach*",2nd edition,McGraw Hill.

3.David F. Rogers.,*"Procedural ElementsforComputerGraphics",*2nd edition,TataMcGraw Hill, 2001.

BIT 357*With effect from the Academic Year 2016-2017*

DIGITAL SIGNAL PROCESSING

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- The study of the fundamentals of Discrete Fourier Transform, digital filter design, multirate sampling and the TMS 320C54XX processors.
- Analyze the response of linear, time-invariant dynamic systems to random input signals , and understand how the resulting outputs reflect input and system characteristics

UNIT-I

Basic Elements and advantages of DSP, Discrete time signals and systems, Analysis of discrete time LTI systems, Discrete time system described by difference equation. Linear Convolution, Circular convolution, Overlap-save method, overlap-add method , Frequency domain sampling-DFT, Properties of DFT, Radix-2 DITFFT & DIFFFT Algorithms, MATLAB program for FFT Calculation.

UNIT-II

Characteristics of practical frequency selective filters, symmetric and anti symmetric FIR filters, Design methods of FIR filters, Design of linear phase FIR filters using windows, Structure for the realization of FIR systems -direct form, cascade form and linear phase realization, MATLAB program for FIR filter using windows.

UNIT-III

Design of IIR filters from analog filters. IIR filter design by impulse invariance, bilinear transformation. Butterworth filters, Chebyshev type-1 filters. Frequency transformation in analog and digital domains.
Structures for IIR systems - direct form, cascade form, parallel form, Representation of numbers, Round off effects in digital filters.

UNIT-IV

Architectures for Programmable DSP devices: Introduction, basic architectural features, DSPcomputational Building Blocks (Multiplier, Shifter, MAC Unit & ALU). Bus Architecture & Memory: On-chip memory, organization of on-chip memory, Data Addressing capabilities: Immediate addressing mode, register addressing mode, direct addressing mode, indirect addressing mode and Special addressing modes. Address generation Unit, Programmability & Program execution: Program Control, Program Sequence. Speed issues: Hardware architecture, parallelism, pipelining.

UNIT-V

Introduction to TMS320C54xx DSP processor, Bus structure, CPU, Data Addressing modes, Memory space, Applications of Programmable DSP devices, DSP based Bio-telemetry receiver, An Image Processing System: JPEG Algorithm, Encoding & Decoding Using TMS320C54xx.

Suggested Reading:

1. Proakis John G, Dimitris G. Manolakis, Digital Signal Processing, Third Edition, PHI 2005. (Units 1,2 &3).
2. Avtar Singh, S.Srinivasan, Digital Signal Processing Implementations Using DSP Microprocessors with Examples from TMS320C54xx, THOMSON BROOKS/COLE, 2004. (Units 4 & 5) .
3. A.NagoorKarni, Digital Signal Processing, Second Edition, McGrawHill
4. P.RameshBabu, Digital Signal Processing, Sixth Edition, SCITECH
5. Phil Lapsley, Jeff Bier, Amit Shoham, Edward Lee, DSP Processor Fundamentals: Architectures & Features, WILEY-INDIA, 1996.

BIT 358*With effect from the Academic Year 2016-2017*

SOFTWARE TESTING

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To learn various software testing techniques through case studies.
- To understand the essential characteristics of various automation tools used for testing.

UNIT-I

Introduction: Software-Testing, Terminology and Methodology, Verification and Validation.

UNIT-II

Dynamic Testing: Black Box Testing Techniques, White Box Testing Techniques, Static Testing, Validation Activities, Regression Testing.

UNIT-III

Test Management, Software Metrics, Testing Metrics for Monitoring and Controlling the Testing Process, Efficient Test Suite Management.

UNIT-IV

Testing Object Oriented Software, Testing Web Based Systems, Debugging**.**

UNIT-V

Overview of Testing Tools, Testing an Application using WinRunner, Test Script Language, Architecture and use of Silk Test, Use of LoadRunner and JMeter, Source Code Testing Utilities
in Unix / Unix Environment.

Suggested Reading:

1.Naresh Chauhan, Software Testing Principles and Practices, Oxford University Press, 2010.
2.Dr.K.V.K.K.Prasad, Software Testing Tools, Dreamtech press, 2008.
3.William E. Perry, Effective Methods for Software Testing,Third Edition, Wiley & Sons, 2006.
4.Srinivasan Desikan, Gopalaswamy Ramesh, Software Testing: Principles and Practices, Pearson Education, 2006.

BIT 359W*ith effect from the Academic Year 2016-2017*

NATURAL LANGUAGE PROCESSING

Instruction	4 Periods per week
Duration	3 Hours
University Examination	75 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

1. To understand the applications of NLP and different levels of language analysis.
2. To understand syntax and semantics of the language and knowledge representations.
3. To understand the basic concepts of NLP including PoS tagging, Word senses and Ambiguity and to encode ambiguity in logical form.
4. Understand machine learning techniques used in NLP including statistical methods and probabilistic context-free grammars.

COURSE OUTCOMES:

Students who complete this course should be able to

1. Understand and apply relevant linguistic concepts and Machine Learning techniques.
2. Choose appropriate solutions for solving typical NLP sub problems (tokenizing, tagging, parsing).
3. Formulate NLP tasks as learning and inference tasks, and address the computational challenges involved.

UNIT- I

Introduction to Natural Language Processing: The study of Language, Applications of NLP, Evaluating Language Understanding Systems, Different levels of Language Analysis, Representations and Understanding, Organization of Natural language, Understanding Systems.

UNIT-II

Linguistic Background: An outline of English syntax,Spoken Language input and output Technologies, Written language Input - Mathematical Methods - statistical Modelling and classification Finite State Methods. Grammar for Natural Language Processing - Parsing -
Introduction to semantics and knowledge representation, Some applications like Machine translation, database interface.

UNIT-III

Grammars and Parsing: Grammars and sentence Structure, Top-Down and Bottom-Up Parsers, Transition Network Grammars, Top-Down Chart Parsing.
Feature Systems and Augmented Grammars: Basic Feature systemfor English, Morphological Analysis and the Lexicon, Parsing with Features, Augmented Transition Networks.

UNIT-IV

Semantic Interpretation: Semantics and Logical Form, word senses and ambiguity, The Basic logical form language, Encoding ambiguity in logical form, Thematic roles, Linking syntax and semantics, Recent trends in NLP.

UNIT-V

Ambiguity Resolution: Statistical Methods, Probabilistic LanguageProcessing, Estimating Probabilities, Part-of-Speech tagging, Obtaining Lexical Probabilities, Probabilistic Context-Free Grammars, Best First Parsing.

Text Book:

1. James Allen, “Natural Language Understanding”, Pearson Education, Second Edition

Suggested Reading:

1. Christopher D Manning and Hinrich Schutze, “Foundations of Statistical Natural Language Processing”, MIT Press, 1999.

2. Akshar Bharti, Vineet Chaitanya and Rajeev Sangal, "NLP: A Paninian Perspective", Prentice Hall, New Delhi.
3. D. Jurafsky, J. H. Martin, "Speech and Language Processing", Pearson Education.

With effect from the academic year 2016-17

BIT 381

COMPILER CONSTRUCTION & DATA MINING LAB

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessional	25 Marks

COMPILER CONSTRUCTION LAB:

(Exercises must be taken from 1 to 6)

COURSE OBJECTIVES:

- To demonstrate the concepts of Lexical Analysis, Syntax Analysis, Intermediate Code Generation and Code Optimization.
- To design Scanner and Parsers
- To generate and optimize code for target machine.

1. Scanner programs using LEX
2. Top down parsers (Recursive decent parser, LL(1) parser)
3. Bottom down parsers -SLR
4. Parser programs using YACC
5. Program on Code generation
6. Program on Code Optimization

DATA MINING LAB

COURSE OBJECTIVES:

- To Conceptualize Data Mining & the need for preprocessing
- To learn the algorithms used for various types of data mining problems.

1. Perform data preprocessing using WEKA
2. Obtain The Decision Tree For Different Data Sets Using WEKA
3. Implement The Classification Algorithms Using WEKA
4. Obtain the Association Rules for given dataset & Identify which association rules are strong rules & weak rules
5. Perform Data Transformations Using ETL Tool.
6. Write A Program To Implement star schema
7. Write A Program To Implement K-Means Algorithm
8. Case study on KDD process.

Suggested Reading

i) Data Mining – Concepts and Techniques Jiawei Han & Micheline Kamber Harcourt India.
ii) http://www.cs.waikato.ac.nz/ml/weka/

With effect from the academic year 2016-17

BIT 382

NETWORK PROGRAMMING LAB

Instruction	3 Periods per week
Duration	3 Hours
University Examination	50 Marks
Sessional	25 Marks

COURSE OBJECTIVES:

- To understand and use the basic network utilities.
- To understand and be able to write client/server architecture programs.
- To understand and use elementary socket system calls, advanced socket system calls
- To understand RPC
- To implement encryption algorithms.

1. Familiarization of Network Environment, Understanding and using network utilities: ipconfig, ifconfig, netstat, ping, finger, traceroute, whois, arp, telnet, ftp.
2. Implementation of connection oriented and connectionless client for well known services i.e. **standard ports**
3. Implementation of concurrent server service using connection oriented socket system calls. (Service: Daytime, Time)
4. Implementation of concurrent server using connectionless socket system calls. (Service: Echoserver, String Concatenation)
5. Implementation of Iterative server using connection **oriented** socket system calls. (Service: Calculate Employee Salary)
6. Implementation of Iterative server using connectionless socket system calls. (Service: Student Grade)
7. Program to demonstrate the use of advanced socket system calls: **readv(), writev(), getsockname(), setsockname(),getpeername()**, gethostbyname(), gethostbyaddr(), getnetbyname(), getnetbyaddr(), getprotobyname(),getservbyname(), getprotobynumber(), getservbyport().
8. Implementation of remote command execution using socket system calls.
9. Program to implement simple program using RPC.
10. **Implementation of Distance Vector Routing Algorithm.**
11. Implementation of RSA public key algorithm.
12. Case study on any open source network simulation tool. (simple routing protocol implementation)

Note: Well Known Services (standard ports) : DAYTIME, TIME, CHARGEN, ECHO.

Suggested Reading:

1.Douglas E.Comer,Hands-on Networking with Internet Technologies,Pearson Education.
2. W. Richard Stevens, Unix Network Programming, Prentice Hall/Pearson Education,2009.

BIT 383 *With effect from the academic year 2016-17*

MINI PROJECT - IV

Instruction 3 Periods per week
Sessional 25 Marks

COURSE OBJECTIVES:

- To develop capability to analyse, design and solve real world problems related to industry, academic institutions and computer science research with an emphasis

on applying/integrating knowledge acquired.

- To prepare proper documentation consisting of software requirement specification (SRS), modeling techniques, implementation and testing strategies using case tools.
- To strengthen software development by lucrative UML diagrams.

Students should form into groups not less than 3 and the teacher concerned should assign a different Case Study to each group. The students should carry out the Case Study as a group activity. The lab should be carried out using a CASE TOOL. Finally they should submit a report. The work books and project reports should be evaluated.

Students have to perform the following OOSD steps on the given case study.

- Software requirement specification.
- Use case Modeling
- Structural Modeling
- Behavioural Modeling
- Architectural Modeling
- Application development
- System testing
- System Documentation