DHARMSINH DESAI UNIVERSITY

FACULTY OF TECHNOLOGY

M. TECH. – COMPUTER ENGINEERING

Teaching Scheme and Detailed Syllabus

DHARMSINH DESAI UNIVERSITY FACULTY OF TECHNOLOGY
M. TECH. – COMPUTER ENGINEERING
Teaching scheme

SEMESTER - I

SUBJECT CODE	SUBJECT	TEACHING SCHEME			EXAM SCHEME				TOTAL	CREDIT
		LEC.	TUT.	PRAC.	TH.	SESS.	PRAC/VIVA	TW		
MT117	ADVANCED COMPILER TECHNIQUES	3	1	2	60	40	25	25	150	5
ELECTIVE – I		3	1	2	60	40	-	25	125	4
MT114	ADVANCE COMPUTER NETWORKS	3	1	2	60	40	25	25	150	5
MT112	OBJECT ORIENTED ANALYSIS AND DESIGN	3	1	2	60	40	25	25	150	5
ELECTIVE– II		3	1	2	60	40	25	25	150	5
MT116	SEMINAR	-	-	-	-	-	-	50	50	1
ELECTIVE – I 1. MT119 - DIGITAL IMAGE PROCESSING 2. MT115 - ADVANCE SOFTWARE ENGINEERING										
ELECTIVE – II 1. MT118- OPERATING SYSTEM DESIGN AND IMPLEMENTATION 2. ADVANCED PROGRAMMING IN UNIX										
								TOTAL	775	25

SEMESTER - II

SUBJECT CODE	SUBJECT	TEACHING SCHEME			EXAM SCHEME				TOTAL	CREDIT
		LEC.	TUT.	PRAC.	TH.	SESS.	PRAC/VIVA	TW		
MT217	MOBILE COMMUNICATION & COMPUTING	3	1	2	60	40	25	25	150	5
MT218	DISTRIBUTED COMPUTING	3	1	-	60	40	-	25	125	4
MT215	DESIGN AND ANALYSIS OF ALGORITHMS	3	1	2	60	40	25	25	150	5
MT 219	BIG DATA ANALYTICS	4	-	2	60	40	25	25	150	5
MT211	SOFT COMPUTING	3	1	-	60	40	-	25	125	4
MT216	PEDAGOGIC PRACTICES	-	-	-	-	-	-	50	50	1
								TOTAL	750	24

SEMESTER - III

Subject code	Subject	Teaching scheme			Exam scheme				Total	Credit
		LEC.	TUT.	PRAC.	TH.	SESS.	PRAC/VIVA	TW		
MT311	DISSERTATION - I	-	-	24	-	-	225	125	350	8
MT313	PEDAGOGIC PRACTICE – I	-	2	2	-	-	-	50	50	2
								TOTAL	400	10

SEMESTER - IV

Subject code	Subject	Teaching scheme			Exam scheme				Total	Credit
		LEC.	TUT.	PRAC.	TH.	SESS.	PRAC/VIVA	TW		
MT411	DISSERTATION - II	-	-	24	-	-	300	150	450	10
MT413	PEDAGOGIC PRACTICE – II	-	2	2	-	-	-	50	50	2
								TOTAL	500	12

DHARMSINH DESAI UNIVERSITY FACULTY OF TECHNOLOGY
M. TECH. – COMPUTER ENGINEERING
SYLLABUS SEMESTER – I

MT117 - ADVANCED COMPILER TECHNIQUES (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

1 **Introduction to Advanced Topics:** Review of Compiler Structure, Advanced Issues in Elementary Topics, The Importance of Code Optimization, Structure of Optimizing Compilers, Informal Compiler Algorithm Notation (ICAN)
2 **Control-Flow Analysis:** Approaches to Control-Flow Analysis, Depth-First Search, Preorder Traversal, Postorder Traversal, and Breadth-First Search, Dominators, Loops and Strongly Connected Components, Reducibility, Interval Analysis and Control Trees, Structural Analysis
3 **Data-Flow Analysis:** Basic Concepts: Lattices, Flow Functions, and Fixed Points, Taxonomy of Data-Flow Problems and Solution Methods, Iterative Data-Flow Analysis, Lattices of Flow Functions, Control-Tree-Based Data-Flow Analysis, Structural Analysis, Interval Analysis, Static Single-Assignment (SSA) Form, Dealing with Arrays, Structures, and Pointers
4 **Dependence Analysis and Dependence Graphs:** Dependence Relations, Basic-Block Dependence DAGs, Dependences in Loops, Dependence Testing, Program-Dependence Graphs
5 **Early optimizations:** Constant-Expression Evaluation (Constant Folding), Scalar Replacement of Aggregates, Algebraic Simplifications and Reassociation, Value Numbering, Copy Propagation, Sparse Conditional Constant Propagation
6 **Redundancy Elimination:** Common-Subexpression Elimination, Loop-Invariant Code Motion, Partial-Redundancy Elimination, Redundancy Elimination and Reassociation, Code Hoisting
7 **Loop optimization:** Induction-Variable Optimizations, Unnecessary Bounds-Checking Elimination
8 **Register Allocation:** Register Allocation and Assignment, Local Methods, Graph Coloring, Priority-Based Graph Coloring
9 **Instruction Scheduling:** branch scheduling, list scheduling

TEXTBOOK:

1) Advanced Compiler Design and Implementation, by Steven Muchnick, Publisher: Morgan Kaufmann

REFERENCE BOOKS:

1) Engineering a Compiler, by Keith Cooper and Linda Torczon, Publisher: Morgan Kaufmann

2) *Optimizing Compilers for Modern Architectures, by Randy Allen & Ken Kennedy, Publisher:* Morgan Kaufmann.

SUBJECT: MT119 - DIGITAL IMAGE PROCESSING (ELECTIVE – I) (CREDIT – 4)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	-	25	125

1. **Introduction**
   Introduction, components of Digital Image Processing, examples, steps in DIP.

2. **Digital Image Fundamentals**
   Elements of Visual perception, Light and Electromagnetic spectrum, Image Sensing and application, image sampling and quantization, Basic relationships between pixels, mathematical tools.

3. **Image Transformation and Spatial Filtering**
   Basic intensity transformation, Histogram processing, Spatial filtering, smoothing and sharpening, combining spatial enhancement methods

4. **Image Transformation in Frequency Domain**
   Concepts, Sampling and fourier transform, 1D and 2D Discrete Fourier Transform, properties of DFT, Basics of filtering, Image smoothing and sharpening, selective filtering, implementation.

5. **Image Restoration and Reconstruction**
   Model of image degradation/restoration, noise models, restoration in spatial and frequency domain, estimating degradation function, inverse filtering, Wiener filtering, constrained least square filtering, geometric mean filter, image reconstruction from projections

6. **Color Image Processing**
   Fundamentals, color models, pseudocolor image processing, full-color image processing, color transformation, smoothing and sharpening, segmentation based on color, noise in color images

7. **Wavelets and Multiresolution Processing**
   Background, multiresolution expansion, wavelet transformation in one dimension, fast wavelet transform.

8. **Image Compression**
   Fundamentals, Huffman coding, golomb coding, arithmetic coding, LZW coding, run-length coding, symbol-based coding, bit-plane coding, block transform coding, predictive coding, wavelet coding.

9. **Morphological Image Processing**
   Erosion and dilation, opening and closing, hit-or-miss transformation, basic morphological algorithms.

10. **Image Segmentation**
    Fundamentals, point-line-edge detection, thresholding, region-based segmentation.

TEXT BOOK:

Digital Image Processing (3rd Edition) By: Rafael C. Gonzalez and Richard E. Woods Publisher: Pearson

REFERENCE BOOKS:

1. Fundamental of Digital Image Processing, 1st Edition By: Anil K. Jain, Publisher: Pearson Education
2. Introduction to Data Compression, 3rd Edition By: Khalid Sayood, Publisher: Morgan kaufmann

MT115 - ADVANCE SOFTWARE ENGINEERING (ELECTIVE – I) (CREDIT – 4)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	-	60	40	-	25	125

1. **Introduction**: Software Product And Process, Phases In Software Development, Software Development Process Models
2. **Software Analysis & Design:** Analysis Methods, Software Requirement Specifications, System Design Methods Detailed Design, Architectural Design And Component Level Design, User Interface Design.
3. **Implementation And Testing**: Coding, Verification And Testing. Testing Techniques.
4. **Software Quality**: Quality Standards, Quality Assurance, Measuring Aspect of Software Quality, Software Reliability and Maintenance.
5. **Software Metrics**: Software Measurement and Metrics, Software Quality, Metrics for Software Product, Process and Project.

TEXTBOOKS:

1. Pressman, Software Engineering, McGraw-Hill, 1992
2. Fenton & Pfleeger, Software Metrics, PWS Publication

REFERENCES:

1. Watts S. Humphrey, Managing The Software Process, Addison Wesley, 1989
2. J.J. Marciniak, Ed., Encyclopedia Of Software Engineering, Vols. 1 And 2 John Wiley,1994

MT114 - ADVANCE COMPUTER NETWORKS (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

[A] OVERVIEW:
Overview of TCP/IP protocol suite, Different TCP/IP Layers and their major Functionalities
Various addressing used in TCP/IP

[**B] IP ADDRESSING & DELIVERY OF IP PACKETS**
IPv4 addressing scheme and notations, Subnetting and Supernetting, Different Routing Methods

[C] PROTOCOLS
ARP, RARP, IP, ICMP,IGMP ,TCP and UDP

[D] WIRELESS Networks
Introduction & Applications,Types of Wireless Networks

[E] AD HOC WIRELESS NETWORKS:
Introduction & Issues in Ad-hoc wireless networks, Ad Hoc wireless Internet, Issues of Routing Protocol, Various Routing Protocols, Energy Management in Ad Hoc Wireless Networks

[F]TRANSPORT LAYER AND SECURITY PROTOCOLS FOR AD HOC WIRELESS NETWORKS
Issues in Designing a Transport Layer Protocol for Wireless Networks,Design Goals of a Transport Layer Protocol for Wireless Networks, Classification of Transport Layer Solutions
TCP over Wireless Networks,Other Transport Layer Protocols for Wireless Networks

[G] DELAY TOLERANT NETWORKS
Application and issues, Architecture and routing algorithms

REFERENCE BOOKS:

1. AdHoc Wireless Networks, Architectures and Protocols, 2nd Edition By: C. Siva Ram Murthy, B. S. Manoj. Publisher: Prentice Hall of India
2. Adhoc Mobile Wireless Networks: Principles, Protocols and Applications, 2nd Edition By:Subir Kumar Sarkar,T. G.Basavaraju, C. Puttamadappa Publisher: Auerbach Publications
3. Adhoc Networks: Technology & Protocols, 1st Edition By:Prasant Mohapatra, S.V. Krishnamurthy Publisher: Spriger
4. Principles of Wireless Networks, 4th Edition By: Kaveh Pahlavan,Prashant Krishnamurthy Publisher: Pearson Education
5. Wireless Networks, 1st Edition By: P.Nicopolitidis, M.S.Obaidat, G.I. papadimitria, A.S. Pomportsis Publisher: John Wiley & Sons.
6. Wireless Communications & Networks, 2nd Edition By: W. Stallings Publisher: Prentice Hall

MT112 - OBJECT ORIENTED ANALYSIS AND DESIGN (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

Introduction to Object Oriented Software Engineering Use Case Analysis, Object Diagrams
Dynamic Models- Object Interacton Diagrams And State Diagrams
Functional Model From Analysis To Design
Relevant Topics From Various Methodologies Such As Jacobson, Rumbaughm, Booch, And Unified Methodology (including UML)
Elements Of Design Reuse – Object Oriented Design Patterns

Object Oriented Concurrent & Distributed Systems – Active Objects, Charm ++, Subcontracting, Object Oriented Concurrency Mechanisms, CORBA Standard

Advanced Concepts Such As Inheritance Anomaly, Reflection In Object Oriented Systems, Multiple Interfaces, Filter Objects, Compositional Filters, Business Objects & Meta Objects.

TEXTBOOK :

1. James Rumbaugh Et Al., Object Oriented Modeling And Design, Prentice Hall, 1991

REFERENCE BOOKS:

1. Bertrand Meyer, Object Oritented Software Construction, Prentice Hall , 1988
2. Ivar Jacobson, Object Oriented Software Engineering, A Use Case Driven Approach, Addison
3. Grady Booch, Object Oriented Analysis & Design, 2nd Ed., Benjamin/Cummings, 1994

MT118 - OPERATING SYSTEM DESIGN AND IMPLEMENTATION (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

Booting And System Calls
Devices And Device Drivers
Processes Description And Control
Signals
Memory Management And Virtual Memory
Threads, SMP, Microkernel, Exo-Kernel
Inter-process Communication (shared Memory, Semaphores, And Synchronization)
Kernel Interaction With Runtime Support Systems
Multiprocessor & Real-time Scheduling
Memory Management In UNIX/Linux
Fundamentals Of Real Time Operating Systems & Study Of Various RTOS – Real Time Operating System :-

1. RTAI
2. WinCE
3. VxWorks

TEXTBOOKS :

1. Operating System By William Stallings, PHI Publication
2. "The Design Of The UNIX O/S", Maurice J.Bach,PHI
3. "Modern Operating Systems", Tannenbaum, PHI
4. "O/S:A Design-Oriented Approach", Charles Crowley, TMH
5. Research Papers Related To RTOS, Linux Kernel Internals, Exo-Kernel

Advanced Programming in UNIX (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

Detailed Syllabus:

1. UNIX system overview
2. File I/O & Files and directories
3. System data files and information
4. Process environment
5. Process control & Process relationships
6. Signals
7. Threads
8. Daemon processes
9. Interprocess communication

Recommended Text Book:

1. "Advanced Programming in the UNIX Environment" by W. Richard Stevens and Stephen A. Rago, 3rd edition, Addision Wesley Professional

Reference Books:

1. "Advanced Linux Programming" by Mark Mitchell, Jeffrey Oldham, Alex Samuel, 1st edition, Pearson Education
2. "Beginning Linux Programming" by Neil Matthew and Richard Stones, 4th edition, Wiley Publishing Inc.
3. "Linux System Programming" by Robert Love, O'reilly

MT116 – SEMINAR (CREDIT – 1)

Teaching Scheme (Hours/Week)			Exam Scheme (Marks)				
Lecture	Tutorial	Practical	Theory	Sessional	Practical	Termwork	Total
-	-	-	-	-	-	50	50

MT217 - MOBILE COMMUNICATION & COMPUTING (CREDIT – 5)

Teaching Scheme (Hours/Week)			Exam Scheme (Marks)				
Lecture	Tutorial	Practical	Theory	Sessional	Practical	Termwork	Total
3	1	2	60	40	25	25	150

1. WIRELESS COMMUNICATION FUNDAMENTALS

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas– Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

2. TELECOMMUNICATIONNETWORKS

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

3. WIRLESS LAN

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

3. MOBILE NETWORK LAYER

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

4. TRANSPORT AND APPLICATION LAYERS

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

TEXT BOOKS

1. Jochen Schiller, "Mobile Communications", PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3-Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, "Wireless Communications and Networks", PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)

REFERENCES

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, "Principles of Wireless Networks", PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, New York, 2003.
3. Hazysztof Wesolowshi, "Mobile Communication Systems", John Wiley and Sons Ltd, 2002.

MT218 - DISTRIBUTED COMPUTING (CREDIT – 4)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	-	60	40	-	25	125

Introduction to Distributed Computing

- Distributed System Architecture
- Logical Time and Global States
- Distributed Mutual Exclusion
- Distributed Deadlock
- Distributed File Systems
- Distributed Shared Memory
- Distributed Scheduling (job scheduling, load balancing, load sharing)
- Consistency and Replication
- Failure Recovery and Fault Tolerance
- Security in Distributed Systems
- Peer to Peer Systems

TEXT BOOK:

1. Advanced Concepts in Operating Systems by Mukesh Singhal and Niranjan Shivaratri, MGH

REFERENCES BOOKS:

1. Distributed Systems: Principles and Paradigms by Andrew Tanenbaum and Maarten Steen, Pearson
2. Distributed Operating Systems: Concepts And Design by Pradip K. Sinha, Pearson
3. Distributed Systems : Concepts & Design by Colouris and Dollimore, Addison Wesley

MT215 - DESIGN AND ANALYSIS OF ALGORITHMS (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	2	60	40	25	25	150

Notion Of Algorithms. Big-Oh, Small-OS, Theta & Omega Notations. Review Of Data Structures And Models Of Computation, Basic Paradigms, E.g. Greedy Algorithms, Divide And Conquer Strategies, Dynamic Programming, Graph Algorithms, Algorithms For Sorting Searching, Order Statistics, String Matching, Sequence Comparision, Geometric Algorithms, Probabilistic Algorithms. The Classes And NP And The Notation Of NP-completeness.

TEXTBOOK :

1. Aho, A. V. , Hopcroft J. E. , Ullman J.D., Design And Analysis Of Algorithms, Addison-wesly, 1974

REFERENCE BOOK:

1. Brassard G, And Bratley P., Algorithms, Theory And Practices, Prentice-Hall International-1988
2. Cormen T. H. , Leiserson C.E. And Rivest R. L., Introduction To Algorithms, MIT Press, 1990

MT-219 BIG DATA ANALYTICS (CREDIT – 5)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
4	0	2	60	40	25	25	150

1. **Introduction :**
   An overview of Data Warehousing and data mining.

2. **A multi dimentional Data Model :**
   Multi dimentional data cubes, Star, Starr Flakes & fact constellation Schema, concept Hierarchies, OLAP

3. **Data Warehouse Architecture:**
   Steps for Design & Construction of Data Warehouse,A 3-Tier Data Warehouse Architecture, ROLAP, MOLAP,HOLAP

4. **Data Pre-Processing:**
   Overview, Need for Pre- Processing, Issues Related to Efficient Data Handling(Extacting, Tranformation And Handling of Large Databases)

5. **Data reduction :**
   Discretization & Concept Hierarchy Generation
   Data Warehouse Implementation: Efficient Computation of Data Cubes, Indexing OLAP data, Efficient Processing of OLAP Queries, Metadata, Data Warehouse Backend Tools & Utilities
   Data Mining Premitives, Language & System Architecture: What defines a Data Mining Task ? A Data Mining Query Language, Architecture of a Data Mining System

6. **Concept Description:**
   Characterization & Comparison: An Overview, Data generalization & Summarization-Based Characterization, Analytical Characterization: Analysis & Attribute Relevance, Mining class Comparisions, Mining Descriptive Statistical Measures, Concept Description & Its Mining

7. **Mining Association Rules :**
   Basic Concepts, Market Basket Analysis, Mining Multi-Level, Association Rules From Transaction Rules from Trasactional Database, Mining Multi-Level Association Rules From Transaction Database, Mining Multi-Dimensional Association Rules From Relational Databases & Data Warehouses, From Association Mining To Correlation Analysis, Constraint Based Association Mining

8. **Classification & Prediction:**
   An Overview & Basic Concepts, Classification by Decision Tree Induction, Bayesian Classification, Classification by back Propagation, Classification Based on Concepts from Association Rules Mining, other Methods, such as Genetic Algorithm, Fuzzy set Approach, Case based Reasoning, etc., Prediction, classifier Accuracy

9. **Cluster Analysis:**
   An Overview & Basic Concepts, Partitioning methods, hierarchical methods, density-based methods, grid-based clustering methods.

10. **Mining Complex types of data:**
    An overview & basic concepts, mining spatial databases, mining multimedia databases, mining time series & sequence data, mining text databases, mining the world world wide web.

11. **Applications & trends in data mining:**
    Data mining applications, data mining system procedures & research prototypes, additional themes on data mining, social impact of data mining, social impact of data mining, trends in data mining. Popular products, and a methodology to select a data mining tool

12. **Introduction to Big Data**
    Introduction of Big Data and Hadoop – Overview and Evolution of Big-Data Hadoop, Architecture/Framework, HDFS Architecture/Framework, Map reduce, Hadoop Environment Setup, Distributed File System – Big Data and its Importance, Drivers for Big data, Big Data Analytics, Big Data Applications, Optimization techniques, Dimensionality Reduction techniques, Time series Forecasting, Social networking and its Application, Big Data analysis using Hadoop, Pig, Hive, Mongodb, Spark and Mahout, Data analysis techniques like Discriminant Analysis and Cluster Analysis, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), Introduction to NOSQL (Neo4j) and MongoDB, Hive Architecture, HBase concepts, PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

13. **Hadoop**

Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, Hadoop MapReduce paradigm, Algorithms using Map Reduce, Understanding inputs and outputs of MapReduce ,Map and Reduce tasks, Job, Task trackers ,Cluster Setup, SSH and Hadoop Configuration, HDFS Administering ,Monitoring and Maintenance Moving Data in and out of Hadoop, Data Serialization

TEXTBOOK:

1) Jiawei Han & Michelline Kamber, Data Mining – Concepts & Techniques, Morgan Kaufmann Publishers (Academic Press)

REFERENCE BOOKS:

1) W. B. Frakes & R. Baeza – Yates Eds., Information Retrieval: Data Structures & Algorithms, Prentice Hall, 1992
2) Michael J A Berry & Gordon Linoff, Data Mining Techniques: For Marketing, sales, customer support
3) Pieter Adriaans & Dolf Zantinge, Data Mining, Pearson Education Asia, 2001

MT211 - SOFT COMPUTING (CREDIT – 4)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
3	1	-	60	40	-	25	125

1. **Introduction**: Introduction To Softcomputing, Intelligent System, Neural Network, Fuzzy Logic And Genetic Algorithm

2. **Neural Network**: Introduction, Architecture, Supervised And Unsupervised Learning, Multilayer Feed Forward Network And Back Propagation Algorithm, Competitive Learning And Self Orga-nization Map.

3. **Fuzzy Logic**: Introduction, Fuzzy Sets And Rules, Fuzzy Membership Function, Application Of Fuzzy Logic.

4. **Genetic Algorithm**: Introduction, Operators, Selection, Crossover Mutations, Different Genetic Algorithms And Its Applications.

BOOKS:

1. Neural Networks: A Comprehensive Foundation, S. Haykin, PHI
2. Introduction To Applied Fuzzy Electronics, Ahmad Ibrahim, PHI
3. Genetic Algorithms In Search, Optimization, And Machine Learning, D. E. Goldberg, Addison-Wesley

MT216 - PEDAGOGIC PRACTICES (CREDIT – 1)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
-	-	-	-	-	-	50	50

SEMESTER – III

MT311 - DISSERTATION - I (CREDIT – 8)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
-	-	24	-	-	225	125	350

MT313 - PEDAGOGIC PRACTICE – I (CREDIT – 2)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
-	2	2	-	-	-	50	50

Semester – IV

MT411 - Dissertation – II (CREDIT – 10)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
-	-	24	-	-	300	150	450

MT413 - Pedagogic Practice – II (CREDIT – 2)

TEACHING SCHEME (HOURS/WEEK)			EXAM SCHEME (MARKS)				
LECTURE	TUTORIAL	PRACTICAL	THEORY	SESSIONAL	PRACTICAL	TERMWORK	TOTAL
-	2	2	-	-	-	50	50