MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI

UG COURSES – AFFILIATED COLLEGE

B.Sc., Computer Science

. (Choice Based Credit System)

(with effect from the academic year 2016-2017 onwards)

(44th SCAA meeting held on 30.05.2016)

V	I	29	Core - 6	Software Engineering and Testing	4	4	25	75	100	30	40
	II	30	Core - 7	Data Communication and Computer Network	4	4	25	75	100	30	40
	III	31	Core - 8	Dot NET Technologies	4	4	25	75	100	30	40
		32	Major Practical -V	Dot NET	8	4	50	50	100	20	40
		33	Major Elective – II (Select any one)	A) Mobile Computing B)Cryptography and Network Security C) Cloud Computing	6	5	25	75	100	30	40
	IV	34	Skill Based subject (Common)	Personality Development/ Effective Communication/ Youth Leadership	4	4	25	75	100	30	40
				Subtotal	30	25					
VI	III	35	Core - 9	Operating System	4	4	25	75	100	30	40
	III	36	Core - 10	Relational Database Management System	4	4	25	75	100	30	40
	III	37	Core - 11	Computer Graphics and Visualization	4	4	25	75	100	30	40
	III	38	Core - 12	Data Mining	4	4	25	75	100	30	40
		39	Major Practical -VI	RDBMS with Oracle Lab	8	4	50	50	100	20	40
		40	Major Elective - III (Select any one)	Big Data Analytics / Artificial Neural Network/Internet of Things	6	5	25	75	100	30	40
				Subtotal	30	25					

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Computer Science)

Semester-V/ Ppr.no.29 / Core - 6

Software Engineering and Testing

Unit I

Introduction:- Evolution – From an Art form on Engineering Discipline: Evolution of an Art into an Engineering Discipline. – Software Development of Projects: Program versus Product – Emergence of Software Engineering: Early Computer Programming – High Level Language Programming – Control Flow-based Design – Data Structure Oriented Design – Object Oriented Design. **Software Life Cycle Models:-** A few Basic Concepts – Waterfall Model and its Extension: Classical Waterfall Model – Iterative Waterfall Model – Prototyping Model – Evolutionary Model. – Rapid Application Development (RAD): Working of RAD. –Spiral Model.

Unit II

Software Project Management:- Responsibilities of a Software Project Manager – Project Planning- Project Estimation Techniques-Risk Management. **Requirements Analysis and Specification:-** Requirements Gathering and Analysis – Software Requirements Specifications (SRS):Users of SRS Document – Characteristics of a Good SRS Document – Important Categories of Customer Requirements – Functional Requirements – How to Identify the Functional Requirements? – Organisation of the SRS Document.

Unit III

Software Design:- Overview of the Design Process: Outcome of the Design Process – Classification of Design Activities. – How to Characterize a good Software Design? **Function-Oriented Software Design:-** Overview of SA/SD Methodology – Structured Analysis – Developing the DFD Model of a System: Context Diagram – Structured Design – Detailed Design. **Object Modelling Using UML:-** Basic Object Oriented Concepts: Basic Concepts – Class Relationships – Other Key Concepts – Related Technical Terms – Advantages and disadvantages of OOD. – Unified Modelling Languages (UML) – UML Diagrams – Class Diagrams – Interaction Diagrams – Activity Diagram – State Chart Diagram.

Unit IV

User Interface Design:- Characteristics of a good User Interface - Basic Concepts – Types of User Interfaces – Fundamentals of Components based GUI Development: Window System. **Coding and Testing:-** Coding – Software Documentation – Testing: Basic Concepts and Terminologies – Testing Activities. – Unit Testing – Black-box Testing: Equivalence Class Partitioning – Boundary Value Analysis. – White-box Testing – Debugging: Debugging Approaches. – Integration Testing – System Testing: Smoke Testing – Performance Testing.

Unit V

Software Reliability and Quality Management:- Software Reliability: Hardware versus Software Reliability. – Software Quality – Software Quality Management System – ISO 9000: What is ISO 9000 Certification? – ISO 9000 for Software Industry – Shortcomings of ISO 9000 Certification. – SEI Capability Maturity Model: Level 1 to Level 5. **Computer Aided Software Engineering:-** Case Environment – CASE Support in Software Life Cycle. **Software Maintenance:-** Characteristics of Software Maintenance: Characteristics of Software Evolution – Software Reverse Engineering.

Text Book:

Fundamentals of Software Engineering Fourth Edition by Rajib Mall – PHI Learning Private Limited 2015

Reference Books:

1. Software Engineering 2nd Edition by K L James PHI
2. Software Engineering 9th Edition by Ian Sommerville - Pearson Education Asia

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Semester-V/ Ppr.no.30/Core - 7

Data communication and Computer Network

Unit I

Introduction - Data communication – Networks-the Internet –Protocols and Standards – **Network Models** –Layered tasks –OSI model- layers in OSI model-TCP/IP protocol Suit-Addressing.

Unit II

Physical layer – Analog and digital – Transmission Impairment –Data rate limits-Performance-Transmission mode -**BandWidth Utilization**- Multiplexing Spread Spectrum- **Transmission media** – Guided and Unguided media.

Unit III

Switching – Circuit Switched Network-Datagram Network – Virtual Circuit Network-Structure of a Switch. **Using telephone and cable networks –** Telephone Network- Dial-Up Modem–Digital Subscriber lIne – Cable TV Network and Cable TV for Data transfer. **Data Link Layer :** Error Detection and Correction- Introduction- Checksum.

Unit IV

Data link control-Framing-Flow and Error Control-Protocols-Noiseless Channels-Noisy Channels. **Wired LANs**-IEEE standards-Standard Ethernet- Changes in the Standard – Fast Ethernet-Gigabit Ethernet. **Wireless LANs**: IEEE 802.11-Blue tooth. **Connecting LANs :** Connecting devices, Backbone networks. **Wireless WANs**: Cellular Telephony, Satellite Networks.

Unit V

Network Layer- IPv4 Address-IPv6 Address-Internetworking. **Transport Layer**-Process to Process delivery –UDP-TCP. **Application Layer-** Name space-DNS- DNS in the internet. **WWW and HTTP**-Architecture-web documents-HTTP.

Text Book

Data Communication and Networking –"BEHROUZ A FOROUZAN " , The McGraw- Hill- 4 th ed.

UNIT I : 1.1-1.4,2.1-2.5,

UNIT II: 3.1,3.4-3.6,4.3,6.1,6.2,7.1,7.2

UNIT III : 8.1-8.4,9.1-9.5,10.1,10.5

UNIT IV: 11.1-11.5,13.1-13.3,13.4,13.5,14.1,14.2,15.1,15.2,16.1,16.2

UNIT V: 19.1,19.2,20.1,23.1,23.2,23.3,25.1,25.2,25.4,27.1-27.3.

References

1.Data Communication and Computer Networks – " Prakash C.Gupta

2.Computer Networks Protocols,Standards and Interfaces- " Uyless Black

3. Data Communications and Computer Networks – Brijendra Singh

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Semester-V/ Ppr.no.31/ Core - 8

Dot NET Technologies

Unit I

The .NET Platform and the Web: The Web C;ient/Server Model – Components of ASP.NET and the .NET Framework – Overview of Internet Information Server – Overview of ASP.NET – The .NET Common Language Runtime and Class Library – Managed Components in .NET – Web Services – Language Independence in the .NET Framework – COM+ Component Services and .NET – Direction and plans for .NET. **The VB.NET:** What is VB.NET? – First VB application – Variables, Constants and Operators – Modularizing Code – Functions and Subroutines – Controlling Program Flow – Handling Errors and Exceptions – Object Oriented Programming – Multithread Programming.

Unit II

Working with ASP.NET: The features of ASP.NET – The Anatomy of ASP.NET Pages –Introducing Web Forms – VS.NET Web Applications and other IDE Basics – Separating Content and Code – the Code-Behind Feature – Application Configuration – Using HTML Forms – Using Web Controls – Web Controls for displaying and formatting data –Web Controls for creating buttons – Web control for inputting text – Web controls for selecting choices – Web controls for creating lists – Miscellaneous Basic Controls – Creating a simple ASP.NET Application – ASP.NET Page Directives – ASP.NET Rich Controls – Validation Controls – Data List Controls – User Controls - Saving state with the StateBag Object – ASP.NET Intrinsic Objects.

Unit III

Using the .NET Framework Class Library: Common Features of the .NET Framework Class Library – Using Data Collections – Handling File Input/output and Directories – Watching the File System for Changes – Using the Windows Event Log – Working with Active Directory Services – Using Message Queues – Communicating with Servers on the Internet – Manipulating XML Data – Sending Internet E-mail.

Unit IV

Building .NET Managed Components for COM+: The concept of Managed Code Execution – The Common Language Runtime – COM+ Component Services – Using VB.NET to develop Managed Components – Serviced Components – Building VB.NET Serviced Components. **Building Web Services:** The need for Web Services – Overview of Web Services – Web Service Description Language - Web Service Wire Formats – Web Services Discovery – Creating a simple Web Service – Calling Web Services with Proxy Classes – Creating a Client for a Web Service – Managing State in Web Services – Using Transactions in Web Services.

Unit V

Accessing Data with ADO.NET: Overview of Data Access on the Web – ADO.NET: The next generation of Data-Access Technology – ADO.NET Programming Objects and Architecture – Displaying Database Data – Programming with the DataList and DataGrid Controls – Working with the DataSet and DataTable Objects – Maintaining Data Integrity with the DataRelation Class – Using Manual Database Transactions – Working with Typed DataSet Objects. **Securing .NET Applications:** Windows Security – IIS Authentication and Authorization Security – A crash course in Cryptography – Implementing Data Encryption – ASD.NET Authentication Security.

Text Book

ASP.NET and VB.NET Web Programming –by Matt J. Crouch, Pearson.

Reference Books

1. Upgrading Microsoft Visual Basic 6.0 to .NET - by d Robinson, Michael Bond, Robert Ian Oliver, WP Publishers

2. Visual Basic.NET - by Shirish Chavan, Pearson

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Semester-V/ Ppr.no.32 / Major Practical - 5

Dot NET Practical Listing

It is compulsory to complete all the exercises given in the list in the stipulated time.

1. Build a homepage for XYZ Corporation using Web Controls.
2. Create a login page using user control in a web form.
3. Create a simple multiple choice questionnaire. Submit the answers and display the score.
4. Develop a project to input data through a web form to a database and retrieve the data. Use the calendar control to input date.
5. Develop a project to input data through a web form to a database and validate the data. Use the RequiredFieldValidator andRangeValidator Controls.
6. Check whether a given word or phrase is a palindrome using Web Service.
7. Create an online photo gallery using DataList and DataGrid Controls.
8. Develop code to send email from ASP.NET

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Semester-V/ Ppr.no.33(A)/ Major Elective - I (A)

Mobile Computing

Unit I

Basics of Communication Technologies: Components of a Wireless Communication System – Architecture of a Mobile Telecommunication System – Wireless Local Area Networks – Bluetooth Technology. **Introduction to Mobile Computing and Wireless Networking:** What is Mobile Computing ? Mobile Computing vs. Wireless Networking – Characteristics of Mobile Computing – Structure of Mobile Computing Application-Cellular Mobile Communication –Global System for Mobile Communications (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunications System (UMTS).

Unit II

MAC Protocols: Properties required of MAC Protocols – Wireless MAC Protocols : Some Issues- A taxonomy of MAC Protocols –Fixed Assignment schemes – Random Assignment Schemes –Reservation based Schemes. **Mobile Internet Protocol:** Mobile IP – Packet Delivery – Overview of Mobile IP – Desirable features of Mobile IP- Key mechanism used in Mobile IP – Route Optimization – Dynamic Host Configuration Protocol.

Unit III

Mobile Transport Layer: Overview of TCP/IP – Terminologies of TCP/IP – Architecture of TCP/IP – An overview of the operation of TCP – Application Layer Protocols of TCP – TCP in Mobile Networks. **Mobile Databases** : Issues in Transaction Processing – Transaction Processing Environment –Data dissemination – Transaction Processing in Mobile Environment – Data Replication – Mobile Transaction Models – Rollback Process – Two-Phase Commit Protocol – Query Processing – Recovery.

Unit IV

Wireless Sensor Networks: WSN vs. MANET – Applications – Architecture of the Sensor Node – Challenges in the design of an effective WSN – Characteristics of Sensor Networks –WSN Routing Protocols –Target Coverage –Clustered Wireless Sensor Networks. **Operating Systems for Mobile Computing:** Special Constraints and requirements of Mobile O/S- A survey of Commercial Mobile Operating Systems – A Comparative study of Mobile OSs.

Unit V

Mobile Application Development and Protocols: Mobile Devices as Web Clients – WAP – J2ME – Android Application Development. **Mobile Commerce:** Applications of M-Commerce – Business-to-Business(B2B) Applications –Structure of Mobile Commerce –Pros and Cons of M-Commerce – Mobile Payment Systems.

Text Book

Fundamentals of Mobile Computing –by Prasant Kumar Pattnaik, Rajib Mall,, PHI.

Reference Books

1. Wireless and Mobile Communication, T.G. Palanivelu & R. Nakkeeran,PHI Learning Private Limited,2009
2. Wireless and Cellular Telecommunications, Third Edition William C.Y. Lee, McGraw Hill
3. Mobile Computing Technology, Applications and Service Creation, Asoke K. Talukder & Roopa R. Yavagal,TMH Publication
4. Wireless Communications and Networking made simple, Prof. Satish Jain, Vineeta Pillai, BPB Publications

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Semester-V/ Ppr.no.33(B)/ Major Elective – I (B)

Cryptography and Network Security

UNIT I

Services, mechanisms and attacks – The OSI Security architecture – A model for network Security – Symmetric Cipher model – Substitution techniques – Transposition techniques – Simplified DES – Block Cipher principles – the strength of DES – Block Cipher design principles and modes of operation.

UNIT II

Triple DES – Blow fish – RC5 – Advanced Symmetric Block Ciphers – RC4 Stream Cipher Confidentiality using Symmetric encryption – Introduction to Number theory – Public _ Key cryptography and RSA.

UNIT III

Key Management – Diffie Hellman Key exchange – Message authentication and hash function – Hash algorithms – Digital Signatures and authentication protocols – Digital signature standard.

UNIT IV

Authentication applications – Pretty good privacy – S\MIME – IP security – Web security considerations – Secure sockets Layer Transport layer security – Secure Electronic transaction.

UNIT V

Intruders – intrusion detection – Password management – Viruses and Related threats – Virus countermeasures – Firewall design principles - Trusted Systems.

Textbook :

William Stallings, “Cryptography and Network security Principles and Practice”, Fourth edition, Pearson Education Asia.

References:

1. Roberta Bragg, Mark Rhodes – Qusely , Keith Strassberg, “Network Security”, Tata McGraw-Hill, 2004.
2. Greg Holden , “Guide to Network Defense and counter measures”, Thomson Course Technology, 2003.

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Semester-V/ Ppr.no.33(C)/ Major Elective- I (C)

Cloud Computing

UNIT I:

Introduction Cloud Computing Introduction, From, Collaboration to cloud, Working of Cloud Computing, Pros and Cons, Benefits, Developing Cloud Computing Services, Cloud Service Development, Discovering Cloud Services.

UNIT II:

Cloud Computing For Everyone Centralizing Email Communications, Cloud Computing for Community, Collaborating on Schedules, Collaborating on Group Projects and Events, Cloud Computing for Corporation, Mapping Schedules Managing Projects, Presenting on Road.

UNIT III:

Using Cloud Services Collaborating on Calendars, Schedules and Task Management, Exploring on Line Scheduling and Planning, Collaborating on Event Management, Collaborating on Contact Management, Collaborating on Project Management, Collaborating on Word Processing, Spreadsheets, and Databases.

UNIT IV:

Outside The Cloud Evaluating Web Mail Services, Evaluating Instant Messaging, Evaluating Web Conference Tools, Creating Groups on Social Networks, Evaluating on Line Groupware, Collaborating via Blogs and Wikis.

UNIT V:

Storing And Sharing Understanding Cloud Storage, Evaluating on Line File Storage, Exploring on Line Book Marking Services, Exploring on Line Photo Editing Applications, Exploring Photo Sharing Communities, Controlling it with Web Based Desktops

TEXT BOOK:

Cloud Computing, Michael Miller, Pearson Education, New Delhi, 2009.

REFERENCE BOOK:

1. Cloud Computing, V. K. Pachghare, PHI Learning Pvt Ltd, 2016
2. Cloud Computing, Anthony T.Velte, Toby J.Velte, Pobert Elsenpeter, TMH, 2010
3. Cloud Computing Bible, Barrie Sosinsky, Wiley Publishing, Inc.

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Semester-VI/ Ppr.no.35/Core - 9

Operating Systems

Unit I

Introduction: What Operating system do – Computer System Organization – Computer System Architecture – Operating System Structures- Operating System Operation. **System Structures:** Operating System Services – System Calls – System Programs – Operating System Design and Implementation- Operation System Generation- System Boot.

Unit II

Process Concept: Process Concept- Process Scheduling –Operation on Processes- Inter Process Communication- Example of IPC System – Communication in Client – Server system. **Process Scheduling :** Basic concept-Scheduling criteria-Scheduling algorithm-Thread scheduling-Multiple Processor Scheduling-Real Time CPU Scheduling-Operating system example- Algorithm evaluation.

Unit III

Synchronization: Background - The Critical section problem-Peterson's solution - Semaphores – Classic problems of Synchronization. **DeadLocks:** System models-Deadlock Characterization-Methods for handling deadlock - Deadlock Prevention-Deadlock Avoidance-Deadlock detection - Recovery from deadlock.

Unit IV

Memory Management: Background – Swapping - Contiguous Memory allocation – Segmentation – paging. **Virtual Memory Management :** Background - Demand paging - Copy and Write-page replacement-Allocation of Frames - Thrashing.

Unit V

File System : File Concept-Access Method-Directory and Structure--File Sharing-Protection**. Implementing File System:** File System Structure - File System implementation-Directory implementation-Allocation Methods - Free Space Management**. Mass Storage Structure:** Overview of Mass Storage Structure-Disk Structure - Disk Scheduling - Disk Management

Text Book:

Operating System Concepts – Abraham Silberscartz, Peter Baer Galvin, and Greg Gange.

Addision Wesley Publishing Company – Ninth Edition.

Reference Books:

1. Operating System: Internal and Design Principles – Fifth Edition, William Stalling ,PHI Learning Private Limited.
2. Understanding Operating Systes: Ida M.Flynn ,Ann McIverMcHoes.

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Semester-VI / Ppr.no.36/Core – 10

Relational Database Management System

UNIT I

Introduction: Database - system applications-Purpose of Database Systems - View of Data- Database languages -Relational Databases - Database Design - Data Storage and Querying - Transaction Management - Database Architecture - Data Mining and Information Retrieval-Specialty Databases - Database Users and Administrators -– Intelligent Database System.

UNIT II

Introduction to the Relational Model and Introduction to SQL: Structure of Relational Databases -Database Schema-Keys-Schema Diagrams- Relational Query Languages-Relational Operations- Overview of the SQL Query Language -SQL Data Definition-Basic Structure of SQL Queries

UNIT III

SQL operations and Intermediate SQL : Additional Basic Operations-Set Operations-Null values-Aggregate functions- Nested Sub queries-Join Expressions – Views - Transactions-Integrity Constraints - SQL Data Types and Schemas-Authorization

UNIT IV

Entity-relationship(E-R) Modeling – Enhanced Entity-Relationship(EER) Model – Data Normalization

UNIT V

Implementation using Oracle: Creating Table-Modifying Table-Creating SEQUENCE-creating Views-PL/SQL- triggers-Stored procedures and Functions-cursors

Text Book:

1.Database System Concepts – Abraham Silberschatz, Henry F.Horth and S.Sudarashan, McGraw-Hill International Sixth Edition.

2. Essentials of Database Management Systems – Alexis Leon, Mathews Leon
(Chapter 4,5,8 – IV unit)

3. Oracle8i Jose A.Ramalho BPB Publications

Reference Books:

1. Database Management Systems, R.Panneerselvam, PHI Learning Private Limited
2. Database Management Systems, Ramakrishnan and Gehrke, Mc Graw Hill Publications
3. Relational Database Management Systems,P. Simon Navis, Ave Maria Publications
4. RDBMS Concepts and Database Designing, Dr. R.C. Goyal –Ebook url http://www.vssut.ac.in/lecture_notes/lecture1423726199.pdf
5. Fundamentals of Database Systems, Ramez Elmasri, Fourth Edition, Pearson Addison Wesley- EBook URL: http://www.uoitc.edu.iq/images/documents/informatics-institute/Competitive_exam/Database_Systems.pdf
6. An Introduction Relational Database Theory, Hugh Darwen, EBook URL: http://www.zums.ac.ir/files/research/site/ebooks/it-programming/an-introduction-to-relational-database-theory.pdf

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Semester-VI / Ppr.no.37 / Core - 11

Computer Graphics And Visualization

Unit I

Overview of Graphics System: Video Display Devices – Input Devices - Hard Copy Devices – Graphics Software. **Output Primitives**: Points and Lines –Line drawing algorithms – DDA algorithm- Bresenham's line algorithm- Circle drawing algorithms: properties of circles – Midpointcircle algorithm – Filled Area primitives.

Unit II

Attributes of Output Primitives: Line attributes – Curve attributes – Character attributes. **Two-Dimensional Geometric Transformation**: Basic Transformations – Matrix Representations and homogenous coordinates – Composite and other Transformations - Transformation between coordinate systems.

Unit III

Two-Dimensional Viewing: The viewing pipeline, Viewing co-ordinate reference frame – Window to view port co-ordinate transformation – Two-dimensional viewing function. **Clipping Operations**: Point clipping – Line clipping (only Cohen-Sutherland line clipping) – Polygon Clipping (only Sutherland-Hodgeman polygon clipping).

Unit IV

Interactive Input Methods: Input of graphical data – Input functions – Three dimensional display methods. **Three Dimensional Geormetric and Modeling Transformations**: Translation - Rotation - Scaling

Unit V

Three Dimensional Viewing: Viewing Pipeline, Projections. **Visible-surface deduction methods**: Back-face deduction – Depth buffer method-Scan Line Method.**Color Models and Color Applications**: RGB, YIQ, CMY and HSV color models

Text Book:

Computer Graphics C version, Second Edition, Donald Hearn, M.Pauline Baker, Pearson Publications.

Chapters: 2.1, 2.6, 2.7, 3.1, 3.2, 3.5, 4.1, 4.2, 4.5, 5.1 to 5.4, 6.1 to 6.8, 8.2, 8.3, 9.1,11.1 to 11.3, 12.1,12.3, 13.1 to 13.3,13.5, 15.4 to 15.7

Reference Books

1. Express Learning - Computer Graphics and Multimedia-ITL Education Solution Ltd.
2. Computer Graphics-A programming Approach 2/e-Steven Harrington-Mc Graw Hill Education Private Limited.
3. Computer Graphics, Multimedia and Animation - Malay K. Pakhira - PHI

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Semester-VI/ Ppr.no.38/Core - 12

Data Mining

Unit I

Introduction: What is Data Mining – why Data Mining Now – The data Mining Process – Data Mining Applications – Data Mining Techniques – Practical examples of Data Mining – The Feature of Data Mining – Guidelines for Successful Data Mining – Data Mining Software.

Unit II

Association Rule Mining: Introduction – Basics – The Task and Naïve Algorithm – The Apriori Algorithm – Improving the efficiency of the Apriori Algorithm – Apriori -TID – Direct Hashing and Pruning DHP-Mining Frequent Patterns without Candidate Generation – Performance Evaluation of Algorithms – Software for Association Rule Mining.

Unit III

Classification: Introduction – Decision Tree – Building a decision Tree- The Tree Induction Algorithm – Split Algorithm Based on the Information Theory – Decision Tree Rules – Decision tree summary – Naïve Bayes Method – Estimating Predictive Accuracy of classification Methods- Other Evaluation Criteria for classification methods – classification software.

Unit IV

Cluster Analysis: What is Cluster Analysis – Desires Features of cluster analysis – – Types of cluster analysis methods – Partitioned Methods – Hierarchical Methods – Density Based Methods- Dealing with Large Databases – cluster Analysis Software.

Unit V

Web Data Mining: Introduction – Web Mining- Web Technology and characteristics – Locality and Hierarchy in the web – Web content Mining – Web Usage Mining – Web Structure Mining – Web Mining Software.

Text Book:

Introduction to Data Mining with Case studies, G.K. Gupta, PHI Third Edition, 2015

Reference Books

1. Data Mining Concepts & Technologies, jiawei Han, Micheline kamber, Morgan Kaufmann, Second Edition, 2005.
2. Data Mining, vikram Pudi, p.Radha Krishna, OxfordUniversity Press, First Edition, 2009.
3. Data Warehousing – Reema Thareja Oxford University Press – 2009.
4. Insight into Data Mining Theory and Practice – K.p. Soman, Shyam Diwakar, V.Ajay, Prentice Hall of India – 2008

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Computer Science)

Semester-VI / Ppr.no.39/Major Practical - 6

RDBMS with Oracle Lab Listing

It is compulsory to complete all the exercises given in the list in the stipulated time.

1. Create an employee database with tables department, employee details, address, pay details and project details. Alter the tables and add constraints relevant to the fields in the tables. Insert records into all the tables.

2. Create queries to retrieve relevant information from a table.

3. Create a table from the existing tables. Create views from the tables.

4. Develop queries to retrieve information from more than one table. Develop summary queries to retrieve relevant information from the tables.

5. Create a partition table and query the records.

6. Create the table with abstract data type and query the records.

7. Write a PL/SQL program to print multiplication table

8. Write a PL/SQL program to check whether given string is palindrome or not

9. Write a PL/SQL program to print student details using Report

10. Create a procedure to calculate Electricity bill (use cursor)

11. Write a PL/SQL program to perform updation using various triggers

12. Write a PL/SQL program to find factorial of numbers using function and procedure

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Computer Science)

Semester-V/ Ppr.no.40 (A)/ Major Elective - III (A)

BIG DATA ANALYTICS

UNIT I

What Is Big Data and Why Is It Important? - A Flood of Mythic "Start-Up" Proportions - Big Data Is More Than Merely Big - Why Now? - A Convergence of Key Trends - Relatively Speaking - A Wider Variety of Data - The Expanding Universe of Unstructured Data.

Industry Examples of Big Data: Digital Marketing and the Non-line World - Don't Abdicate Relationships - Is IT Losing Control of Web Analytics? - Database Marketers, Pioneers of Big Data - Big Data and the New School of Marketing - Consumers Have Changed. So Must Marketers. - The Right Approach: Cross-Channel Lifecycle Marketing - Social and Affiliate Marketing - Empowering Marketing with Social Intelligence

UNIT II

Fraud and Big Data - Risk and Big Data - Credit Risk Management - Big Data and Algorithmic Trading - Crunching Through Complex Interrelated Data - Intraday Risk Analytics, a Constant Flow of Big Data - Calculating Risk in Marketing - Other Industries Benefit from Financial Services' Risk Experience - Big Data and Advances in Health Care - "Disruptive Analytics" - A Holistic Value Proposition - BI Is Not Data Science - Pioneering New Frontiers in Medicine - Advertising and Big Data: From Papyrus to Seeing Somebody - Big Data Feeds the Modern-Day Donald Draper - Reach, Resonance, and Reaction - The Need to Act Quickly (Real-Time When Possible) -Measurement Can Be Tricky - Content Delivery Matters Too - Optimization and Marketing Mixed Modeling - Beard's Take on the Three Big Data Vs in Advertising - Using Consumer Products as a Doorway.

UNIT III

Big Data Technology : The Elephant in the Room: Hadoop's Parallel World - Old vs. New Approaches - Data Discovery: Work the Way People's Minds Work - Open-Source Technology for Big Data Analytics - The Cloud and Big Data - Predictive Analytics Moves into the Limelight - Software as a Service BI - Mobile Business Intelligence is Going Mainstream - Ease of Mobile Application Deployment - Crowdsourcing Analytics - Inter- and Trans-Firewall Analytics - R&D Approach Helps Adopt New Technology - Adding Big Data Technology into the Mix - Big Data Technology Terms - Data Size 101.

UNIT IV

Information Management : The Big Data Foundation - Big Data Computing Platforms (or Computing Platforms That Handle the Big Data Analytics Tsunami) - Big Data Computation - More on Big Data Storage - Big Data Computational Limitations - Big Data Emerging Technologies.

Business Analytics : The Last Mile in Data Analysis - Geospatial Intelligence Will Make Your Life Better - Listening: Is It Signal or Noise? - Consumption of Analytics - From Creation to Consumption - Visualizing: How to Make It Consumable? - Organizations Are Using Data Visualization as a Way to Take Immediate Action - Moving from Sampling to Using All the Data - Thinking Outside the Box - 360° Modeling - Need for Speed - Let's Get Scrappy - What Technology Is Available? - Moving from Beyond the Tools to Analytic Applications.

UNIT V

The People Part of the Equation : Rise of the Data Scientist - Learning over Knowing - Agility - Scale and Convergence - Multidisciplinary Talent - Innovation - Cost Effectiveness -Using Deep Math, Science, and Computer Science - The 90/10 Rule and Critical Thinking - Analytic Talent and Executive Buy-in - Developing Decision Sciences Talent - Holistic View of Analytics - Creating Talent for Decision Sciences - Creating a Culture That Nurtures Decision Sciences Talent - Setting Up the Right Organizational Structure for Institutionalizing Analytics.

Data Privacy and Ethics : The Privacy Landscape -The Great Data Grab Isn't New - Preferences, Personalization, and Relationships - Rights and Responsibility - Playing in a Global Sandbox - Conscientious and Conscious Responsibility - Privacy May Be the Wrong Focus - Can Data Be Anonymized? - Balancing for Counterintelligence – Now What?

TEXT BOOK

Michael Minelli, Michele Chamboss, Ambiga Dhiraj , "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for today's businesses" John Wiley , 2014

REFERENCE BOOKS

1. Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data, EMC Education Services

2. Bill Franks, Taming The Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics, Wiley, 2012

3. Arvind Sathi, Big Data Analytics: Disruptive Technologies for Changing the Game, MC Press, 2012

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Computer Science)

Semester-V/ Ppr.no.40 (B)/ Major Elective - III (B)

ARTIFICIAL NEURAL NETWORKS

UNIT I

Introduction to Neural networks: Neural processing- Neural networks- an overview – the raise of neuro computing – introduction to artificial neural networks : introduction- artificial neural networks – historical development of neural networks – biological neural networks – comparison between the brain and the computer – artificial and biological neural networks – basic building blocks of artificial neural networks – artificial neural network terminologies.

UNIT II

Fundamental models of artificial neural networks: McCulloch-Pits neuron Model-Learning rules. Perceptron networks: Introduction –single layer perceptron –brief introduction to multi layer perceptron networks.

UNIT III

Feedback networks: Introduction- discrete Hopfield net-continuous Hopfield net-relation between BAM and Hopfield nets. Feed forward networks: introduction-back propagation networks.

UNIT IV

Kohonen self - organizing feature maps - counter propagation network: introduction-Full counter propagation network-Forward only propagation network.

UNIT V

Applications of Neural Networks: Applications of neural networks in Arts-Bioinformatics - Knowledge Extraction – Forecasting - Bankruptcy forecasting-Healthcare-Intrusion - Detection.

TEXT BOOK

Introduction to Neural Networks using MATLAB 6.0., S N Sivanandam S Sumathi S N Deepa Tata McGraw Hill, 2006

REFERENCE BOOKS

1.Artificial neural Networks B.Yegnanarayana, Prentice Hall India, 2005

2.Neural Networks Alogorithms, Applications and programming Techniques, James A Freeman David M Skapura, Pearson Education.

3.Neural Networks for Pattern Recognition, Christopher M. Bishop, Indian Edition, OXFORD University Press

MSU/2016-17/UG-Colleges/Part-III (B.Sc. Computer Science)

Semester-V/ Ppr.no.40 (C)/ Major Elective - III (C)

INTERNET OF THINGS

UNIT I

M2M to IoT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, A use case example, Differing Characteristics.

UNIT II

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

M2M to IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

UNIT III

M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management

UNIT IV

IoT Architecture-State of the Art – Introduction, State of the art,

Architecture Reference Model- Introduction, Reference Model and architecture, IoT reference Model

UNIT V

IoT Reference Architecture- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views.

Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control.

TEXT BOOK

Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, **"From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence",** 1st Edition, Academic Press, 2014.

REFERENCE BOOKS

1. Vijay Madisetti and Arshdeep Bahga, **"Internet of Things (A Hands-on-Approach)",** 1stEdition, VPT, 2014.
2. Francis daCosta, **"Rethinking the Internet of Things: A Scalable Approach to Connecting Everything",** 1st Edition, Apress Publications, 2013.