MANNAR THIRUMALAI NAICKER COLLEGE

PASUMALAI, MADURAI– 625 004

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

(Re-accredited with 'A' Grade by NAAC)

M.Sc., Computer Science

SYLLABUS AND REGULATIONS

UNDER
CHOICE BASED CREDIT SYSTEM (CBCS)
(For those who joined during 2018-2019 and after)

Eligibility for Admission

Candidate for admission to Master's degree course in Computer Science should have Higher Secondary (+2) level Mathematics with Bachelor's degree in Computer Science/ Information Technology or BCA of Madurai Kamaraj University or any other University recognized by the Syndicate of Madurai Kamaraj University as equivalent thereto.

Candidate should have passed the Degree with a minimum of 55% marks in Part-III. In case of SC/ST candidates, they should have passed the degree with a minimum of 50% marks inPart-III.

Duration of the course

The duration of the course shall be two academic years comprising four semesters with two semesters in each academic year.

Subjects of Study

1. Core Subjects
2. Electives
3. Non Major Electives

The scheme of Examination

The components for continuous internal assessment are:

Two   tests and their average   --15 marks

Seminar /Group discussion   --5 marks

Assignment   --5 marks

Total   --25 marks

Pattern of the questions paper for the continuous Internal Assessment

(For Part III , NME & Skilled Paper in Part IV)

The components for continuous internal assessment are:
Part –A
Six multiple choice questions (answer all)   6 x01= 06 Marks
Part –B
Two questions ('either …. or 'type)   2 x 07=14 Marks
Part –C
One question out of two   1 x 10 =10 Marks

                    Total   30 Marks

Pattern of the question paper for the Summative Examinations:
Note: Duration- 3 hours
Part –A
Ten multiple choice questions   10 x01   = 10 Marks
(No Unit shall be omitted; not more than two questions from each unit.)
Part –B
Five Paragraph questions ('either …. or 'type)   5 x 07   = 35 Marks
(One question from each Unit)
Part –C
Three Essay questions out of five   3 x 10   =30 Marks
(One question from each Unit)

                    Total   75 Marks

Minimum Marks for a Pass

        50% of the aggregate (Internal +Summative Examinations).
        No separate pass minimum for the Internal Examinations.
        34 marks out of 75 is the pass minimum for the Summative Examinations.

PROGRAMME SPECIFIC OUTCOMES

PSO1: To understand, analyze and develop software in the areas related to system software, multimedia, web design, big data analytics, networking, and algorithms for efficient design of computer-based systems of varying complexities.

PSO2: To apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success.

PSO3: To employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, with zest for research.

PSO4: To study, experiment, interpret, analyze and explore the solutions to the real time problems which are effective, efficient, optimized and feasible.

MANNAR THIRUMALAI NAICKER COLLEGE(Autonomous)
DEPARTMENT OF M.Sc COMPUTER SCIENCE
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COURSE PATTERN

Study Component	I Sem.	II Sem.	III Sem.	IV Sem.	Total Hrs/week	Total Credit	No.Of Papers	Total Marks
Core Subject	5(4) 5(4) 5(4) 5(4) 5(3) 5(3)	5(4) 5(4) 5(4) 5(3) 5(3)	5(4) 5(4) 5(3) 5(3)	6(6) 6(4) 6(4) 12(10)	105	78	19	1900
Elective	-	5(4)	4(4)	-	9	8	2	200
Non-Major Elective	-	-	6(4)	-	6	4	1	100
Total	30 (22)	30 (22)	30 (22)	30 (24)	120	90	22	2200

SEMESTER - III

Subject Code	Subjects	No.of Papers	Hours/ Week	Credits	Maximum Marks		
					Int.	Ext.	Tot.
18PCSC31	Soft Computing	1	5	4	25	75	100
18PCSC32	Analysis of Algorithm	1	5	4	25	75	100
18PCSCP5	Design and Analysis of Algorithms - Lab	1	5	3	40	60	100
18PCSCP6	Web Programming – Lab	1	5	3	40	60	100
	Elective Subject **Elective –II** (Any one from List-B) **List B**						
18PCSE31	Big Data Analytics	1	4	4	25	75	100
18PCSE32	Information Security						
18PCSE33 18PCSE34	Computational Intelligence Data mining and Warehousing						
18PCSN31	Multimedia Lab	1	6	4	40	60	100
	TOTAL	**6**	**30**	**22**	**195**	**405**	**600**

SEMESTER - IV

Subject Code	Subject	No.of Papers	Hours/ Week	Credits	Maximum Marks		
					Int.	Ext.	Tot.
18PCSC41	Internet of Things	1	6	5	25	75	100
18PCSCP7	Python Programming Lab	1	6	4	40	60	100
18PCSPR1	Project Work and Viva-Voce	1	18	15	40	60	100
	TOTAL	**3**	**30**	**24**	**105**	**195**	**300**

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF(M.Sc) COMPUTER SCIENCE
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Programme	**: PG**	**Part III**	**: Core**
Semester	**: III**	**Hours per week**	**: 05**
Sub code	**: 18PCSC31**	**Credit**	**: 04**

SOFT COMPUTING

Course Outcomes
    CO1: Familiarize with soft computing concepts
    CO2: Knowing the concepts of Genetic algorithm and its applications to soft computing
    CO3: Getting the ideas of Fuzzy logic and Neural networks
    CO4: provides the skill about soft computing concepts

Unit - I:

Fundamentals of Neural Networks: Introduction-Static vs. Dynamic Neural Networks-Training of Neural Network. **Some Examples of Neural Networks:** Introduction - Multilayer Feed-Forward Neural Network (MLFFNN)-Radial Basis Function Network (RBFN) - Self Organizing Map(SOM) - Counter – Propagation Neural Network(CPNN) - Recurrent Neural Network(RNNs).

Unit –II:

Introduction to Fuzzy Sets: Crisp Sets-**Measures of Fuzziness and Inaccuracy of Fuzzy sets Fuzzy Reasoning and Clustering:**Introduction-Fuzzy Logic Controller-Fuzzy Clustering.

Unit –III:

Introduction: Hard Computing - Soft Computing - Hybrid Computing. **Introduction to Genetic Algorithms:** Working Cycle of a Genetic Algorithms - Binary-Coded GA – GA - parameters Setting-Constraints Handling in GA - Advantages and Disadvantages of Genetic Algorithms - Combination of local and Global Optimum Search Algorithms.

Unit –IV:

Genetic Algorithms: Fuzzy Logic-Introduction-Fuzzy -Genetic Algorithm-Genetic-Fuzzy System.**GeneticAlgorithms:**Neural Networks-Introduction-Working Principle of a Genetic-Neural System.

Unit –V:

Neural Networks: Fuzzy Logic-Introduction – Neuro-Fuzzy System Working based on Mamdani Approach-Neuro Fuzzy System based on Takagi and Sugeno'sApproach.**Application of Soft Computing:**Introduction-Application of Soft Computing in Design and Development of Intelligent-Application of Soft Computing in Data Analysis.

Text Books:

Dilip K.Pratihar, "**SoftComputing, Fundamenatals and Applications",** Narosa Publishing House, 2014, New Delhi.

Unit I- Chapter9(Full),Chapter10(Full).
Unit II-Chapter7(Full),Chapter8(Full).
Unit III-Chapter1(Full),Chapter3(Full).
Unit IV-Chapter11(Full),Chapter12(Full).
Unit V-Chapter13(Full),Chater14(Full).

Reference Books:

1. Rajasekaran. S and Pai. G.A.V, **NeuralNetworks, Fuzzy Logic and Genetic Algorithms**, PHI, 2003.
2. Jang.J.S.R, Sun. C.T and Mizutani, **Neuro Fuzzy and Soft Computing**, Pearson Education, 2004.
3. Deepa. S. N and Sivanandam.S. N, **Principles of Soft Computing**, Wiley publication, 2nd Edition

Web References

1. http://www.vssut.ac.in/lecture_notes/lecture1423723637.pdf
2. https://nptel.ac.in/courses/106105173/
3. http://www.myreaders.info/01_Introduction_to_Soft_Computing.pdf

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Semester	**: III**	**Hours per week**	**: 05**
Sub code	**: 18PCSC32**	**Credit**	**: 04**

ANALYSIS OF ALGORITHM

Course Outcomes

      CO1: know the techniques for effective problem solving in computing
      CO2: using different paradigms of problem solving
      CO3: using the analysis of algorithm to show the efficiency of the algorithm
      CO4: provides the skill about analysis of algorithm

Unit -I:

Introduction: Definition of algorithm - algorithm specification - performance analysis - randomized algorithms.

Unit –II:

Elementary Data Structures: stacks ans queues - tress - dictionaries - priority queues - graphs.

Divide and Conquer: General method - defective chessboard - binary search - finding the maximum and minimum - merge sort - quick sort - selection.

Unit –III:

The Greedy method: The general method - container loading - knapsack problem - tree vertex splitting - job sequencing with deadlines - minimum cost spanning trees - optimal storage on tapes - optimal merge patterns - single merge shortest paths.

Unit –IV:
Basic traversal and search techniques: Techniques for binary trees - techniques for graphs - connected components and spanning trees - biconnected components and DFS.

Unit –V:
Backtracking: The general method - the 8 queens problem - sum of subsets - graph coloring - Hamiltonian cycles.**Branch and Bound:** The method - traveling salesperson(*) - efficiency considerations.

Text Book:

      1. Ellis Horowitz, SartajSahni, Sanguthevar Raja Sekaran **"Fundamentals of Computer Algorithms"** Universities Press, 2017, Hyderabadi.
      Unit I: Chapter 1 (1.1 To 1.4)
      Unit II: Chapter 2 (2.1 To 2.4, 2.6), Chapter 3(3.1 To 3.7)
      Unit III: Chapter 4 (4.1 To 4.9)
      Unit IV: Chapter 6.1 To 6.4
      Unit V: Chapter 7 (7.1 To 7.5), Chapter 8(8.1 To 8.4).

Reference Books:

1. Gilles Brassard and Paul Bratley, **" Fundamentals of Algorithms**" PHI Learning Private Limited, 2010, New Delhi,

2. Clifford A. Shaffer, Data Structures and Algorithm Analysis, Dover Publications, Edition 3.2, (Java Version)

3. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford, Introduction to Algorithms, MIT Press, 3rd Edition

Web References

1. http://www.vssut.ac.in/lecture_notes/lecture1428551222.pdf

2. https://www.ics.uci.edu/~goodrich/teach/cs161/notes/

3. https://www.tutorialspoint.com/design_and_analysis_of_algorithms/analysis_of_algorithms.htm

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
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Semester	**: III**	**Hours per week**	**: 05**
Sub code	**: 18PCSCP5**	**Credit**	**: 03**

DESIGN AND ANALYSIS OF ALGORITHMS - LAB

Course Outcomes

CO1: Develop working knowledge of algorithms.

CO2: To implement various problems using algorithms.

CO3: Ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

CO4: provides the skill about analysis of algoritms

Implement the following programs:

1. Quick Sort
2. Merge Sort
3. Warshall's Algorithm
4. Knapsack Algorithm
5. Shortest path algorithm
6. Minimum cost spanning tree
7. Tree traversal
8. Graph traversal
9. Sum of sub sets algorithm
10. Travelling sales person problem
11. Minimum cost spanning tree
12. All pairs shortest paths

N-Queens problem

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DEPARTMENT OF (M.Sc) COMPUTER SCIENCE
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Programme	: PG	Part III	: Core
Semester	: III	Hours per week	: 05
Sub code	: 18PCSCP6	Credit	: 03

WEB PROGRAMMING LAB

Course Outcomes

CO1: Design and develop a Web site using text, images, links, lists, and tables for navigation and layout.

CO2: Learn how to use graphics in Web design.

CO3: Style your page using CSS, internal style sheets, and external style sheets.

CO4: To provide the skill about designing web sites and develop the employability in IT industry and provide entrepreneur skill

CO5: provides the skill about web programming and provides employability skill

1. Create an Application form using various text formats.
2. Create our COLLEGE website using HTML Frame.
3. Design Mark sheet printing using HTML
4. Create style sheets with the style elements.
5. Create Calculator functions using java script.
6. Validate the Registration, user login, user profile and payment by credit card pages using JavaScript.
7. String manipulation-using functions.
8. Create a program to print date using JavaScript.
9. Create a program to sum and multiply two numbers using JavaScript.
10. Add a simple script using Click event.
11. Create a format of a bill for the departmental store products
12. Create Employee details using CSS.
13. Create our department details using CSS.
14. Create Payroll system using CSS.
15. Animation – Using text, image and sound.
16. Display current date, month, year and day of the week of the machine.
17. Create a Function to calculate 33% on the given salary.
18. Generate Fibonacci series for a given number.
19. Create a PHP code, which will retrieve the data captured by the HTML form, display the name of the form and also display the message Data Entered Successfully on the HTML form page after performing the validations.
20. Develop a PHP code, which will generate a Personnel Information form.

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Programme : PG	**Part III**	: Elective
Semester : III	**Hours per week**	: 04
Sub code : 18PCSE31	**Credit**	: 04

BIG DATA ANALYTICS

Course Outcomes

CO1: Knowing the big data technologies used for storage, analysis and manipulation of data.
CO2: Recognize the key concepts of Hadoop framework, Map Reduce, Pig, Hive, and No-SQL.
CO3: Ability to understand and apply scaling up machine learning techniques and associated computing techniques and technologies.
CO4: provides the skill about big data analytics and provides employability skill

Unit - I:

Types of Digital Data: Classification of Digital Data. Introduction to Big Data: Characteristics of Data – Evolution of Big Data – Definition of Big Data – Challenges in Big Data – Big Data definition – Other characteristics of Data – Need of Big Data – Traditional Business Intelligence (BI) vs Big Data – A typical Data Warehouse environment – A typical Hadoop environment – New things - Changes - Realms of Big Data.

Unit –II:

Big Data Analytics: Big Data Analytics – Classification of Analytics – Greatest challenges that prevent business from capitalizing on Big Data – Top challenges facing Big Data – Importance of Big Data Analytics – Data Science – Data Scientist – Terminologies used in Big Data Environment – BASE – Analytics tool.

Unit –III:

The Big Data Technology Landscape: NoSQL – Types of NoSQL Database – Need of NoSQL? – Advantages of NoSQL – Use of NoSQL in Industry – SQL vsNoSQL – Comparison of SQL, NoSQL and NewSQL. **Hadoop:** Features of Hadoop – Advantages of Hadoop – Overview of Hadoop – Hadoop distribution – Hadoopvs SQL – Integrated Hadoop System – Cloud-Based Hadoop Solutions.

Unit –IV:

Introduction to Hadoop: Introducing Hadoop – Need of Hadoop – Need of RDBMS – RDBMS vsHadoop – Distributed computing challenges – History of Hadoop – Hadoop overview – Use case of Hadoop – Hadoop distribution – HDFS – Processing data with Hadoop – Managing resources and Application with Hadoop YARN – Interacting with Hadoop Ecosystem.

Unit –V:

Introduction to MangoDB: What is MangoDB – Why MangoDB – Terms used in RDBMS and MangoDB – Data types in MangoDB -MangoDB query language. **Introduction to Machine Learning:** Introduction – Machine Learning Definition – Machine Learning Algorithms – Regression Model – Linear Regression – Clustering – Collaborative Filtering – Association Rule Mining – Decision Tree.

Text Books:

1. Seema Acharya, Subhashini Chellappan, **Big Data and Analytics,** Wiley, 2015, New Delhi.

      Unit I   - Chapter 1(Full), Chapter 2.1 To 2.7, 2.9 To 2.13
      Unit II - Chapter 3.2,3.5 To 3.8,3.10 To 3.14.
      Unit III - Chapter 4(Full)
      Unit IV- Chapter 5(Full)
      Unit V- Chapter 6(Full), Chapter 12(Full).

Reference Books:

1. DT Editorial Services, **Big Data, Black book**, Ninth Edition, Dreamtech, 2016, New Delhi.
2. Michael Minelli, Michele Chambers, AmbigaDhiraj, **Big Data, Big Analytics**, Wiley, 2016, New Delhi.
3. Field Cady, **The Data Science Handbook**, Wiley, 1st Edition, 2017

Web References

1. https://www.slideshare.net/mohitsainirke/big-data-lecture-notes

2. https://www.ntnu.no/iie/fag/big/lessons/lesson1.pdf

3. https://www.tutorialspoint.com/big_data_analytics/big_data_analytics_pdf_version.htm

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF (M.Sc) COMPUTER SCIENCE
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Semester	: III	**Hours per week**	: 04
Sub code	: 18PCSE32	**Credit**	: 04

INFORMATION SECURITY

Course Outcomes

CO1: Know the fundamentals of information security.
CO2: Learn the basic principles of web application security.
CO3: Understand the authentication and encryption needs of an information system.
CO4: Evaluate a company's security policies and procedures and provides the skill about information security.

UNIT-I

Introduction: The cast of characters - Alice's online crypto - classic crypto - modern crypto history - a taxonomy of cryptography - a taxonomy of cryptanalysis.

Symmetric key crypto: Introduction - Stream ciphers - block cipher - integrity.

UNIT-II

Public key crypto: Introduction – knapsack - RSA - Diffie-Hellman - Elliptic curve cryptography - public key notation - uses for public key crypto - public key infrastructure.

UNIT-III

Authentication: Introduction – authentication methods - passwords - biometrics - smartcards - two factor authentication - single sign-on and web cookies.

UNIT-IV

Authorization: Introduction – access control - matrix - multilevel security models - multilateral security - covert channel - inference control - captcha - firewalls - intrusion detection.

UNIT-V

Simple authentication protocols: Introduction – simple security protocols - authentication protocols - authentication and TCP - zero knowledge proofs.

Text Book:

Mark Stamp, **Information SecurityL Principles and Practice**, Wiley, 2nd Edition

Unit I	:	Chapter 2 (2.1 To 2.6), Chapter 3(3.1 To 3.4)
Unit II	:	Chapter 4(4.1 To 4.8)
Unit III	:	Chapter 7(7.1 To 7.7)
Unit IV	:	Chapter 8 (8.1 To 8.9)
Unit V	:	Chapter 9(9.1 To 9.5)

Reference Books:

1. Jason Andress, **The Basics of Information Security, 2nd Edition,** Syngress, 2014, New Delhi.

2. Pachghare V.K., **Cryptography and Information Security**, 2[nd]Edition, PHI, 2015, New Delhi.

3. AtulKahate, **Cryptography and Network Security**, 3rd Edition, MGH, 2013.

Web References

1. http://www.vssut.ac.in/lecture_notes/lecture1423183198.pdf

2. https://lecturenotes.in/notes/18243-note-for-information-security-is-by-pankhuri-aggarwal

3. http://improvet.cvut.cz/project/download/C2EN/Information_and_network_security.pdf

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF(M.Sc) COMPUTER SCIENCE
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Programme	: PG	Part III	: Elective
Semester	: III	Hours per week	: 04
Sub code	: 18PCSE33	Credit	: 04

COMPUTATIONAL INTELLIGENCE

Course Outcomes

CO 1: Understand the fundamental concepts of computational intelligence.
CO2: Demonstrate awareness of the major challenges and risks facing computational intelligence and the complexity of typical problems within the field.
CO 3: Able to implement solutions to various problems in computational intelligence.
CO4: provides the skill about computational intelligence.

Unit -I:

Introduction to Computational Intelligence: Computational Intelligence Paradigms - Short History **Introduction to Evolutionary Computation:** Generic Evolutionary Algorithm - Representation – The Chromosome - Initial Population - Fitness Function – Selection - Reproduction Operators - Stopping Conditions - Evolutionary Computation versus Classical Optimization.

Unit –II:

Genetic Algorithms: Canonical Genetic Algorithm - Crossover -Mutation - Control Parameters - Genetic Algorithm Variants - Advanced Topics - Applications. Genetic Programming: Tree-Based Representation - Initial Population - Fitness Function - Crossover Operators - Mutation Operators - Building Block Genetic Programming - Applications.

Unit –III:

Evolutionary Programming: Basic Evolutionary Programming - Evolutionary Programming Operators - Strategy Parameters - Evolutionary Programming Implementations - Advanced Topics - **Applications. Evolution Strategies:** (1+1)-ES - Generic Evolution Strategy Algorithm - Strategy Parameters and Self-Adaptation - Evolution Strategy Operators - Evolution Strategy Variants - Advanced Topics - Applications of Evolution Strategies.

Unit –IV:
Computational Swarm Intelligence: Particle Swarm Optimization - Basic Particle Swarm Optimization - Social Network Structures - Basic Variations - Basic PSO Parameters - Single-Solution Particle Swarm Optimization. - Advanced Topics - Applications. Ant Algorithms - Ant Colony Optimization Meta-Heuristic - Cemetery Organization and Brood Care - Division of Labor.- Advanced Topics - Applications.

Unit –V:

Artificial Immune Systems - Natural Immune System - Classical View -Antibodies and Antigens – The White Cells - Immunity Types - Learning the Antigen Structure - The Network Theory - The Danger Theory. Artificial Immune Models - Artificial Immune System Algorithm - Classical View Models - Clonal Selection Theory Models - Network Theory Models - Danger Theory Models - Applications and Other AIS models.

Text Books:

1. Engelbrecht, A.P, Computational Intelligence: An Introduction, 2nd Edition, John Wiley & Sons, 2012, New Delhi.

Reference Books:

1. Intelligence Emerging By Keith L. Downing, The MIT Press, 2015

2. The Deep Learning Revolution By Terrence J. Sejnowski, The MIT Press, 2018

3. Achariya.D. P., Theory of Computation, Mjp Publishers, 1st edition, 2011

Web References

1. https://www.cs.ubc.ca/~poole/ci/ch1.pdf

2. https://www8.cs.umu.se/kurser/TDBC11/VT00/files/Compendium.pdf

3. http://www.cs.mun.ca/~tinayu/Teaching_files/cs4752/Lecture1_new.pdf

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
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Programme	: PG	**Part III**	: Elective
Semester	: III	**Hours per week**	: 04
Sub code	: 18PCSE34	**Credit**	: 04

DATA MINING AND WAREHOUSING

Course Outcomes

CO1: Demonstrate an understanding of the importance of data mining and the principles of business intelligence

CO2: Organize and Prepare the data needed for data mining using pre preprocessing techniques

CO3: Perform exploratory analysis of the data to be used for mining.

CO4: Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets, Define and apply metrics to measure the performance of various data mining algorithms.

Unit -I:

Introduction: Need of data mining - Data mining definition - kinds of data - kinds of patterns - technologies - kinds of applications - Major issues in data mining.

Getting to know your Data: Data Objects and Attribute Types - Basic Statistical Descriptions of Data - Data Visualization - Measuring Data Similarity and Dissimilarity.-

Unit –II:

Data Preprocessing: Data Preprocessing: An Overview - Data Cleaning - Data Integration - Data Reduction - Data Transformation and Data Discretization.

Data Warehousing and Online Analytical Processing: DataWarehouse: Basic Concepts - DataWarehouse Modeling: Data Cube and OLAP - DataWarehouse Design and Usage - DataWarehouse Implementation - Data Generalization by Attribute-Oriented Induction.

Unit –III:

Data cube technology: Data Cube Computation: Preliminary Concepts - Data Cube Computation Methods - Processing Advanced Kinds of Queries by Exploring Cube Technology - Multidimensional Data Analysis in Cube Space.

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and Methods:
Basic Concepts - Frequent Itemset Mining Methods - interesting patterns Are - pattern evaluation Methods.

Unit –IV:

Advanced Pattern mining: Pattern Mining: A Road Map - Pattern Mining in Multilevel, Multidimensional Space - Constraint-Based Frequent Pattern Mining - Mining High-Dimensional Data and Colossal Patterns.

Classification: Basic Concepts: Basic Concepts - Decision Tree Induction - Bayes Classification Methods - Rule-Based Classification - Model Evaluation and Selection - Techniques to Improve Classification Accuracy.

Unit –V:

Classification: Advanced Methods: Bayesian Belief Networks - Classification by Backpropagation - Support Vector Machines - Classification Using Frequent Patterns - Lazy Learners (or Learning from Your Neighbors) - Other Classification Methods - Additional Topics Regarding Classification.

Cluster Analysis: BasicConcepts and Methods: Cluster Analysis - Partitioning Methods - Hierarchical Methods - Density-Based Methods - Grid-Based Methods - Evaluation of Clustering.

Outlier Detection: Outliers and Outlier Analysis - Outlier Detection Methods - Statistical Approaches - Clustering-Based Approaches - Classification-Based Approaches - Mining Contextual and Collective Outliers - Outlier Detection in High-Dimensional Data

Text Books:

1.Jiawei Han, MichelineKamber, Jian Pei, **Data mining Concepts and Techniques,** Morgan Kaupmann, Third Edition, New Delhi.

Unit I   - Chapter 1 1.1 To 1. 7, Chapter 2 2.1 To 2.4

Unit II - Chapter 3 3.1 To 3.5, Chapter 4 -> 4.1 To 4.5

Unit III - Chapter 5 5.1 To 5.4, Chapter 6 6.1 To 6.3

Unit IV- Chapter7 7.1 To 7.4, Chapter 8 8.1 To 8.6

Unit V- Chapter 12Chapter 9 9.1 To 9.7, Chapter 10 10.1 To 10.6, Chapter 12 12.1 To 12.3, 12.5 To 12.8

Reference Books:

1. Arun K Pujari, **Data mining techniques**, Universities, Fourth Edition.

2. Alex Berson, Stephen J. Smith, Data Warehousing, Data mining & OLAP, McGraw Hill Education, 2013

3. Bharat BhushanAgarwal, **Data Mining and Data Warehousing**, Laxmi Publications, 1st edition, 2012

Web References

1. https://hanj.cs.illinois.edu/bk3/bk3_slidesindex.htm

2. http://www.vssut.ac.in/lecture_notes/lecture1428550844.pdf

3.https://lecturenotes.in/notes/14502-note-for-data-mining-and-data-warehousing-dmdw-by-jntu-heroes

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF (M.Sc) COMPUTER SCIENCE
(For those who joined in 2018-2019 and after)

Programme	**: PG**	**Part IV**	**: NME**
Semester	**: III**	**Hours per week**	**: 06**
Sub code	**: 18PCSN31**	**Credit**	**: 04**

MULTIMEDIA LAB

Course Outcomes
 CO1: To familiarize with Photoshop tools.
 CO2: To understand the animation techniques using Adobe Flash.
 CO3: To understand the concept of text for heading or slide presentation using   CorelDraw
 CO4: provides employability skill in the designing field.

PHOTOSHOP
1. Changing Color Modes.
 2. Pattern Setting.
3. Mirror Image.
4. Changing Black /White Image to Color and vice versa.
5. Stroking Effect.
6. Merge Text and Image.
 7. Shadow of an image.
 8. 3D & Lighting Effects.
9. Morphing.
 10. Composite of two Images.

FLASH
1. Create an animation with the following features:
        i) Letters should appear one by one.
        ii) The fill color of the text should change to a different color after the display of the
Full word.
2. Simulate movement of a Cloud.
 3. Create an animation.
4. Create an animation to represent the growing moon.
 5. Animate a Globe.
6. Converting Text into Shapes.
7. Animate using motion- shape- Tweening and actions.

CORELDRAW
1. Design a logo for Coffee shop using all the tools
2. Design 3D button for web page
3. Design 3D looking text

Web References

1.http://saiful.uitm.edu.my/files/Manual%20Photoshop%20-%20CSC253.pdf

2. http://dte.kar.nic.in/STDNTS/CS%20IS/multimedia%20lab%20programs.pdf

3. http://dominic.cheng.tripod.com/IMMWS/Material/LabManual.pdf

4. https://www.eecis.udel.edu/~yarringt/103/labs/PhotoshopLab3

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
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Programme	: PG	Part III	: Core
Semester	: IV	Hours per week	: 06
Sub code	: 18PCSC41	Credit	: 05

INTERNET OF THINGS

Course Outcomes

CO1: To assess the vision and Introduction of IoT.
CO2: To Understand IoT Market perspective.
CO3: To Implement Data and Knowledge Management and use of Devices in IoT
    Technology.
CO4: To Understand State of the Art - IoT Architecture.
CO5: To classify Real World IoT Design Constraints, Industrial Automation in IoT.
CO6: provides the skill about internet of things and provides employability skill

Unit- I:

Introduction to Internet of Things: Introduction - Definition and Characteristics of IoT - Physical Design of IoT - Logical Design of IoT - IoT Enabling Technologies - IoT Levels and Deployment Templates.

Unit-II:

Domain Specific IoTs: Introduction - Home Automation – Cities - Environment- Energy – Retail – Logistics – Agriculture – Industry - Health & Lifestyle.

Unit-III:

IoT and M2M: Introduction - M2M - Difference between IoT and M2M - SDN and NFV for IoT - Software Defined Networking - Network Function Virtualization - **IoTSystemManagement with NETCONF** – YANG - Need for IoT Systems Management - Simple Network Management Protocol(SNMP) - Limitations of SNMP - Network Operator Requirements – NETCONF – YANG - IoT Systems Management with NETCONF – YANG – NETOPEER.

Unit-IV:

Developing Internet of Things: IoT Platforms Design Methodology – Introduction - IoT Design Methodology - **Case Study on IoT System for Weather Monitoring – IoTPhysicalDevices& Endpoints** – What is an IoT Device - Basic Building Blocks of an IoT Device – Raspberry Pi – Linux on Raspberry Pi – Raspberry Pi Interfaces – Programming Raspberry Pi with Python – Other IoT Device

Unit-V:

IoT Physical Servers & Cloud Offerings: Introduction to Cloud Storage Models & Communication APIs – WAMP – AutoBahn for IoT – Xively Cloud for IoT– Django – Designing a RESTful Web API – Amazon Web Services for IoT – SkyNetIoT Messaging Platform.

Text book:

1.ArshdeepBahga,VijayMadisetti **"Internet of Things"** A Hands-On Approach, Universities Press (India) Private Limited.

Unit I: Chapter 1 Full
Unit II: Chapter 2 Full
Unit III: Chapter 3,4 Full
Unit IV: Chapter 5 Full
Unit V: Chapter 8.1, 8.2, 8.3, 8.5, 8.6, 8.7

Reference books:

1. Adrian McEwen and Hakim Cassimally, **Designing the Internet of Things** Book by Wiley Publishers, 2014.

2. CunoPfister, **Getting Started with the Internet of Things: Connecting Sensors and Microcontrollers to the Cloud,** O'Reilly Media, Inc, 2011.

3. David Hanes – IoT Fundamentals: Networking Technologies, protocols and use cases for the Internet of Thimgs, Cisco press, 2017.

Web References

1. https://www.tutorialspoint.com/internet_of_things/internet_of_things_tutorial.pdf

2. http://cseweb.ucsd.edu/classes/wi15/cse237A-a/handouts/8_iot.pdf

3. https://nptel.ac.in/courses/106105166/

MANNAR THIRUMALAI NAICKER COLLEGE (Autonomous)
DEPARTMENT OF (M.Sc) COMPUTER SCIENCE
(For those who joined in 2018-2019 and after)

Programme	**: PG**	**Part III**	**: Core**
Semester	**: IV**	**Hours per week**	**: 06**
Sub code	**: 18PCSCP7**	**Credit**	**: 04**

PYTHON PROGRAMMING - LAB

Course Outcomes
CO1: Write- test- and debug simple Python programs.
CO2: Implement Python programs with conditionals and loops.
CO3: Develop Python programs step-wise by defining functions and calling them.
CO4: Use Python lists- tuples- dictionaries for representing compound data.
CO5: Develop python applications using Database.
CO5: Provides the employability skill

LIST OF PROGRAMS

1) Linear search and Binary search

2) Selection sort- Insertion sort

3) Python program to merge mails

4) Python program to find size of the image

5) Python program to find hash of file

6) To write to an existing file- you must add a parameter to the open() function

7) Python program to calculate length of a String without using len() function

8) convert Python objects of the following types- into JSON strings: dict- list-tuple-string-True-False

9) To create a database in MySQL- use the "CREATE DATABASE" statement:

10) To create a table in MySQL- use the "CREATE TABLE" statement. To fill a table in MySQL-
    use the "INSERT INTO" statement.

11) a)implement Select record query
         b)Select records where the address contains the particular word

12) Escape query values by using the placeholder %s method

13) a)Delete any record by the given address

14) b)n delete an existing table by using the "DROP TABLE" statement

15) Develop calculator application using python

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DEPARTMENT OF(M.Sc) COMPUTER SCIENCE
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Programme	**: PG**	**Part III**	**: Core**
Semester	**: IV**	**Hours per week**	**: 18**
Sub code	**: 18PCSPR1**	**Credit**	**: 15**

PROJECT WORK AND VIVA-VOCE

Course Outcomes:

CO1: This course is to train the student in executing a project and preparing the report of work done.

CO2: The project work is to be carried for the entire semester and the report of work done is   to be submitted to the college.

Total marks: 100 (Internal: 40 marks, External: 60 marks)

Parameters:

For Internal Marks (40):

Start-up Review	: 5 marks
Design Review	: 7.5 Marks
Implementation and Validation Review	: 7.5 Marks
Final Review	: 10 Marks
Overall Performance	: 10 Marks

For External Marks(60):

Project Report	: 20 Marks
Project work Demo & Presentation	: 30 Marks
Viva-Voce	: 10 Marks