



**MARUDHAR KESARI JAIN COLLEGE FOR WOMEN
(AUTONOMOUS)**

Vaniyambadi – 635 751

**PG & Research Department of Computer Science
for**

Postgraduate Programme in Computer Science

Master of Computer Science

From the Academic Year 2024-25

Semester - I						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24PCSC11	CC – 1 Principles of Compiler Design	3	1	2	0	4
24PCSC12	CC – 2 Analysis and Design of Algorithms	3	1	2	0	4
24PCSC13P	CC - 3 Practical Analysis and Design of Algorithms Lab	0	0	4	0	3
24PCSE11	EC - 1 Advanced Python Programming	3	1	1	0	3
24PCSE12P	EC – 2 Machine Learning using Python Lab	0	0	5	0	3
24PCSA11	AECC – 1 Cloud Computing	1	1	0	0	2
24PCHR11	VE - 1 Human Rights	1	1	0	0	2
24PCSC11	CC – 1 Principles of Compiler Design	3	1	2	0	4
TOTAL					30	21

Semester - II						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24PCSC21	CC - 4 Advanced Operating Systems	3	1	2	0	4
24PCSC22	CC - 5 Advanced Java Programming	3	1	2	0	4
24PCSC23P	CC - 6 Practical Advanced Operating Systems Lab (Linux)	0	0	4	0	3
24PCSC24P	CC - 7 Advanced Java Programming Lab	0	0	4	0	3
24PCSE21	EC - 3 1. Artificial Intelligence 2. Advanced Software Engineering	2	1	1	0	3
24PCSE22	EC - 4 Web Services	2	1	1	0	3
24PCSS21	SEC - 1 (NME) Internet concepts and Web Development	1	1	0	0	2
24PCSC21	CC - 4 Advanced Operating Systems	3	1	2	0	4
TOTAL					30	22

Semester - III						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
24PCSC31	CC - 8 Data Mining and Warehousing	3	1	2	0	5
24PCSC32	CC - 9 Advanced Database Management Systems	3	1	2	0	5
24PCSC33P	CC - 10 Practical Advanced Database Management Systems Lab	0	0	4	0	3
24PCSC34	CC – 11 Cryptography and Network Security	2	1	1	0	4
24PCSE31	EC - 5 1. Data Science	2	1	1	0	3
24PCSE32	2. Social Media Analytics					
24PCSS31P	SEC - 2 Data Mining using R Practicals	0	0	4	0	2
24PCSIN31	Internship	0	0	2	0	2
TOTAL					30	24

Semester - IV						
Code	Course Title	Hours Distribution				C
		L	T	P	S	
	CC - 12 Internet of Things	3	1	2	0	5
	CC - 13 Industry Entrepreneurship: Internet of Things Lab	3	1	2	0	5
	CC - 14 Project	0	0	6	0	5
	EC - 6 1. Block Chain Technology 2. Mobile Application Development	4	1	1	0	4
	AEC - 1 Communication and Presentation Skills	1	1	0	0	2
	SLC - 1 Tensor Flow Developer Certificate	0	0	1	3	2
TOTAL					30	23
Total Credits					90+2*	

L-LECTURE T- TUTORIAL P-PRACTICAL S- SEMINAR

Students must complete at least one online course (MOOC) from platforms like SWAYAM, NPTEL, or Nanmudalvan within the fifth semester. Additionally, engaging in a specified Self-learning Course is mandatory to qualify for the degree, and successful participation will be acknowledged with an extra credit of 2*.

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSC31	Data Mining and Warehousing	CC-8	3	1	2	0	5	6	25	75	100
Learning Objectives											
LO1	To understand various Data Mining Techniques and their applicability to different data mining tasks and challenges										
LO2	To understand the strengths and weaknesses of various classification algorithms										
LO3	To understand and utilize various clustering and association rule techniques										
LO4	To Understand about the concepts of OLTP and OLAP										
LO5	To Learn about the Data warehouse architecture and its applications										
Unit	Content										Hours
1	Basic data mining tasks – data mining versus knowledge discovery in databases – data mining issues – data mining metrics – social implications of data mining – data mining from a database perspective. Data mining techniques: Introduction – a statistical perspective on data mining – similarity measures – decision trees – neural networks – genetic algorithms.										18
2	Classification: Introduction – Statistical – based algorithms – distance – based algorithms – decision tree – based algorithms – neural network – based algorithms – rule – based algorithms –combining techniques.										18
3	Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms – Partitional Algorithms. Association rules: Introduction – large item sets – basic algorithms – parallel & distributed algorithms – comparing approaches – incremental rules – advanced association rules techniques – measuring the quality of rules.										18
4	Data warehousing: Introduction – characteristics of a data warehouse data marts – other aspects of data mart. Online analytical processing: introduction – OLTP & OLAP systems .Data modeling –star schema for multi dimensional view –data modeling – multi facts schema or snowflake schema – OLAP TOOLS – State of the market – OLAP TOOLS and the internet.										18
5	Developing a data warehouse: why and how to build a data warehouse – data warehouse architectural strategies and organization issues – design consideration – data content – meta data distribution of data – tools for data warehousing – performance considerations – crucial decisions in designing a data warehouse. Applications of data warehousing and data mining in government: Introduction – national data warehouses – other areas for data warehousing and data mining.										18

CO	Course Outcomes Students can able to
CO1	Design and implement a data mining solution that addresses a real-world problem
CO2	Design, implement, and evaluate a classification model using multiple classification algorithms
CO3	Design and implement Clustering techniques
CO4	Design and implement a data warehouse solution using appropriate data modeling techniques and OLAP tools to enable multidimensional analysis and support business reporting
CO5	Design a comprehensive data warehouse architecture, addressing crucial design decisions, performance considerations, and tool selection, to effectively support organizational data analysis and reporting requirements
Textbooks:	
1	Margaret H.Dunham, “Data Mining: Introductory and Advanced Topics”, Pearson education,2003.
2	C.S.R.Prabhu,“Data Warehousing Concepts, Techniques, Products and Applications”, PHI, Second Edition.
Reference Books:	
1	ArunK.Pujari,“DataMiningTechniques”,UniversitiesPress(India)Pvt.Ltd.,2003.
2	AlexBerson, StephenJ.Smith,“Data Warehousing,Data Mining and OLAP”,TMCH, 2001.
3	Jiawei Han & Micheline Kamber, “Data Mining Concepts &Techniques”,2001, Academic press.
Web resources:	
1	https://www.techtargget.com/searchdatamanagement/resources/Data-warehousing
2	https://www.btechguru.com/training--it--database-management-systems--file-structures--introduction-to-data-warehousing-and-olap-2-video-lecture--12054--26--151.html

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	3	2	3
CO2	3	3	3	3	3	3	3	3	3	2	3
CO3	3	3	3	3	3	3	3	3	3	2	3
CO4	3	3	3	3	3	3	3	3	3	2	3
CO5	3	3	3	3	3	3	3	3	3	2	3
Total	15	15	15	15	15	15	15	15	15	10	15
Average	3	3	3	3	3	3	3	3	3	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSC32	Advanced Database Management Systems	CC-9	3	1	2	0	5	6	25	75	100
Learning Objectives											
LO1	To understand the basic concepts and terminology related to DBMS and Relational Database Design										
LO2	To have a high-level understanding of major DBMS components and relational data										
LO3	To understand various normalization techniques in Databases.										
LO4	To be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS										
LO5	To be able to program a data-intensive application using PL/SQL.										
Unit	Content										Hours
1	INTRODUCTION TO DATABASE CONCEPTS Introduction : Database System – Architecture – Database Management System as Implemented in Modern Database Packages – System Databases. The Entity - Relationship Model : Introduction – Entities – Entity Sets – Relationships – Mapping Constraints – Keys – Roles in E-R Diagrams –Non Binary Relationships – Combining Two E-R Diagrams – Representation of Strong and Weak Entity Sets –Breaking Higher Cardinalities into Lower Cardinalities – Generalization - Aggregation.										18
2	STORAGE AND RELATIONAL DATA Storage Structure : File Organization and Addressing Schemes – Sequential and Indexed Sequential Organizations – Direct Organization of File – Interface Indexing – Hashing Scheme of File Organization – Dynamic Hashing Technique – Insertion Scheme in Dynamic Hashing – B-Trees – Indexing Methods - Clustering. Relational Data Structure: Introduction - Relations - Domains.										18
3	NORMALIZATION Introduction – Purpose of Normalization - Normalization - Definition of Functional Dependence (FD) - Normal Forms: 1NF, 2NF, 3NF and BCNF. Decomposition and synthesis approaches - Basics of query processing - external sorting - file scans.										18
4	STRUCTURED QUERY LANGUAGE (SQL) Overview– Basic Structure - Set Operations, Aggregate Functions – GROUPBY – HAVING, Nested Sub queries. Creating, Dropping and Altering Tables – Inserting Rows – Querying the Database – Simple select Statement Sub – Number and Date Functions – SET Operations – Views – create view – drop view – Modifying the Database.										18
5	PROCEDURAL LANGUAGE – SQL (PL/SQL) Data Types and Variables – Program Control Statements – null Statement – Assignment Statement – Conditional Statements – Loops – Program Structure – Anonymous Blocks – Procedures and Functions – Stored Procedures and Functions – Packages– Database Access using Cursors.										18

CO	Course Outcomes Students can able to
CO1	Understand the database concepts and database management system software
CO2	Learn the High-level understanding of major DBMS components and their function
CO3	Learn about the various normalization techniques.
CO4	Write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
CO5	Understand about the PL/SQL and Stored Procedures
Textbooks:	
1	Abraham Silberschatz, Henry F. Korth and S. Sudarshan- “Database System Concepts”, seventh Edition, McGraw-Hill. March 2019
Reference Books:	
1	Raghu Ramakrishnan and Johannes Gehrke, “Database Management Systems”, Tata McGraw-Hill Publishing Company, 2003
2	Ramez Elmasri and Shamkant B. Navathe, “Fundamental Database Systems”, Third Edition, Pearson Education, 2003
3	Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- “Database System Implementation”- Pearson Education- 2000
4	Narang,”Database Management Systems”, 2nd ed., PHI
Web resources:	
1	https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
2	http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf
3	https://www.teachmint.com/tfile/studymaterial/class-12th/informaticspractices/sqlqueries3pptx/a2a19ffa-3889-4e42-bc6d-a98be1dfead6

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	2
CO2	3	3	2	3	2	3	2	3	2	2	2
CO3	2	3	2	3	3	2	2	2	1	1	1
CO4	3	2	2	3	3	3	3	3	2	2	3
CO5	3	3	2	3	3	3	2	2	2	2	2
Total	14	14	10	15	13	14	11	12	9	9	10
Average	3	3	2	3	3	3	2	2	2	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSC33P	Advanced Database Management Systems Lab	CC-10	0	0	4	0	3	4	25	75	100
Learning Objectives											
LO1	To understand the basic concepts and terminology related to DBMS and Relational Database Design										
LO2	To have a high-level understanding of major DBMS components and their function										
LO3	To the design and implement Distributed Databases.										
LO4	To be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.										
LO5	To be able to program a data-intensive application using PL/SQL										
List of Programs											
	1. Creating database tables and using data types. • Create table • Modify table • Drop table 2. Data Manipulation. • Adding data with Insert • Modify data with Update • Deleting records with Delete 3. Implementing the Constraints. • NULL and NOT NULL • Primary Key and Foreign Key Constraint • Unique, Check and Default Constraint 4. Data Retrieval • Simple select clause • Accessing specific data with Where, Ordered By, Distinct and Group By 5. Aggregate Functions. • AVG • COUNT • MAX • MIN • SUM • CUBE 6. String functions. 7. Date and Time Functions, Union, intersection and set difference. 8. Nested Queries & JOIN operation. 9. Practical Based on performing different operations on a view in sql. 10. Practical Based on implementing use of triggers, cursors & procedures.										60

CO	Course Outcomes The students can able to
CO1	Create the database table and manipulate the data
CO2	Implement the Primary Key and Foreign Key Constraints
CO3	Create a Program using string functions.
CO4	Write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
CO5	Understand about the packages and Database Access using Cursors.
Textbooks:	
1	Abraham Silberschatz, Henry F. Korth and S. Sudarshan- “Database System Concepts”, seventh Edition, McGraw-Hill. March 2019
Reference Books:	
1	Raghu Ramakrishnan and Johannes Gehrke, “Database Management Systems”, Tata McGraw-Hill Publishing Company, 2003
2	Ramez Elmasri and Shamkant B. Navathe, “Fundamental Database Systems”, Third Edition, Pearson Education, 2003
3	Hector Garcia–Molina, Jeffrey D.Ullman and Jennifer Widom- “Database System Implementation”- Pearson Education- 2000
4	Narang,”Database Management Systems”, 2nd ed., PHI
Web resources:	
1	https://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm
2	http://www.rjspm.com/PDF/BCA-428%20Oracle.pdf
3	https://www.teachmint.com/tfile/studymaterial/class-12th/informaticspractices/sqlqueries3pptx/a2a19ffa-3889-4e42-bc6d-a98be1dfead6

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	2	3	2	3	2	2	2	2	2
CO2	3	3	2	3	2	3	2	3	2	2	2
CO3	2	3	2	3	3	2	2	2	1	1	1
CO4	3	2	2	3	3	3	3	3	2	2	3
CO5	3	3	2	3	3	3	2	2	2	2	2
Total	14	14	10	15	13	14	11	12	9	9	10
Average	3	3	2	3	3	3	2	2	2	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSC34	Cryptography and Network Security	CC-11	2	1	1	0	3	4	25	75	100
Learning Objectives											
LO1	To understand the fundamental concepts of cryptography, security threats, and classical cryptography techniques.										
LO2	To study the design principles and working of symmetric key cryptographic algorithms such as DES, 3DES, and AES.										
LO3	To explore the principles of public-key cryptography and understand key exchange algorithms like RSA and Diffie-Hellman.										
LO4	To understand authentication mechanisms, hash functions, and digital signatures for ensuring message integrity and security.										
LO5	To study network security threats, security controls, firewalls, intrusion detection systems, and email security mechanisms.										
Unit	Content										Hours
1	Introduction to Cryptography, Security Threats, Vulnerability, Active and Passive attacks, Security services and mechanism, Conventional Encryption Model, CIA model, Modular Arithmetic, Euclidean and Extended Euclidean algorithm, Prime numbers, Fermat and Euler's Theorem, Classical Cryptographic Techniques.										12
2	Feistel Cipher Structure, Simplified DES, DES, Double and Triple DES, Block Cipher design Principles, AES, Modes of Operations.										12
3	Principles Of Public-Key Cryptography, RSA Algorithm, Key Management, Diffie- Hellman Key Exchange, Elgamal Algorithm, Elliptic Curve Cryptography										12
4	Authentication Requirement, Functions, Message Authentication Code, Hash Functions, Security Of Hash Functions And Macs, MD5 Message Digest Algorithm, Secure Hash Algorithm, Digital Signatures, Key Distribution Techniques, Kerberos.										12
5	Threats in networks, Network Security Controls – Architecture, Encryption, Content Integrity, Strong Authentication, Access Controls, Wireless Security, Honeypots, Traffic flow security, Firewalls – Design and Types of Firewalls, Personal Firewalls, IDS, Email Security – PGP, S/MIME.										12

CO	Course Outcomes Students can able to
CO1	Explain different types of security threats, vulnerabilities, and cryptographic models used for data security.
CO2	Compare and evaluate symmetric encryption techniques and their modes of operation for secure data transmission.
CO3	Apply public-key cryptographic techniques for secure key distribution and encryption.
CO4	Implement authentication techniques using hash functions, message authentication codes, and digital signatures.
CO5	Design and implement network security solutions using firewalls, IDS, and secure email protocols like PGP and S/MIME.
Textbooks:	
1	Cryptography And Network Security, Principles And Practice, 4th Edition, William Stallings, Pearson Education
2	Modern Cryptography, Theory and Practice, Wenbo Mao, Prentice Hall
3	Network Security Essentials, Applications and Standards, William Stallings, Prentice Hall
Reference Books:	
1	Bruce Schneier, Applied Cryptography: Protocols, Algorithms, and Source Code in C, 2nd Edition, Wiley.
2	Behrouz A. Forouzan, Cryptography and Network Security, McGraw-Hill.
3	Douglas R. Stinson, Cryptography: Theory and Practice, CRC Press.
Web resources:	
1	https://csrc.nist.gov/
2	https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-857-network-and-computer-security-fall-2014/

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
C01	3	3	2	3	2	3	2	2	2	2	2
C02	3	3	2	3	2	3	2	3	2	2	2
C03	2	3	2	3	3	2	2	2	1	1	1
C04	3	2	2	3	3	3	3	3	2	2	3
C05	3	3	2	3	3	3	2	2	2	2	2
Total	14	14	10	15	13	14	11	12	9	9	10
Average	3	3	2	3	3	3	2	2	2	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSE31	Data Science	EC-5	2	1	1	0	3	4	25	75	100
Learning Objectives											
LO1	To introduce the students to data science, big data & its ecosystem.										
LO2	To learn data analytics & its life cycle.										
LO3	To explore the programming language R, with respect to the data mining algorithms.										
LO4	To relate the relationship between artificial intelligence, machine learning and data science.										
LO5	To understand AI concepts, developing skills in AI techniques, and applying AI to solve real-world problems.										
Unit	Content										Hours
1	Introduction of Data Science: data science and big data-facets of data-data science process -Ecosystem- The Data Science process – six steps- Machine Learning.										12
2	Data Analytics life cycle-review of data analytics-Advanced data Analytics-technology and tools.										12
3	Basic Data Analytics using R : R Graphical User Interfaces – Data Import and Export – Attribute and Data Types –Descriptive Statistics – Exploratory Data Analysis – Visualization Before Analysis – Dirty Data – Visualizing a Single Variable – Examining Multiple Variables – Data Exploration Versus Presentation.										12
4	Overview of Clustering : K-means – Use Cases – Overview of the Method – Perform a K-means Analysis using R –Classification – Decision Trees – Overview of a Decision Tree – Decision Tree Algorithms – Evaluating a Decision Tree – Decision Tree in R – Bayes’ Theorem – Naïve Bayes Classifier – Smoothing – Naïve Bayes in R.										12
5	Artificial intelligence: Machine Learning and deep learning in data science-Clustering, association rules. Linear regression-logistic regression-Additional regression methods.										12

CO	Course Outcomes Students can able to
CO1	Understand the concept of data science and its techniques
CO2	Review data science concepts
CO3	Apply and determine appropriate Data Mining techniques using R to real time applications
CO4	Analyze on clustering algorithms
CO5	Analyze on regression methods in AI
Textbooks:	
1	Introducing Data Science: Big Data, Machine Learning, and More, Using Python Tools Davy Cielen, Arno D.B. Meysman, Mohamed Ali, ISBN: 9789351199373
2	Data science in big data analytics-Wiley 2015 John Wiley & Sons
Reference Books:	
1	A simple introduction to Data Science-Lars Nielson 2015
2	Introducing Data Science Davy Cielen, Arno D.B.Meysman, Mohamed Ali 2016 Manning Publication
3	R Programming for Data Science-Roger D. Peng 2015 Lean Publication
4	Data Science & Big Data Analytics : Discovering, Analyzing, Visualizing and Presenting Data
Web resources:	
1	https://www.tutorialspoint.com/python_data_science/index.htm
2	https://www.tpointtech.com/data-science

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	2	2	2
CO2	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3
Total	15	15	15	15	15	15	15	15	14	14	14
Average	3	3	3	3	3	3	3	3	2	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSE32	Social Media Analytics	EC-5	2	1	1	0	3	4	25	75	100
Learning Objectives											
LO1	Familiarize the learners with the concept of social media.										
LO2	Familiarize the learners with the concept of social media analytics and understand its significance										
LO3	Enable the learners to develop skills required for analyzing the effectiveness of Social media.										
LO4	Familiarize the learners with different tools of social media analytics.										
LO5	Familiarize the learner with different visualization techniques for Social media analytics.										
Unit	Content										Hours
1	Social Media Analytics :An Overview Core Characteristics of Social Media, Types of Social Media, Social media landscape, Need for Social Media Analytics (SMA), SMA in small & large organizations. Purpose of Social Media Analytics, Social Media vs. Traditional Business Analytics, Seven Layers of Social Media Analytics, Types of Social Media Analytics, Social Media Analytics Cycle, Challenges to Social Media Analytics, Social Media Analytics Tools										12
2	Social Network Structure, Measures & Visualization Basics of Social Network Structure - Nodes, Edges & Tie Describing the Networks Measures –Degree Distribution, Density, Connectivity, Centralization, Tie Strength & Trust Network Visualization-Graph Layout, Visualizing Network features, Scale Issues. Social Media Network Analytics - Common Network Terms, Common Social Media Network Types, Types of Networks, Common Network Terminologies, Network Analytics Tools.										12
3	Social Media Text, Action & Hyperlink Analytics Social Media Text Analytics- Types of Social Media Text, Purpose of Text Analytics, Steps in Text Analytics, Social Media Text Analysis Tools, Social Media Action Analytics What Is Actions Analytics? Common Social Media Actions, Actions Analytics Tools Social Media Hyperlink Analytics- Types of Hyperlinks, Types of Hyperlink Analytics, Hyperlink Analytics Tools										12

4	Social Media Location & Search Engine Analytics Location Analytics - Sources of Location Data, Categories of Location Analytics, Location Analytics and Privacy Concerns, Location Analytics Tools, Search Engine Analytics- Types of Search Engines, Search Engine Analytics, Search Engine Analytics Tools	12
5	Social Information Filtering - Social Sharing and filtering Automated Recommendation systems, Traditional Vs social Recommendation Systems, Understanding Social Media and Business Alignment, Social Media KPI, Formulating a Social Media Strategy, Managing Social Media Risks.	12

CO	Course Outcomes Students can able to
CO1	Understand the concept of Social media
CO2	Understand the concept of social media Analytics and its significance.
CO3	Learners will be able to analyze the effectiveness of social media.
CO4	Learners will be able to use different Social media analytics tools effectively and efficiently.
CO5	Learners will be able to use different effective Visualization technique store present Social media analytics
Textbooks:	
1	Reza Zafarani Mohammad Ali Abbasi Huan Liu, Social Media Mining, Cambridge University Press, ISBN: 10: 1107018854.
2	Charu C. Aggarwal, Social Network Data Analytics, Springer, ISBN: 978-1-4419-8461-6.
Reference Books:	
1	Marshall Sponder, Social Media Analytics: Effective Tools for Building, Interpreting, and Using Metrics, McGraw Hill Education, 978-0-07-176829-0.
2	Matthew A. Russell, Mining the Social Web, O'Reilly, 2nd Edition, ISBN:10: 1449367615.
3	Jiawei Han University of Illinois at Urbana-Champaign Micheline Kamber, Data Mining: Concepts and Techniques, Morgan Kaufmann, 2nd Edition, ISBN: 13: 978-1-55860-901-3 ISBN: 10: 1-55860-901-6.
4	Bing Liu, Web Data Mining : Exploring Hyperlinks, Contents and Usage Data, Springer, 2nd Edition, ISBN: 978-3-642-19459-7.
Web resources:	
1	www.geeksforgeeks.com
2	https://www.udemy.com/course/introduction-to-social-analytics/?srsltid=AfmBOoqZa-tfFDAuEJciahdnihDXA8HEwgRtt2pV1FRHYd7Kvklaf-4N

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
C01	3	3	3	3	3	3	3	3	2	2	2
C02	3	3	3	3	3	3	3	3	3	3	3
C03	3	3	3	3	3	3	3	3	3	3	3
C04	3	3	3	3	3	3	3	3	3	3	3
C05	3	3	3	3	3	3	3	3	3	3	3
Total	15	15	15	15	15	15	15	15	14	14	14
Average	3	3	3	3	3	3	3	3	2	2	2

3 – Strong, 2- Medium, 1- Low

2nd YEAR: THIRD SEMESTER

Course Code	Course Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	External	Total
24PCSS31P	Data Mining using R Lab Practical	SEC-2	0	0	4	0	2	4	25	75	100
Learning Objectives											
LO1	To Implement and apply various clustering algorithms (k-means, hierarchical) to group data based on similarity.										
LO2	To Develop and evaluate classification models (decision trees, Naive Bayes, KNN) to predict categorical outcomes.										
LO3	Extract and interpret association rules using the Apriori algorithm to discover relationships between items in a dataset.										
LO4	Build and assess regression models (linear regression, decision tree regression) to predict continuous values.										
LO5	To Create and interpret various data visualizations (scatter plots, histograms, boxplots) to effectively communicate patterns and insights in data.										
Unit	Content									Hours	
	1. Implement k-means clustering Technique. 2. Implement Decision Tree Classification. 3. Implement Naive Bayes Classification. 4. Implement K-Nearest Neighbors (KNN) Classification. 5. Implement any one Hierarchical Clustering. 6. Implement Apriori algorithm to extract association rule of data mining. 7. Implement Decision Tree. 8. Linear Regression. 9. Data Visualization.									60	

CO	Course Outcomes Students can able to
CO1	Demonstrate proficiency in applying core data mining techniques (clustering, classification, association rule mining, regression) to solve real-world problems.
CO2	Evaluate the performance of data mining models using appropriate metrics and techniques.
CO3	Utilize R programming to implement data mining algorithms and perform data analysis tasks.
CO4	Effectively visualize and present data analysis results to stakeholders using appropriate graphical representations.
CO5	Apply different data mining algorithms to solve real world applications
Textbooks:	
1	Margaret H. Dunham, “Data Mining : Introductory and Advanced Topics”, Pearson education, 1st edition 2020
2	C.S.R. Prabhu, “Data Warehousing Concepts, Techniques, Products and Applications”, PHI, Second Edition
Reference Books:	
1	Arun K. Pujari, “Data Mining Techniques”, Universities Press (India) Pvt. Ltd., 2003.
2	Alex Berson, Stephen J. Smith, “Data Warehousing, Data Mining and OLAP”, TMCH, 2001.
Web resources:	
1	https://www.javatpoint.com/data-warehouse

Mapping with Programme Outcomes and Programme Specific Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	3	3	2	2	2
CO2	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3
Total	15	15	15	15	15	15	15	15	14	14	14
Average	3	3	3	3	3	3	3	3	2	2	2

3 – Strong, 2- Medium, 1- Low

SEMESTER – III
ABILITY ENHANCEMENT COURSE-I
INTERNSHIP INDUSTRIAL ACTIVITY
SUBJECT CODE: 24PCSIN31

L	T	P	C
0	0	0	2

Total Hours: 30

OBJECTIVES:

1. Introduce the Working Ambience, Attitude, Adaptability, Problem Solving Ability, Ability to work with Supervisor, Ability to take Directions, etc.,
2. Expose on the different phases of Developing a Computer Solution with Team Spirit.
3. Learn about Problem Solving Skills, Soft Skills and other related Skills required for the industry.
4. To develop skill competencies specific to an occupation or profession.
5. To acquire additional interpersonal communication and interaction skills.

REGULATIONS:

1. The Candidates have to undergo a Minimum of 40 Hours of Internship Programme in the Industry during the holidays of the Second Semester of the Course of Study.
2. The Candidates need to get a Project, Analyze, learn the various stages of Developing a solution, Test, Validate and carryout the other related requirements.
3. During the course of Third Semester, the Candidates need to refine the work carried out during the Internship at the Industry, progress towards developing a better Solution as per the standards of the industry and by carrying out the constructive comments received from the industry and / or Institution during the Reviews.
4. Then the Candidates have to prepare and submit the manuscript of the Internship experience as a Report as per the requirements of the Institution / Department for Evaluation.
5. The submission of the Internship Report will be done at the end of the Third Semester for Presentation and Viva– Voce during the Practical Examinations of the Semester.
6. The Passing Minimum for Internship is 50%.
7. If the Candidate fails to score 50% in the Internship, the Candidate has to improve it during the next attempt.
8. A Faculty Member from the Department will act as a Guide to Supervise and Monitor the progress of the Candidates during the course of Internship.
9. The Faculty Member will act as the Internal Examiner during the course of Internship as well as at the time of conducting the Viva– Voce Examination.
10. The Internal Marks for the Internship will be awarded by the concerned Guide / Internal Examiner.
11. The Internal and External Examiners shall both evaluate the Internship Report, Presentation and conduct the Viva– Voce Examination.