E.G.S. PILLAY ENGINEERING COLLEGE(Autonomous)

Approved by AICTE, New Delhi | Affiliated to AnnaUniversity, Chennai |

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NAGAPATTINAM – 611 002

M.E Computer Science Engineering

Full Time Curriculum and Syllabus

SEMESTER III

SL. NO.	COURSECODE	COURSETITLE	CATEGORY	PERIODSPERWEEK			TOTAL CONTACT PERIODS	CREDITS
				L	T	P		
1.	2103CP018	Program Elective–V (**Information Retrieval Techniques**)	PEC	3	0	0	3	3
2.	2103CO028	Open Elective (**ADVANCED DIGITAL IMAGE PROCESSING**)	OEC	3	0	0	3	3
PRACTICALS								
4.	2104CP301	Project Work–Phase - I	EEC	0	0	20	20	10
		TOTAL		**06**	**00**	**20**	**26**	**16**

SEMESTER - III, ELECTIVE –V

SL. NO.	COURSECODE	COURSETITLE	CATEGORY	PERIODSPERWEEK			TOTAL CONTACTPERIODS	CREDITS
				L	T	P		
1.	2103CP017	Big Data Analytics	PEC	3	0	0	3	3
2.	2103CP018	Information Retrieval Techniques	PEC	3	0	0	3	3
3.	2103CP019	Foundation of Data Science	PEC	3	0	0	3	3
4.	2103CP020	Data Warehousing and Data Mining	PEC	3	0	0	3	3

OPENELECTIVECOURSES [OEC]

SL. NO.	COURSECODE	COURSETITLE	CATEGORY	PERIODSPERWEEK			TOTAL CONTACTPERIODS	CREDITS
				L	T	P		
1.	2103CP014	Internet of Things	OEC	3	0	0	3	3
2.	2103CP017	Big Data Analytics	OEC	3	0	0	3	3
3.	2103CP021	Social Network Analysis	OEC	3	0	0	3	3
4.	2103CP022	Cyber Forensics	OEC	3	0	0	3	3
5.	2103CP023	Social Media Web Analysis	OEC	3	0	0	3	3
6.	2103CP024	Knowledge Engineering and Management	OEC	3	0	0	3	3

SEMESTER - III, ELECTIVE –V

2103CP014	INTERNET OF THINGS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

- Understand the components and protocols used inIOT
- To Understand the IOT Reference Architecture and Real World Design Constraints
- Ability to understand the Security requirements inIOT

MODULE 1	INTRODUCTION TO INTERNET OF THINGS	9 HOURS

IOT Fundamentals - Characteristics of IOT - Physical Design of IOT - IOT Protocols - IOT communication models - IOT Communication APIs -IOT enabled Technologies - Wireless Sensor Networks, Cloud Computing, Big data analytics, and Communication protocols, Embedded Systems, IOT Levels and Templates.

MODULE 2	IOT REFERENCE ARCHITECTURE	9 HOURS

Introduction- State of the art - Architecture Reference Model- IOT reference Model-IOT Protocols: Zigbee, RFID, BLE, NFC, BACnet, 6LowPAN, RPL, XMPP, CoAP, and MQTT.

MODULE 3	IOT DEVICES AND INTERFACING	9 HOURS

IOT components - Sensors - Actuators - Hardware Platforms - Interfacing with devices: Setting up the board - Programming for IOT - Reading from Sensors, Communication: Connecting microcontroller with mobile devices - communication through Bluetooth, wifi,Ethernet

MODULE 4	IOT CLOUD, WEB SERVICES AND DATA ANALYTICS	9 HOURS

Introduction to Cloud Storage models - Cloud services and IOT - communication APIs -Cloud for IOT - Web server: Web server for IOT - Amazon Web services for IOT- Data analytics forIOT.

MODULE 5	IOT SECURITY	9 HOURS

Security Requirements in IOT - Security Concerns in IOT Applications - Security Architecture in the Internet of Things - Insufficient Authentication/Authorization - Insecure Access Control - Threats to Access Control, Privacy, and Availability - Attacks Specific to IOT. Vulnerabilities - Secrecy and Secret-KeyCapacity-Authentication/Authorization for Smart Devices-Transport Encryption

COURSE OUTCOME

1. Design an IOT architecture using different types of components and communication models.
2. Select appropriate protocols for specific applications in real time environment.
3. Implement sensor interfacing and collaborate with network devices.
4. Implement IOT programming in cloud and web servers using appropriate protocols..
5. Analyze the security requirements and threats in IOT.

REFERENCES

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Aves and, 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.

2. Vijay Madisetti and ArshdeepBahga, Internet of Things (A Hands-on- Approach), 1stEdition, VPT,2014.

3. CunoPfister ,Getting Started with the Internet of Things: Connecting Sensors and Microcontrollers to the Cloud (Make: Projects)[Kindle Edition] ,2011

4. Brian Russell and Drew Van Duren ,Practical Internet of Things Security (Kindle Edition),2016

5. Fei Hu, Security and Privacy in Internet of Things (IOTs): Models, Algorithms, andImplementations,2016

2103CP017	BIG DATA ANALYTICS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

- To understand the fundamental concepts of Big Data
- To gain in-depth knowledge about the Hadoop Architecture and YARN
- To apply the key concepts of Hadoop framework, MapReduce, Pig, Hive, and Zoo Keeper

MODULE 1	INTRODUCTION TO BIG DATA	9 HOURS

Introduction - Four Vs, Drivers for Big data, Big data analytics, Big data applications. Challenges of conventional systems -Intelligent data analysis -Nature of data - Analytic processes and tools– Analysis Vs Reporting - Modern data analytic tools

MODULE 2	INTRODUCTION TO HADOOP	9 HOURS

Big Data -Apache Hadoop&HadoopEcoSystem -Moving Data in and out of Hadoop – Understanding inputs and outputs of MapReduce - Data Serialization -Data Visualization
techniques Introduction to Spark.

MODULE 3	HADOOP ARCHITECTURE	9 HOURS

Hadoop Architecture, HadoopStorage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., NameNode, Secondary NameNode, and DataNode, HadoopMapReduceparadigm, Map and Reduce tasks, Job, Task trackers - Cluster Setup -SSH &Hadoop Configuration -HDFS Administering -Monitoring & Maintenance.

MODULE 4	HADOOP ECOSYSTEM AND YARN	9 HOURS

Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features NameNode High Availability, HDFS Federation, Map Reducev2, YARN, Running Map Reducev1 in YARN.

MODULE 5	HIVE, PIG AND HBASE	9 HOURS

Hive Architecture and Installation, Comparison with Traditional Database, HiveQL -Querying Data - Sorting And Aggregating, Map Reduce Scripts, Joins &Subqueries,HBase concepts Advanced Usage, Schema Design, Advance Indexing - Mahout - PIG, Zookeeper - how it helps in monitoring a cluster, HBase uses Zookeeper and how to Build Applications with Zookeeper.

COURSE OUTCOME

1. Analyze the Big Data concepts, file system and Applications

2. Apply the knowledge of HadoopI/O and Data visualization techniques

3. Analyze the Hadoop and Map Reduce framework associated with big data

4. Apply the fundamentals of Hadoop YARN and Map Reduce programming for Big Data Applications

5. Develop the applications Using Pig, Hive and ZooKeeper

REFERENCES

1. Boris Lublinsky, Kevin T. Smith, Alexey Yakubovich, Professional Hadoop Solutions, Wiley, ISBN: 88126551071,2015.

2. Tom Plunkett, Brian Macdonaldetal, Oracle Big Data Handbook, Oracle Press, 2014.

3. Vignesh Prajapati, Big Data Analytics with RandHadoop, Packet Publishing 2013.

4. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2013.

Tom White, HADOOP: The definitive Guide , O'Reilly2012.

2103CP018	INFORMATION RETRIEVALTECHNIQUES	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE
- To understand the basics of information retrieval with pertinence to modeling, query operations and indexing.
- To understand the various applications of information retrieval giving emphasis to multimedia IR, web search.
- To learn measuring effectiveness and efficiency of information retrieval techniques.
- To get used to performing Parallel Information Retrieval.
- To understand the concepts of digital libraries.

MODULE 1	INTRODUCTION	9 HOURS

Basic Concepts – Practical Issues – Retrieval Process – Architecture – Boolean Retrieval – Retrieval Evaluation – Open Source IR Systems–History of Web Search – Web Characteristics– The impact of the web on IR –IR Versus Web Search–Components of a Search engine

MODULE 2	RETRIEVAL MODELING	9 HOURS

Taxonomy and Characterization of IR Models – Boolean Model – Vector Model – TermWeighting – Scoring and Ranking –Language Models – Set Theoretic Models – Probabilistic Models– Algebraic Models – Structured Text Retrieval Models – Models for Browsing

MODULE 3	INDEXING	9 HOURS

Static and Dynamic Inverted Indices – Index Construction and Index Compression. Searching – Sequential Searching and Pattern Matching. Query Operations –Query Languages – Query Processing – Relevance Feedback and Query Expansion – Automatic Local and Global Analysis – Measuring Effectiveness and Efficiency

MODULE 4	EVALUATION AND PARALLEL INFORMATION RETRIEVAL	9 HOURS

Traditional Effectiveness Measures – Statistics in Evaluation – Minimizing Adjudication Effect – Nontraditional Effectiveness Measures – Measuring Efficiency – Efficiency Criteria –Queueing Theory – Query Scheduling – Parallel Information Retrieval – Parallel Query Processing – MapReduce

MODULE 5	SEARCHING THE WEB	9 HOURS

Searching the Web –Structure of the Web –IR and web search – Static and Dynamic Ranking – Web Crawling and Indexing – Link Analysis – XML Retrieval Multimedia IR: Models and Languages – Indexing and Searching Parallel and Distributed IR – Digital Libraries

COURSE OUTCOME
1. Build an Information Retrieval system using the available tools.
2. Identify and Design the various components of an Information Retrieval system.
3. Measure effectiveness and efficiency of information retrieval techniques.
4. Use parallel Information Retrieval approaches in real world problems.
5. Design an efficient search engine and analyze the Web content structure.

REFERENCES
1. Ricardo Baeza Yates, Berthier Ribeiro Neto, "Modern Information Retrieval: The Concepts and Technology behind Search",(ACM Press Books), Second Edition, 2011.
2. Chrstopher D. Manning, Prabhakar Raghavan, Hinrich Schutze, "Introduction To Information Retrieval " Cambridge University Press, First South Asian Press, 2008.
3. Stefan Buttcher, Charles L. A. Clarke, Gordon V. Cormack, "Information Retrieval Implementing and Evaluating Search Engines", The MIT Press, Cambridge, Massachusetts London, England, 2010.

2103CP019	FOUNDATION OF DATA SCIENCE	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

- Implement data analytics concepts using R
- Apply the different types of modeling methods for analysis the data

MODULE 1	INTRODUCTION TO DATASCIENCE	9 HOURS

Data science process -roles, stages in data science project -working with data from files -working with relational databases -exploring data -managing data -cleaning and sampling for modeling and validation - introduction to NoSQL.

MODULE 2	MODELING METHODS	9 HOURS

Choosing and evaluating models -mapping problems to machine learning, evaluating clustering models, validating models -cluster analysis -K-means algorithm, Naive Bayes -Linear and logistic regression.

MODULE 3	INTRODUCTION TO R	9 HOURS

Reading and getting data into R -ordered and unordered factors -arrays and matrices -lists and data frames -reading data from files -probability distributions -statistical models in R - manipulating objects -data distribution - Sentiment Analysis Approach -Neutral, Negative, Positive Comparative Analysis –Testing in R-test -Test workflow.

MODULE 4	MAP REDUCE	9 HOURS

Introduction -distributed file system -algorithms using map reduce, Matrix-Vector Multiplication by Map Reduce -Hadoop - Understanding the Map Reduce architecture - Writing Hadoop Map Reduce Programs - Loading data into HDFS - Executing the Map phase - Shuffling and sorting - Reducing phase execution

MODULE 5	DELIVERING RESULTS	9 HOURS

Documentation and deployment -producing effective presentations -Introduction to graphical analysis - plot() function -displaying multivariate data -matrix plots -Scatter Plot -Histogram - Bar & Stack Bar Chart-BoxPlot-AreaChart-HeatMap-Correlogram-PolarityPlot-multipleplotsinonewindow-exporting graph - using graphics parameters. Case studies

COURSE OUTCOME

1. Analyze the fundamental concepts of data science.

2. Apply fundamental algorithmic ideas to process data.

3. Implement the sentiment analysis approach using R language.

4. Identify the purpose of Map Reduce and HDFS.

5. Apply different types of visualization techniques to predict the future set.

REFERENCES

1. Boris Lublinsky, Kevin T. Smith and Alexey Yakubovich, Professional HadoopSolution, Wiley,2015.

2. Nina Zumeland John Mount, Practical Data Science with R, Manning Publications, 2014.

3. Jure Leskovec, Anand Rajaraman and Jeffrey D. Ullman, Mining of Massive Datasets,

Cambridge University Press,2014.

Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort and Abhijit Dasgupta, Practical Data Science Cookbook, Packt Publishing Ltd.,2014.

2103CP020	DATA WAREHOUSING AND DATA MINING	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE
- Understand the basic concepts of data mining
- Familiarize with the data mining functionalities
- Assess the strengths and weaknesses of various data mining techniques

MODULE 1	DATA WAREHOUSING	9 HOURS

Introduction- Data Warehouse - Multidimensional data model - Data warehouse architecture - Steps for the design and construction of data warehouses, Three-tier data warehouse architecture, Data warehouse back-end tools and utilities, Metadata Repository - Types of OLAP Servers - Data warehouse implementation

MODULE 2	INTRODUCTION TO DATA MINING	9 HOURS

Introduction - The evolution of database system technology - Steps in knowledge discovery from database process - Architecture of a data mining systems - Data mining on different kinds of data - Different kinds of pattern - Technologies used - Applications - Major issues in data mining - Classification of data mining systems - Data mining task primitives - Integration of a data mining system with a database or data warehouse system

MODULE 3	DATA PREPROCESSING	9 HOURS

Data Objects and attribute types - Basic statistical description of data - Data visualization – Measuring data similarity and dissimilarity - Data cleaning - Integration - Data reduction - Data transformation and data discretization

MODULE 4	ASSOCIATION RULE MINING	9 HOURS

Basic concepts - Frequent itemset mining methods - Apriori algorithm, a pattern growth approach, Vertical data format, Closed and max patterns - Pattern mining in multilevel and multidimensional space - Constraint based frequent pattern mining

MODULE 5	CLASSIFICATION AND CLUSTERING	9 HOURS

General approach to classification - Decision tree induction - Bayes classification methods-Rule Based Classification- Metrics for evaluating classifier performance - Prediction - Cluster Analysis - Partitioning methods – Hierarchical methods

COURSE OUTCOME
1. Implement the data warehouse architecture
2. Explain the functionalities of data mining
3. Explore the different data preprocessing techniques
4. Identify the association rules using frequent itemset mining algorithms
5. Describe the classification and clustering techniques

REFERENCES
1. Jiawei Han, MichelineKamber and JianPai, Data Mining: Concepts and Techniques, Morgan Kauffman,2013
2. Alex Berson and Stephen J Smith, Data Warehousing, Data Mining, and OLAP, Mcgraw-Hill,1997David Hand, HeikkiManila, Padhraic Symth, Principles of Data Mining, MIT Press,2001
3. Margaret H.Dunham , Data Mining: Introductory and Advanced Topics, Pearson Education 2003.

OPEN ELECTIVE COURSES [OEC]

2103CP021	SOCIAL NETWORK ANALYSIS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE
- To understand the components of the social network.
- To model and visualize the social network.
- To mine the users in the social network.
- To understand the evolution of the social network.
- To know the applications in real time systems.

MODULE 1	INTRODUCTION	9 HOURS

Introduction to Web - Limitations of current Web – Development of Semantic Web – Emergence of the Social Web – Statistical Properties of Social Networks -Network analysis - Development of Social Network Analysis - Key concepts and measures in network analysis - Discussion networks - Blogs and online communities - Web-based networks.

MODULE 2	MODELING AND VISUALIZATION	9 HOURS

Visualizing Online Social Networks - A Taxonomy of Visualizations - Graph Representation - Centrality- Clustering - Node-Edge Diagrams - Visualizing Social Networks with Matrix- Based Representations- Node- Link Diagrams - Hybrid Representations - Modelling and aggregating social network data – Random Walks and their Applications –Use of Hadoop and Map Reduce - Ontological representation of social individuals and relationships

MODULE 3	MINING COMMUNITIES	9 HOURS

Aggregating and reasoning with social network data, Advanced Representations – Extracting evolution of Web Community from a Series of Web Archive - Detecting Communities in Social Networks - Evaluating Communities – Core Methods for Community Detection & Mining - Applications of Community Mining Algorithms - Node Classification in Social Networks.

MODULE 4	EVOLUTION	9 HOURS

Evolution in Social Networks – Framework - Tracing Smoothly Evolving Communities - Models and Algorithms for Social Influence Analysis - Influence Related Statistics - Social Similarity and Influence - Influence Maximization in Viral Marketing - Algorithms and Systems for Expert Location in Social Networks - Expert Location without Graph Constraints - with Score Propagation – Expert Team Formation - Link Prediction in Social Networks - Feature based Link Prediction – Bayesian Probabilistic Models - Probabilistic Relational Models.

MODULE 5	APPLICATIONS	9 HOURS

A Learning Based Approach for Real Time Emotion Classification of Tweets, A New Linguistic Approach to Assess the Opinion of Users in Social Network Environments, Explaining Scientific and Technical Emergence Forecasting, Social Network Analysis for Biometric Template Protection

OUTCOME
- Work on the internals components of the social network
- Model and visualize the social network
- Mine the behaviour of the users in the social network
- Predict the possible next outcome of the social network
- Apply social network in real time applications

REFERENCES

1. Ajith Abraham, Aboul Ella Hassanien, Václav Snášel, Computational Social Network Analysis: Trends, Tools and Research Advances‖, Springer, 2012

2. Borko Furht, Handbook of Social Network Technologies and Applications‖, Springer, 1 st edition, 2011

3. Charu C. Aggarwal, Social Network Data Analytics‖, Springer; 2014

4. Giles, Mark Smith, John Yen, Advances in Social Network Mining and Analysis‖, Springer, 2010.

5. Guandong Xu , Yanchun Zhang and Lin Li, Web Mining and Social Networking – Techniques and applications‖, Springer, 1st edition, 2012

6. Peter Mika, ―Social Networks and the Semantic Web‖, Springer, 1st edition, 2007.

7. Przemyslaw Kazienko, Nitesh Chawla,‖Applications of Social Media and Social Network Analysis‖, Springer,2015

2103CP022	CYBER FORENSICS	I	T	P	C
		3	0	0	3

COURSE OBJECTIVE
- To learn computer forensics
- To become familiar with forensics tools
- To learn to analyze and validate forensics data

MODULE 1	INTRODUCTION TO COMPUTER FORENSICS	9 HOURS

Introduction to Traditional Computer Crime, Traditional problems associated with Computer Crime. Introduction to Identity Theft & Identity Fraud. Types of CF techniques - Incident and incident response methodology - Forensic duplication and investigation. Preparation for IR: Creating response tool kit and IR team. - Forensics Technology and Systems – Understanding Computer Investigation – Data Acquisition

MODULE 2	EVIDENCE COLLECTION AND FORENSICS TOOLS	9 HOURS

Processing Crime and Incident Scenes – Working with Windows and DOS Systems. Current Computer Forensics Tools: Software/ Hardware Tools.

MODULE 3	ANALYSIS AND VALIDATION	9 HOURS

Validating Forensics Data – Data Hiding Techniques – Performing Remote Acquisition – Network Forensics – Email Investigations – Cell Phone and Mobile Devices Forensics

MODULE 4	ETHICAL HACKING	9 HOURS

Introduction to Ethical Hacking - Footprinting and Reconnaissance - Scanning Networks - Enumeration - System Hacking - Malware Threats – Sniffing

MODULE 5	ETHICAL HACKING IN WEB	9 HOURS

Social Engineering - Denial of Service - Session Hijacking - Hacking Web servers – Hacking Web Applications – SQL Injection - Hacking Wireless Networks - Hacking Mobile Platforms.

COURSE OUTCOMES
- To conduct a digital forensics investigation, including the concept of the chain of evidence.
- The students will able to identify and apply current practices for processing crime and incident scenes using forensics tool
- The students will able to perform recovery of digital evidence from various digital devices using a variety of software utilities.
- To study the basics of Ethical hacking
- To identify legal and ethical issues related to web

REFERENCES

1. Bill Nelson, Amelia Phillips, Frank Enfinger, Christopher Steuart, Computer Forensics and Investigations, Cengage Learning, India Edition, 2016.
2. CEH official Certfied Ethical Hacking Review Guide, Wiley India Edition, 2015.
3. John R.Vacca, Computer Forensics‖, Cengage Learning, 2005
4. MarjieT.Britz, Computer Forensics and Cyber Crime‖: An Introduction‖, 3rd Edition, Prentice Hall, 2013.
5. AnkitFadia, Ethical Hacking‖ Second Edition, Macmillan India Ltd, 2006
6. Kenneth C.Brancik, Insider Computer Fraud‖ Auerbach Publications Taylor & Francis Group–2008.

2103CP023	SOCIAL MEDIA WEB ANALYSIS	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE

To showcase the opportunities that exist today to leverage the power of the web and social media

MODULE 1	INTRODUCTION	9 HOURS

Evolution of online communities - History and Evolution of Social Media- Social Media vs. Traditionalmedia - Social Media Audience and Goals for using Social Media - Understanding Social Media: Strong and weak ties – Influencers - How ideas travel – Viralness - Social theory and social media - technological determinism in popular discourse on social media technologies.

MODULE 2	COMMUNITY BUILDING AND MANAGEMENT	9 HOURS

Science of Social Media - Keys to Community Building - Promoting Social Media Pages- Linking Social Media Accounts-The Viral Impact of Social Media-Digital PR-Encourage Positive Chatter in Social Media - Identity in social media: formation of identities, communities, activist movements, and consumer markets - Social Media as business.

MODULE 3	SOCIAL MEDIA POLICIES AND MEASUREMENTS	9 HOURS

Social Media Policies-Etiquette, Privacy- ethical problems posed by emerging social media technologies - The road ahead in social media- The Basics of Tracking Social Media - social media analytics- Insights Gained From Social Media- Customized Campaign Performance Reports - Observations of social media use.

MODULE 4	WEB ANALYTICS	9 HOURS

Web Analytics - Present and Future, Data Collection - Importance and Options, Overview of Qualitative Analysis, Business Analysis, KPI and Planning, Critical Components of a Successful Web Analytics Strategy, Web Analytics Fundamentals, Concepts, Proposals & Reports, Web Data Analysis.

MODULE 5	SEARCH ANALYTICS	9 HOURS

Search engine optimization (SEO), non-linear media consumption, user engagement, user generated content, web traffic analysis, navigation, usability, eye tracking, online security, online ethics, content management system, data visualization, RSS feeds, Mobile platforms, User centered design, Understanding search behaviors.

COURSE OUTCOMES

1. The students will be able to enhance the social media skills.
2. The students will be able to develop a mass communication strategy and guide campaigns.
3. To get an idea of social media policies.
4. Understand the fundamentals and concepts of web analytics.
5. How to effectively use the resulting insights to support website design decisions, campaign optimization, search analytics, etc.

REFERENCES

1. K. M. Shrivastava, Social Media in Business and Governance, Sterling Publishers Private Limited, 2013
2. Christian Fuchs, Social Media a critical introduction, SAGE Publications Ltd, 2014
3. Bittu Kumar, Social Networking, V & S Publishers, 2013
4. Avinash Kaushik, Web Analytics -An Hour a Day, Wiley Publishing, 2007
5. ric T. Peterson, Web Analytics Demystified, Celilo Group Media and Café Press, 2004
6. TakeshiMoriguchi, Web Analytics Consultant Official Textbook, 7th Edition, 2016

2103CP024	KNOWLEDGE ENGINEERING AND MANAGEMENT	L	T	P	C
		3	0	0	3

COURSE OBJECTIVE
- Introducing the concept of KM
- Discusses the types of knowledge and it implications

MODULE 1	KNOWLEDGE MANAGEMENT	9 HOURS

KM Myths – KM Life Cycle – Understanding Knowledge – Knowledge, intelligence – Experience – Common Sense – Cognition and KM – Types of Knowledge – Expert
Knowledge – Human Thinking and Learning.

MODULE 2	KNOWLEDGE MANAGEMENT SYSTEM LIFE CYCLE	9 HOURS

Challenges in Building KM Systems – Conventional Vrs KM System Life Cycle (KMSLS) – Knowledge Creation and Knowledge Architecture – Nonaka's Model of Knowledge Creation and Transformation. Knowledge Architecture.

MODULE 3	CAPTURING KNOWLEDGE	9 HOURS

Evaluating the Expert – Developing a Relationship with Experts – Fuzzy Reasoning and the Quality of Knowledge – Knowledge Capturing Techniques, Brain Storming – Protocol Analysis – Consensus Decision Making – Repertory Grid- Concept Mapping –Black boarding

MODULE 4	KNOWLEDGE CODIFICATION	9 HOURS

Modes of Knowledge Conversion – Codification Tools and Procedures – Knowledge
Developer's Skill Sets – System Testing and Deployment – Knowledge Testing –
Approaches to Logical Testing, User Acceptance Testing – KM System Deployment
Issues – User Training – Post implementation

MODULE 5	KNOWLEDGE TRANSFER AND SHARING	9 HOURS

Transfer Methods – Role of the Internet – Knowledge Transfer in e-world – KM System Tools – Neural Network – Association Rules – Classification Trees – Data Mining and Business Intelligence – Decision Making Architecture – Data Management – Knowledge Management Protocols – Managing Knowledge Workers

COURSE OUTCOMES
- To learn KM and its business strategy
- To study the KM system life cycle and its Architecture
- To develop a system through the process of codification
- To perform system testing and deployment
- To discusses the transfer of Knowledge and its effectiveness in E-world.

REFERENCES
1. Elias.M. Award & Hassan M. Ghaziri "Knowledge Management" Pearson Education 2000
2. Guus Schreiber, Hans Akkermans, Anjo Anjewierden, Robert de Hoog, Nigel Shadbolt, Walter Van de Velde and Bob Wielinga, "Knowledge Engineering and Management", Universities Press, 2001.
3. C.W. Holsapple, "Handbooks on Knowledge Management", International Handbooks on Information Systems, Vol 1 and 2, 2003

2104CP301	Project Work–Phase - I	L	T	P	C
		0	0	20	10

Course Objective
1.To develop knowledge to formulate a real world problem and project's goals 2.To identify the various tasks of the project to determine standard procedures 3.To identify and learn new tools, algorithms and techniques
4.To understand the various procedures for validation of the product and analysis the cost effectiveness
5.To understand the guideline to Prepare report for oral demonstrations

Guidelines
 The Project Work will start in semester III and should preferably be a problem with research potential and should involve scientific research, design, generation / collection and analysis of data, determining solution and must preferably bring out the individual contribution. Seminar should be based on the area in which the candidate has undertaken the dissertation work as per the common instructions for all branches of M. E. The examination shall consist of the preparation of report consisting of a detailed problem statement and a literature review. The preliminary results (if available) of the problem may also be discussed in the report. The work has to be presented in front of the examiners panel set by Head and PG coordinator. The candidate has to be in regular contact with his guide and the topic of dissertation must be mutually decided by the guide and student.

Total: 60 Hours

Course Outcome
 After completion of the course, Student will be able to
1. Self-learning various topics.
2. Survey the literature such as books, national/international refereed journals and contact resource persons for the selected topic of research.
3. Write technical reports.
4. Develop oral and written communication skills to present and defend their work in-front of technically qualified audience.