DATA STRUCTURES USING C++
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards)
SEMESTER – I

Semester: I	**CIE Marks:50**
Course Code:20MCA11	**SEEMarks:50**
Contact Hours (L:T:P): 4:0:0	**Exam Hours:03**
CREDITS - 04	

Course objectives: This course 20MCA11 will enable students to

- To learn the fundamentals of data structures, and linear and non linear data structures.
- To learn the concepts of Stacks and Queues and their implementation through programming.
- To learn Effective use of concepts like Recursion and Linked list, their implementation through programming and their applications.
- To learn the concept Algorithmic Analysis, Efficiency notations, different types of mathematical analysis and apply the analysis for different algorithms.
- Study of the efficient searching and sorting techniques and analyze the algorithmic efficiency

Module-1	**Teaching hours**
Classification of Data Structures: Primitive and Non-Primitive, Linear and Nonlinear; Data structure Operations, Stack: Definition, Representation, Operations and Applications: Polish and reverse polish expressions, Infix to postfix conversion, evaluation of postfix expression, infix to prefix, postfix to infix conversion **RBT: L1, L2, L3, L4**	10
Module-2	
Recursion -Factorial, GCD, Fibonacci Sequence, Tower of Hanoi. Queue: Definition, Representation, Queue Variants: Circular Queue, Priority Queue, Double Ended Queue; Applications of Queues. Programming Examples. **RBT: L1, L2, L3**	10
Module-3	
Linked List: Limitations of array implementation, Memory Management: Static (Stack) and Dynamic (Heap) Memory Allocation, Memory management functions. Definition, Representation, Operations: getnode () and Free node () operations, Types: Singly Linked List. Linked list as a data Structure, Inserting and removing nodes from a list, Linked implementations of stacks, Header nodes, and Array implementation of lists. **RBT: L2, L3, L5**	10
Module-4	
Introduction, Fundamentals of the Analysis of Algorithm, Efficiency Notion of Algorithm, Fundamentals of Algorithmic Problem Solving, Important Problem Types, Analysis Framework, Asymptotic Notations and Basic efficiency classes, Mathematical analysis of Recursive and Non-recursive algorithms. **RBT: L2, L3, L4, L6**	10

Module-5	
Brute Force: Selection Sort and Bubble Sort, Sequential Search, Exhaustive search and String Matching. Divide-and-Conquer Merge-sort, Quick-sort, Binary Search, Binary tree Traversals and related properties. Decrease-and-Conquer Insertion Sort, Depth First and Breadth First Search, Topological sorting. Greedy Technique Prim's Algorithm, Kruskal's Algorithm, Dijkstra's Algorithm. **RBT: L2, L3, L4, L5**	10
Course Outcomes:	
student will be able to CO1: Demonstrate different data structures, its operations using C++ programming and analyze the performance of Stacks. CO2: Understand the working of recursion and solve the recursion problems using Tower of Hanoi and analyze the performance of Queues and types of queues. CO3: Understand the Linked list data structure, and the representation of linked lists in memory. Study the different type of Linked lists. Implement the working of Linked Lists and its types through C++ programming Language CO4: Understand and apply algorithmic analysis, using the Efficiency Notion of Algorithm for data structures in a high-level language such as C++ and Design the appropriate data structures for solving computing problems. CO5: Compute the efficiency of Sorting and other greedy technique algorithms in terms of asymptotic notations for the given problem.	
Question paper pattern: The question paper will have ten questions. There will be 2 questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.	
Text books and Reference books	
1. Introduction to the Design and Analysis of Algorithms. Anany Levitin, Pearson Education,2nd Edition. 2. Classic Data Structures by D.Samanta, 2nd Edition PHI . 3. Data Structures Using C and C++ by YedidyahLangsam and Moshe J. Augenstein and Aaron M Tenanbanum, 2nd Edition, Pearson Education Asia, 2002 4. Introduction to Data Structure and Algorithms with C++ by Glenn W. Rowe.	

OPERATING SYSTEM AND UNIX
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards)
SEMESTER – I

Subject Code	20MCA12	CIE Marks	50
Number of Lecture Hours/Week	04	SEE Marks	50
Total Number of Lecture Hours	50	Exam Hours	03

CREDITS – 04

Course objectives: This course will enable students to

- To familiarize students with the concepts, design, and structure of the UNIX operating system.
- To teach students the use of basic UNIX Utilities
- To teach students the principles of UNIX shell programming.

Module I	Teaching Hours
Introduction to Operating Systems, Computer System Architecture; Operating System Operations; ; Operating System Structure: Operating System Services; System Calls; Types of System Calls; System Programs;; Virtual Machines; System boot. **Process Management Process Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling. Process Synchronization	10 Hours
Module II	
Deadlocks: System model; Deadlock Characterization, Methods for handling deadlocks; Deadlock Prevention; Deadlock Avoidance; Deadlock Detection and Recovery from deadlock. Memory Management: Memory Management Strategies: Background, Swapping; Contiguous Memory Allocation; Paging; Segmentation; Virtual Memory Management; Demand Paging; Page Replacement; Allocation of Frames; Thrashing.	10 Hours
Module III	
The File System: The File, What's in a File name? The Parent-Child Relationship, The HOME Variable: The Home Directory, pwd, cd, mkdir, rmdir, Absolute Pathnames, Relative Pathnames, The Unix File System. The vi Editor: vi Basics, Input Mode, ex Mode and Command Mode. **Basic File Attributes:** ls options, File Ownership, File Permissions, chmod, Directory Permissions, Changing the File Ownership More File Attributes: File Systems and Inodes.	10 Hours
Module IV	
The Process: Process Basics, ps: Process Status, System Processes, Mechanism of Process Creation, Internal and External Commands, Running Jobs in Background, Killing Processes with Signals, Job Control, at and batch, cron. **Essential Shell Programming:** Shell Variables, Environment Variables, Shell	10 Hours

Scripts, read, Using Command Line Arguments, exit and exit status of command, The Logical Operators, The if Conditional, using test and [] to Evaluate Expression, The case Conditional, expr, while: looping, for: looping with a list, set and shift, trap, Debugging Shell Scripts with set – x.	
Module V	
AWK and Advanced Shell Programming Simple AWK Filtering, Splitting a Line into Fields, printf, the Logical and Relational Operators, Number Processing, Variables, The –f option, BEGIN and END positional Parameters, getline, Built-invariables, Arrays, Functions, Interface with the Shell, Control Flow. The sh command, export Command, Conditional Parameter Substitution, Merging Streams, Shell Functions, eval, Exec Statement and Examples .	10 Hours

Course Outcomes

The students should be able to:

- Apply the fundamental concepts of the operating systems (OS) for a given problem and discuss its performance issues.
- Apply graph theory concepts to model OS problem and give valid conclusions.
- Analyse the given problem and solve using OS management techniques.
- Design algorithms for the given problem & compare its performance with existing ones.
- Demonstrate the working of basic commands of Unix environment including file processing
- Demonstrate the usage of different shell commands, variable and AWK filtering to the given problem .

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Sumitabha Das: UNIX Concepts and Applications, 4th Edition, Tata McGraw Hill, 2006.
2. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne: Operating Systems Principles,8th Edition, Wiley – India.

Reference Books:

1. UNIX: The Complete Reference: Kenneth Roson et al, Osborne/McGraw Hill, 2000.
2. Using UNIX: Steve Montsugu, 2ndEdition, Prentice Hall India, 1999.
3. UNIX and Shell Programming: M G Venkateshmurthy, Pearson Education Asia, 2005 Behrouz A Forouzan and Richard F Gilberg

4.D M Dhamdhere: Operating Systems – A Concept Based Approach, 2nd Edition, Tata McGraw – Hill, 2002.

Advanced Database Management System

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards
SEMESTER – I

Semester: I	**CIE Marks:50**
Course Code:20MCA13	**SEEMarks:50**
Contact Hours (L:T:P): 4:0:0	**Exam Hours:03**

Credits-04

Course Objectives:

- To Learn Evolution of database management systems, Entity Relationship Modeling and Design
- To Learn Relational Data Model and Relational Algebra, Structured Query Language, Transaction Processing.
- To Learn about Concurrency Control and Recovery, Client Server and Distributed databases.

Module-1	**Teaching hours**
Characteristics of Database approach, Actors on the Scene, Workers behind the scene, Advantages of using DBMS approach, A Brief History of Database Applications, Data models, schemas and instances, Three-schema architecture and data independence, Database languages and interfaces, the database system environment ,Centralized and client-server architectures, Classification of Database Management systems.	10
Module-2	
Structure of Relational Databases, Database Schema, Keys, Relational Query Languages, Relational Operations, Entity-Relationship Model: Conceptual Database using high level conceptual data models for Database Design, A Sample Database Application, Entity types, Entity sets Attributes and Keys Relationship types, Relationship Sets,Functional Dependencies, Normal Forms based on Primary	10
Module-3	
SQL data definition and data types, specifying constraints in SQL, basic retrieval queries in SQL, Insert, update and delete statements in SQL, aggregate functions in SQL, group by and having clauses. Introduction to triggers in SQL, views in SQL, schema change statements in SQL, stored procedures and functions.	10
Module-4	
Introduction to transaction processing, transaction and system concepts, desirable properties of transactions, transaction support in SQL, Database security, Strategies for query processing, query optimization	10
Module-5	
Concurrency control techniques: two-phase locking techniques, concurrency control based on timestamp ordering, multiversion concurrency control techniques, validation concurrency control techniques ,Database Recovery Technique , Recovery concepts ,Distributed database concepts ,Data	10

fragmentation , replication and allocation technique.	
Course Outcomes: at the end students will be able to CO1: Apply the basic concepts of database management in designing the database for the given problem. CO2: Design entity-relationship diagrams to the given problem to develop database application with appropriate fields and validations. CO3: Implement a database schema for a given problem domain. CO4: Formulate SQL queries in Oracle to the given problem. CO5: Apply normalization techniques to improve the database design to the given problem	
Question paper pattern: The question paper will have ten questions. There will be 2 questions from each module. Each question will have questions covering all the topics under a module. The students will have to answer 5 full questions, selecting one full question from each module.	
Text books and Reference books	
1. Elmasri and Navathe: Fundamentals of Database Systems, 5th Edition, Addison -Wesley, 2011. 2. Silberschatz, Korth and Sudharshan Data base System Concepts, 6th Edition, Tata McGraw Hill, 2011.4. Introduction to Data Structure and Algorithms with C++ by Glenn W. Rowe. 3. C.J. Date, A. Kannan, S. Swamynatham: An Introduction to Database Systems, 8th Edition, Pearson education, 2009. 4. Raghu Ramakrishnan and Johannes Gehrke: Database Management Systems, 3rd Edition, McGraw-Hill, 2003.	

SOFTWARE ENGINEERING

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2020 -2021)

SEMESTER– I

Subject Code	**20MCA14**	**CIE Marks**	**50**
Number of Lecture Hours/Week	**04**	**SEE Marks**	**50**
Total Number of Lecture Hours	**50**	**Exam Hours**	**03**

CREDITS – 04

Course objectives: This course (20MCA14) will enable students to:

- Outline software engineering principles and activities involved in building large software programs. Identify ethical and professional issues and explain why they are of concern to softwareengineers.
- Explain the fundamentals of object oriented concepts
- Describe the process of requirements gathering, requirements classification, requirements specification and requirements validation. Differentiate system models, use UML diagrams andapply design patterns.
- Discuss the distinctions between validation testing and defect testing.
- Recognize the importance of software maintenance and describe the intricacies involved in software evolution. Apply estimation techniques, schedule project activities and compute pricing.
- Identify software quality parameters and quantify software using measurements and metrics. Listsoftware quality standards and outline the practices involved.

Module I	Teaching Hours
Introduction: Software Crisis, Need for Software Engineering. Professional Software Development, Software Engineering Ethics. Case Studies. **Software Processes**: Models: Waterfall Model, Incremental Model and Spiral Model. Process activities. **Requirements Engineering**: Requirements Engineering Processes **,** Requirements Elicitation and Analysis Functional and non-functional requirements The software Requirements Document Requirements Specification Requirements validation Requirements Management **RBT: L1, L2, L3**	10 Hours
Module II	
What is Object orientation? What is OO development? OO Themes; Evidence for usefulness of OO development; OO modelling history. Modelling as Design technique: Modelling; abstraction; The Three models. **Introduction, Modelling Concepts and Class Modelling:** What is Object orientation? What is OO development? OO Themes; Evidence for usefulness of OO development; OO modelling history. Modelling as Design technique: Modelling; abstraction; The Three models. Class Modelling: Object and Class Concept; Link and associations concepts; Generalization and Inheritance; A sample class model; Navigation of class models; **RBT: L1, L2 ,L3**	10 Hours

Module III

System Models: Context models Interaction models Structural models Behavioral models Model-driven engineering **Design and Implementation**: Introduction to RUP **(**Design Principles Object-oriented design using the UML Design patterns Implementationissues Open source development **RBT: L1, L2, L3**	10 Hours

Module IV

Software Testing: Development testing Test-driven development Release testing User testing Test Automation **Software Evolution**: Evolution processes Program evolution dynamics Software maintenance Legacy system management **RBT: L1, L2 ,L3**	10 Hours

Module V

Project Planning: Software pricing Plan-driven development Project scheduling Estimation techniques **Quality management**: Software quality Reviews and inspections Software measurement and metrics Software standards **RBT: L1, L2 ,L3**	10 Hours

Course Outcomes : The student will be able to

- Design a software system, component, or process to meet desired needs within realistic constraints.
- Assess professional and ethical responsibility
- Function on multi-disciplinary teams
- Use the techniques, skills, and modern engineering tools necessary for engineering practice
- Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Ian Sommerville: Software Engineering, 9th Edition, Pearson Education, 2012. (Listed topics only from Chapters 1,2,3,4, 5,6, 7, 8, 9,10,11, 23, and 24)
2. Michael Blaha, James Rumbaugh: Object Oriented Modelling and Design with UML,2nd Edition, Pearson Education,2005.

Reference Books:

1. Roger S. Pressman: Software Engineering-A Practitioners approach, 7th Edition, Tata McGraw Hill.
2. Pankaj Jalote: An Integrated Approach to Software Engineering, Wiley India

PROBABILITY AND STATISTICS

[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards)
SEMESTER – I

Subject Code	**20MCA151**	**CIE Marks**	**50**
Number of Lecture Hours/Week	**03**	**SEE Marks**	**50**
Total Number of Lecture Hours	**30**	**Exam Hours**	**03**

CREDITS – 03

Course objectives: This course will enable students to

- To revise elementary concepts and techniques.
- To extend and formalize knowledge of the theory of probability and random variables
- To introduce new techniques for carrying out probability calculations and identifying probability distributions.

Module I	Teaching Hours
DESCRIPTIVE STATISTICS Measures of central tendency- Arithmetic mean, Median and Mode. Partition values- quartiles, deciles and percentiles. Measures of dispersion – quartile deviation, standard deviation and coefficient of variation for grouped and ungrouped data.	6Hours
Module II	
CORRELATION AND REGRESSION ANALYSIS Correlation – Introduction, Types of Correlation, Scatter Diagram, Karl Pearson and Spearman's correlation coefficient. Regression – Lines of Regression, Regression Coefficients, Properties of Regression Coefficients and Regression Lines.	6 Hours
Module III	
PROBABILITY & PROBABILITY DISTRIBUTIONS Definitions of Probability. Addition and multiplication rules of probability.Conditional probability.Random variables –Discrete and continuous. (univariate data) Probability mass functions and probability density functions. Probability distributions – Binomial, Poisson, Normal and Exponential distributions and its applications. Concepts of statistic, parameter, sampling distribution and standard error.	6 Hours
Module IV	
ESTIMATION THEORY & TESTING OF HYPOTHESIS Interval estimation – single mean and difference between two means (known and known variance), single proportion and difference between two proportions. Statistical hypotheses-Simple and composite, Statistical tests, Critical region, Errors of Type I and Type II, Testing of hypothesis – null and alternative hypothesis, level of significance, Type I and Type II errors.	6 Hours
Module V	

TEST OF SIGNIFICANCE Based On t, F and Z Distributions:-Student's (t) distribution, definition, properties, critical value of t, Application of t-distribution, Test for single mean, t-test for difference of mean, Fischer Z- transformation, F-statistic, critical value of F distribution, application.	6 Hours

Course Outcomes

The students should be able to:

- Basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- How to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions
- How to calculate probabilities, and derive the marginal and conditional distributions of bivariate random variables.
- How to translate real-world problems into probability models.

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Gupta S.C & Kapoor V.K, *Fundamentals of Mathematical statistics*, Sultanchand & sons, 5009.
2. Freund J.E, *Mathematical statistics*, Prentice hall, 5001

Reference Books:

1. Douglas C Montgomery, George C Runger, *Applied Statistics and Probability for Engineers*, Wiley student edition, 5004.
2. Berenson V Levine, *Basic Business Statistics*, Prentice-Hall India, 6th edition, 1996.

Artificial Intelligence

[As per Choice Based Credit System (CBCS) scheme]

(Effective from the academic year 2020 -2021 onwards)

SEMESTER –I

Subject Code	**20MCA152**	**CIE Marks**	**50**
Number of Lecture Hours/Week	**03**	**SEE Marks**	**50**
Total Number of Lecture Hours	**40**	**Exam Hours**	**03**

CREDITS – 03

Course objectives: This course will enable students to

- To clarify basic knowledge representation, problem solving, and learning methods of artificial intelligence.
- To stimulate interest about how artificial intelligence methods work under a variety of circumstances.
- To impart the role of problem solving, vision, and language in understanding human intelligence from a computational perspective.

Module I	**Teaching Hours**
Introduction : What is intelligence?, Foundations of artificial intelligence(AI), History of AI, Basics of AI, Artificial Intelligence Problems, Artificial Intelligence Techniques Problem **Spaces and Search** : Defining the problem as a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in designing search problems, Breadth first search (BFS), Depth first search (DFS), Bi-directional Search	**10 Hours**
Module II	
Informed Search Strategies : Best first search, A* algorithm, Heuristic functions, Generate and Test, Hill Climbing, Simulated Annealing, Constraint satisfaction.	**10 Hours**
Module III	
Knowledge Representation : Representations & mappings, Approaches in knowledge representation, Issues in knowledge representation, Predicate logic, Propositional logic, Procedural versus declarative knowledge, Logic programming, Forward versus backward reasoning	**10 Hours**
Module IV	
Symbolic reasoning under uncertainty : Non monotonic reasoning, Logic for non monotonic reasoning, Implementation issues, Augmenting a problem solver, Truth maintenance system Statistical reasoning : Certainty factors & rule-based systems, Probability & Bayes' theorem, Bayesian networks, Dempster-Shafer-Theorysection for Unix / Linux users, Debugging.	**10 Hours**

Module V

Weak slot and filler structures : Semantic nets, Frames **Strong slot and filler structures** : Conceptual dependency, Scripts **Game playing** : The min-max search procedure, Alpha-beta cutoffs, Iterative deepening **Advance topics in Artificial Intelligence** : Artificial Neural Network, Fuzzy logic systems, Genetic algorithms, Natural Language Processing(NLP)	**10 Hours**

Course Outcomes

The students should be able to:

- Understand problem solving, vision, and language in understanding human intelligence from a computational perspective.
- Student can explore knowledge representation, problem solving, and learning methods of artificial intelligence.

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Text Books:

1. Artificial Intelligence By Kevin Knight, Elaine Rich, B. Shivashankar Nair, Tata Mcgraw Hill, India, 3rd Edition, (2013)

Reference Books:

1. Artificial Intelligence By Saroj Kaushik, Cengage Learning, 1st Edition, (2013) Credits:4
2. Artificial Intelligence: A Modern Approach By Stuart Russel, Peter Norvig, Pearson, 2nd Edition, (2014)
3. Artificial Intelligence And Intelligent System By N. P. Padhy, Oxford University Press, 1st Edition, (2005)

DIGITAL MARKETING
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards)
SEMESTER –I

Subject Code	**20MCA153**	**CIE Marks**	**50**
Number of Lecture Hours/Week	**03**	**SEE Marks**	**50**
Total Number of Lecture Hours	**40**	**Exam Hours**	**03**

CREDITS – 03

Course Outcomes:
CO1: Demonstrate the key concepts related to e-marketing for the given case.
CO2: Demonstrate the use of different electronic media for designing marketing activities.
CO3: Analyze the role of search engine in improving digital marketing
CO4: Analyze role of social media marketing for the given problem
CO5: Analyze technical solutions to overcome social media threats

Module I	**Teaching Hours**
Introduction to Digital Marketing Evolution of Digital Marketing from traditional to modern era, Role of Internet; Current trends, Info-graphics, implications for business & society; Emergence of digital marketing as a tool; Drivers of the new marketing environment; Digital marketing strategy; P.O.E.M. framework, Digital landscape, Digital marketing plan, Digital marketing models.	**10 Hours**
Module II	
Internet Marketing and Digital Marketing Mix – Internet Marketing, opportunities and challenges; Digital marketing framework; Digital Marketing mix, Impact of digital channels on IMC; Search Engine Advertising: - Pay for Search Advertisements, Ad Placement, Ad Ranks,	**10 Hours**
Module III	
Social Media Marketing – Role of Influencer Marketing, Tools & Plan– Introduction to social media platforms, penetration & characteristics; Building a successful social media marketing strategy Facebook Marketing: - Business through Facebook Marketing, Creating Advertising Campaigns, Adverts, Facebook Marketing Tools Linkedin Marketing: - Introduction and Importance of Linkedin Marketing, Framing Linkedin Strategy, Lead Generation through Linkedin, Content Strategy, Analytics and Targeting Twitter Marketing: - Introduction to Twitter Marketing, how twitter Marketing is different than other forms of digital marketing, framing content strategy, Twitter Advertising Campaigns Instagram and Snapchat: - Digital Marketing Strategies through Instagram and Snapchat Mobile Marketing: - Mobile Advertising, Forms of Mobile Marketing, Features, Mobile Campaign Development, Mobile Advertising Analytics Introduction to social media metrics	**10 Hours**

Module IV	
Introduction to SEO, SEM, Web Analytics, Mobile Marketing, Trends in Digital Advertising– - Introduction and need for SEO, How to use internet & search engines; search engine and its working pattern, On-page and off-page optimization, SEO Tactics - Introduction to SEM Web Analytics: - Google Analytics & Google AdWords; data collection for web analytics, multichannel attribution, Universal analytics, Tracking code Trends in digital advertising	**10 Hours**

Module V	
Social Media Channels: Introduction, Key terms and concepts, Traditional media vs Social media. Social media channels: Social networking. Content creation, Bookmarking & aggregating and Location & social media. Tracking social media campaigns. Social media marketing: Rules of engagement. Advantages and challenges. Social Media Strategy: Introduction, Key terms and concepts. Using social media to solve business challenges. Step-by-step guide to creating a social media strategy. Documents and processes. Dealing with opportunities and threats. Step-by-step guide for recovering from an online brand attack. Social media risks and challenges	**10 Hours**

Course Outcomes

Question paper pattern:

The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Textbooks

1. Seema Gupta “Digital Marketing” Mc-Graw Hill 1st Edition – 2017

References

1. Ian Dodson “The Art of Digital Marketing” Wiley Latest Edition
2. Puneet Singh Bhatia “Fundamentals of Digital Marketing” Pearson 1st Edition – 2017
3. Prof. Nitin C. Kamat, Mr.Chinmay Nitin Kamat Digital Social Media Marketing Himalaya Publishing House Pvt. Ltd. Latest Edition

ENTERPRISE RESOURCE PLANNING
[As per Choice Based Credit System (CBCS) scheme]
(Effective from the academic year 2020 -2021 onwards)
SEMESTER –I

Subject Code	**20MCA154**	**CIE Marks**	**50**
Number of Lecture Hours/Week	**03**	**SEE Marks**	**50**
Total Number of Lecture Hours	**40**	**Exam Hours**	**03**

CREDITS – 03

Course Outcomes: At the end of the course students will be able to
CO1: Analyse the essentials of supply chain management in ERP.
CO2: Analyse the implementation of ERP in the context of business of the different organization.
CO3: Analyse and apply ERP for different business modules for the given problem.
CO4: Analyse the given case study of ERP marketing.
CO5: Analyse the design of ERP with future E-commerce and internet

Module I	**Teaching Hours**
Introduction to Supply Chain Management: Supply chain – objectives – importance – decision phases – process view – competitive and supply chain strategies – achieving strategic fit – supply chain drivers – obstacles – framework – facilities – inventory – transportation – information – sourcing – pricing.	**10 Hours**
Module II	
ERP Implementation: Implementation of Life Cycle, Implementation Methodology, Hidden Costs, Organizing Implementation, Vendors, Consultants and Users, Contracts, Project Management and Monitoring	**10 Hours**
Module III	
Business Modules: Business Modules in an ERP Package, Finance, Manufacturing, Human Resource, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution	**10 Hours**
Module IV	
ERP Market: ERP Market Place, SAP AG, People Soft, Baan Company, JD Edwards World Solutions Company, Oracle Corporation, QAD, System Software Associates.	**10 Hours**
Module V	
ERP–Present And Future: Turbo Charge the ERP System, EIA, ERP and E–Commerce, ERP and Internet, Future Directions in ERP.	**10 Hours**

Question paper pattern:
The question paper will have ten questions.
There will be 2 questions from each module.
Each question will have questions covering all the topics under a module.
The students will have to answer 5 full questions, selecting one full question from each module.

Textbooks

1. Sunil Chopra and Peter Meindl, Supply Chain Management – Strategy, Planning and Operation, Pearson/PHI, 3rd Edition, 2007
2. Alexis Leon, "ERP Demystified", Tata McGraw Hill, 1999.
3. Joseph A. Brady, Ellen F. Monk, Bret J. Wangner, "Concepts in Enterprise Resource Planning", Thomson Learning, 2001.

References

1.Vinod Kumar Garg and N.K .Venkata Krishnan, "Enterprise Resource Planning concepts and Planning", Prentice Hall, 1998.
2. Jose Antonio Fernandz, " The SAP R /3 Hand book", Tata McGraw Hill