

**120CAT02 – PYTHON PROGRAMMING**

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures -- lists, tuples, dictionaries.
- To do input/output with files in Python.

**UNIT - I DATA, EXPRESSIONS, STATEMENTS**

9

Python interpreter and interactive mode: values and types: int, float, boolean, string, and list: variables, expressions, statements, tuple assignment, precedence of operators, comments: modules and functions, function definition and use, flow of execution, parameters and arguments: Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

**UNIT - II CONTROL FLOW, FUNCTIONS**

9

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass: Fruitful functions: return values, parameters, local and global scope, function composition, recursion: Strings: string slices, immutability, string functions and methods, string module: Lists as arrays, Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.

**UNIT - III LISTS, TUPLES, DICTIONARIES**

9

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters: Tuples: tuple assignment, tuple as return value: Dictionaries: operations and methods: advanced list processing - list comprehension: Illustrative programs: selection sort, insertion sort, merge sort, histogram.

**UNIT - IV FILES, MODULES, PACKAGES**

9

Files and exception: text files, reading and writing files, format operator: command line arguments, errors and exceptions, handling exceptions, modules, packages: Illustrative programs: word count, copy file.

**UNIT - V OOC AND DB INTEGRATION IN PYTHON**

9

Python Basics - Introduction to OOC – Classes and Instances – Static and Class Methods – Composition – Inheritance – Built-in Functions – Integrated Web Applications in Python – Python and MySQL, Database Integration: Connect Database – Create and Insert Operations – Parameter Passing – Retrieving data from Database, Case Study on SciPy, Django, Open CV.

**Total No. of Hours: 45**



## Course Outcomes:

- CO1. Develop algorithmic solutions to simple computational problems
- CO2. Read, write, execute by hand simple Python programs.
- CO3. Structure simple Python programs for solving problems.
- CO4. Represent compound data using Python lists, tuples, dictionaries.
- CO5. Read and write data from/to files in Python Programs.

## REFERENCES

1. Fabrizio Romano, "Learn Python Programming", Second Edition, Paktr Publication, 2018
2. Ashok Namdev Kamthane, Amit Ashok Kamthane, "Python programming", McGraw Hill Publication, 2018
3. Brian Draper, "Python Programming -A Complete Guide for Beginners to Master and Become an Expert in Python Programming Language", CreateSpace Independent Publishing Platform, 2016
4. John M. Stewart, "Python for Scientists", Cambridge University Press, 2015.
5. Mitch Garnaat, "Python and AWS Cookbook", First Edition, O'Reilly Media, Inc., 2012.
6. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016
7. Guido van Rossum and Fred L. Drake Jr. —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.



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## 120CAP06 – PYTHON PROGRAMMING LAB

### Course Objectives

- To Understand fundamental statement of python programming
- To enable knowledge of Dictionaries and tuples
- Practice of an Exception Handling
- Ability to gain knowledge on Inheritance
- To Deploy web application with MySQL Database

### LIST OF EXPERIMENTS

1. Write a python program to implement a module to find distance between two points
2. Develop a user defined function to exchange the value of two variables.
3. Write a python program to implement any five string functions.
4. Python Program to develop a fruitful function.
5. Implement a python program with tuples
6. Write a python program to use Dictionaries with appropriate data.
7. Implement file concept with various operation
8. Practice Exception handling in python
9. Design and develop a python program using Inheritance.
10. Integrate Web Application in Python Using MySQL Database.

**Total No. of Periods: 45**

### Course Outcome

- CO1. Getting Practice with decision and branching statement
- CO2. Knowledge about dictionaries and tuples
- CO3. Create an exception handling application with inheritance
- CO4. Able to develop a web application with MySQL database

  
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## 120CAE07 - BUSINESS PROCESSES

### Course Objectives

- An organization must carefully analyze and document their business processes
- Continuously assess the efficiency and effectiveness of these processes to minimize cost and maximize value creation.
- Cognize the interactions between human behavior and process design.
- Managing Change in the Global Environment-BPR
- Organizational Frame Work and Implementation of business processes

### UNIT 1: ORGANIZATIONAL STRUCTURE 9

Types of Business Organizations-Organizational Structures-Definition-Complexity-Formulization-Size-Technology-Culture-Forms and Outcomes-Explanations of Structures-IT Industry and Organizational Structures

### UNIT 2: ORGANIZATIONAL OUTCOMES 9

Organizational Power and Power Outcomes-Leadership and Decision Making-Communication and Organizational Change-Organizational Environments and Effects-Inter and Intra organizational Relationships-Organizational Effectiveness

### UNIT 3: BUSINESS PROCESS RE-ENGINEERING 9

Introduction to Business Process Re-engineering (BPR)-Meaning-Types-Process-Impetorative for Survival-Strategic Approach-Implementing Business Process Re-engineering-Methodology and Steps-Indian Scenario of Implementing BPR

### UNIT 4: BPR AND IT INDUSTRY 9

BPR and Information Technology Process-People View and Perspectives-Empowering People through IT-Managing Change in the Global Environment-BPR Rediscovering Indian Paradigm-Need of Reengineering

### UNIT 5: E-BUSINESS PROCESS 9

E-Business-Introduction-E-business vs. E-commerce-Execution of E-business-Trends-Design for Execution-Construction-Types-Organizational Frame Work and Implementation-E-business Application Areas(CRM,ERP,SCM and Selling)-E-business and India

**Total No. of Periods: 45**


  
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## Course Outcomes:

- CO1. Develop new or improved innovative business processes from gap analysis through process design in support of a company's strategic objectives in a socially responsible manner.
- CO2. Analyze the key business processes that drive the value chain of an organization throughout the entire product life cycle.
- CO3. Evaluate current global business issues and their impact on various enterprises.
- CO4. BPR and Information Technology Process-People View and Perspectives
- CO5. E-business Application in the areas of CRM,ERP,SCM and Selling

## REFERENCES:

1. Richard H.Hall, "Organizations-Structures, Processes and Outcomes", Pearson Education, 2015
2. M.S.Jayaraman et. Al, "Business Process Reengineering", Tata Mc Graw Hill Publications, 2015
3. Ravi Kalakota and Marcia Robinson, "E-Business: Roadmap for Success: Pearson Education, 2016
4. Gareth Jones, "Organizational Theory, Design and Change", Pearson Education, 4th Edition, 2017
5. Dave Chaffey, "E-business and E-Commerce" Pearson Education, 2nd Edition, 2016



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# 220CAT02 OBJECT ORIENTED PROGRAMMING USING JAVA

## Course Objectives

- Basic concepts of Java Fundamental
- Practice an Exception and Multithreading
- Provide a Knowledge about AWT
- To apply networking and SQL Packages
- Understand the Collection framework.

## UNIT - I JAVA FUNDAMENTALS

9

Java Features – Java Platform – Java Fundamental – Expression – Operators – Control Structures – Classes and Object – Inheritance – Polymorphism – Abstract class – Interface – Packages – Inner Classes.

## UNIT - II EXCEPTION AND MULTITHREADING

9

Exception Handling Fundamentals – Exception Types – Java Built in Exception – Creating Your Own Exception Subclasses – Chained Exceptions – The Java Thread Model – Thread Priorities – Creating Thread: Implementing Runnable interface - Synchronization – Interthread Communication- Using a Factory Method to create and start a thread.

## UNIT - III AWT & EVENT HANDLING

9

AWT Classes-Windows Fundamentals-Working with Frame Windows-Working with Font-AWT Control Fundamentals-AWT Components-Understanding Layout Managers-Menu bars and Menus-Event Handling Mechanisms-Delegation Event Model-Event classes-Key Event class-Event Listener Interfaces.

## UNIT - IV NETWORKING AND SQL PACAKAGES

9

Networking Basics-Networking Classes and Interface-InetAddress-Inet4 and Inet6 Address-TCP/IP Client Socket-URL Connections-Cookies-TCP/IP Server Socket-Java Database Connectivity-Introduction JDBC Drivers-JDBC connectivity with MySQL/Oracle-Prepared Statement & Result Set.

## UNIT - V COLLECTION FRAMEWORK

9

Collection Overview – The Collection Interface: List Interface-Set Interface –Sorted Set Interface – NavigableSet Interface – Queue and Deque Interface – The Collection Classes – ArrayList Class – LinkedList Class –HashSet Class- LinkedHashSet Class – TreeSet Class – The PriorityQueue Class – The ArrayDeque Class – The EnumSet Class- Accessing a Class via an Iterator

## Course Outcomes :

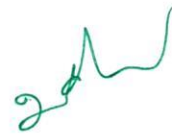
- CO1. To apply the fundamental concept of JAVA.
- CO2. Implement Exception Handling and Multithreading
- CO3. Design an application using AWT.
- CO4. Gain Knowledge about Networking and packages
- CO5. Deploy Collection framework.

Total No. of Periods: 45

  
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## REFERENCES

1. Herbert Schildt. The Java Complete Reference. 11<sup>th</sup> Edition. Tata McGraw Hill.,2018.
2. Mitsunori Ogihara. "Fundamentals of Java Programming", Springer Publication, 2018.
3. E. Balaguruswamy. "Programming with JAVA", 6<sup>th</sup> Edition. Tata McGraw Hill Publication, 2019.
4. Bart Baesens, Aimee Backiel, Seppe vanden Broucke. " Beginning Java Programming: The Object -Oriented Approach". Wiley Publication, 2015.
5. Wu Thomas. "Introduction to Object-Oriented Programming with Java", McGraw Hill Education, 2005



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## 220CAT03 CLOUD COMPUTING

### Course Objectives

- To Understand the cloud architecture and model
- Learn about various services involved in cloud.
- Provide a knowledge about virtualization technology.
- Understand Cloud Infrastructure and mobility.
- Knowledge about security and standards in the cloud.

### UNIT - I CLOUD COMPUTING FUNDAMENTALS

9

Cloud Computing definition, Types of cloud, Cloud services: Benefits and challenges of cloud computing, Evolution of Cloud Computing, Applications cloud computing, Business models around Cloud – Major Players in Cloud Computing - Issues in Cloud - Eucalyptus - Nimbus - Open Nebula, CloudSim.

### UNIT - II CLUSTER – GRID COMPUTING AND CLOUD MODEL

9

Cluster Computing, Grid Computing, Grid Computing Versus Cloud Computing, Key Characteristics of Cloud Computing, Cloud Models: Benefits of Cloud Models, Public Cloud, Private Cloud, Hybrid Cloud, Community Cloud, Shared Private Cloud, Dedicated Private Cloud, and Dynamic Private Cloud.

### UNIT- III CLOUD SERVICES AND FILE SYSTEM

9

Types of Cloud services: Software as a Service - Platform as a Service – Infrastructure as a Service - Database as a Service- Monitoring as a Service – Communication as services, Service providers- Google App Engine, Amazon EC2, Microsoft Azure, Sales force.

### UNIT - IV VIRTUALIZATION

9

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation, Introduction to MapReduce, GFS, HDFS, Hadoop Framework.

### UNIT - V SECURITY IN CLOUD

9

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

### Course Outcomes

- CO1. To gain the knowledge of cloud architecture and model.
- CO2. Idea about various services involved in cloud
- CO3. Gain the knowledge about virtualization technology
- CO4. Ability to deploy cloud infrastructure and mobility.
- CO5. Develop security and standards in the cloud.

Total No. of Periods: 45

  
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1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud Computing A Practical Approach" McGraw-Hill Publication , 2009.
2. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
3. John W.Rittinghouse and James F.Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
4. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.
5. Kumar Saurabh, " Cloud Computing – insights into New -Era Infrastructure", Wiley India,2011.
6. Ronald L. Krutz, Russell Dean Vines, "Cloud Security – A comprehensive Guide to Secure Cloud Computing", Wiley – India, 2010.



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## 220CAE05 - DATA MINING AND DATA WAREHOUSING

### Course Objectives :

- To expose the concepts of Data warehousing Architecture and Implementation.
- To learn the association rule mining for handling large data.
- To understand the concept of classification for the retrieval purposes.
- To identify Business applications and Trends of Data mining.

### UNIT – I INTRODUCTION

9

Relation to Statistics. Databases – Data Mining Functionalities – Steps in Data mining Process – Architecture of a Typical Data Mining Systems – Classification of Data Mining Systems – Overview of Data mining Techniques.

### UNIT – II DATA PREPROCESSING

9

Data Preprocessing – Data Cleaning, Integration, Transformation, Reduction, Discretization  
Concept Hierarchies – Concept Description: Data Generalization and Summarization based  
Characterization – Mining Association Rules: Apriori Algorithm, Partition Algorithm and FP-  
Tree Growth Algorithm.

### UNIT – III CLASSIFICATION AND CLUSTERING

9

Classification and Prediction: Issues Regarding Classification and Prediction – Classification  
by Decision Tree Induction – Bayesian Classification – Other Classification Methods: Genetic  
Algorithms, Rough Set Theory and Fuzzy Set Approach - Prediction – Cluster Analysis: Types  
of Data in Cluster Analysis – Categorization of Major Clustering Methods: Partitioning  
Methods: K- Means and K- Medoids Methods – Hierarchical Methods: BIRCH, ROCK and  
CHAMELON.

### UNIT – IV DATA WAREHOUSING

9

Data Warehousing Components – Multi Dimensional Data Model – Data Warehouse  
Architecture – Data Warehouse Implementation – Mapping the Data Warehouse to  
Multiprocessor Architecture – OLAP – Need – OLAP Operations – Categorization of OLAP  
Tools.

### UNIT – V APPLICATIONS

9

Applications of Data Mining – Social Impacts of Data Mining – Tools – An Introduction to  
WEKA – DB2 – MOA – DBMiner - Python Libraries – Case Studies – Mining WWW –  
Mining Text Databases – Mining Spatial Databases.

**Total No. of Periods: 45**

### Course outcomes :

- CO1. Preprocess the data for mining applications
- CO2. Apply data mining techniques and methods to large data sets
- CO3. Apply the association rules for mining the data
- CO4. Use data mining tools.
- CO5. Compare and contrast various classifiers

  
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## REFERENCES

1. Parteek Bhatia, "Data Mining and Data Warehousing Principles and Practical Techniques", Cambridge Publication, 2019.
2. Jiawei Han, Micheline Kamber, "Data Mining: Concepts and Techniques", Morgan Kaufmann Publishers, 2002, 2<sup>nd</sup> Edition.
3. Alex Berson, Stephen J. Smith, "Data Warehousing, Data Mining, & OLAP", Tata McGraw-Hill, Edition 2011.
4. Dunham Margaret H., "Data Mining : Introductory and Advanced Topics", Pearson Education, Inc., 2012.
5. Sean Kelly, "Data Warehousing in Action", John Wiley & Sons Inc., 2007.
6. David Hand, Heikki Mannila, Padharic Symth, "Principles of Data Mining", PHI, 2009.
7. Arun K. Pujari, "Data Mining Techniques", University Press, 2013, 3rd Edition.



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## 220CAE06 - DIGITAL MARKETING

### Course Objectives

- Know the important and growing role of digital marketing plays in both consumer and organizational target markets.
- Discussing current issues in digital marketing and customer service strategies.
- It focuses on effective CRM: key service delivery elements; and service recovery strategies that lead to the successful implementation of a customer focus.
- The Course aims at developing understating about the concepts, strategies, various functions, operations, activities and problems of Retail business decisions.
- To enhance student's capability to identify and analyze business environment and its opportunities and limitations, Digital copy rights and Electronics commerce and Multimedia and digital video

### UNIT – I INTRODUCTION

9

Going Digital – The changing face of advertising – The Technology behind digital marketing – Strategic thinking: Why you need a digital marketing strategy – Defining your digital marketing strategy – Understanding the digital marketing strategy – Understanding the digital consumer – Mind your Ps – Your window to the digital world – Mobile Marketing.

### UNIT – II SEARCH ENGINE MARKETING

9

The search for success: Search: the online marketer's holy grail – About the engines – Optimizing your site for the engines – Advertising on the search engines – Black Hat, the darker side of search – Bringing in the pros – Universal search –more opportunities to rank – Website intelligence and return on investment.

### UNIT – III MARKETING TRENDS

9

E-mail marketing: The new direct mail – what exactly is e-mail marketing – Planning your campaign – Dos and Don'ts of an e-mail marketing campaign – Measuring your success – Still a vital component of digital marketing – Social media and online consumer engagement: join the conversation – What is social media – The different forms of social media – The rules of engagement – Adding social media to your own site – Online PR and reputation management.

### UNIT – IV AFFILIATE AND MARKETING ON INTERNET

9

Affiliate marketing and strategic partnerships: Recognizing opportunities for strategic partnership – What is affiliate marketing – The click that really counts – What advertisers should do – Digital media creative: Creative application of digital media – using an agency Digital creative: what works and what doesn't – The age of new information-Based marketing - – Advertising on internet – Charting the on-line Marketing Process.

### UNIT – V CONSUMER SEARCH AND RESOURCE DISCOVERY

9

Search and resource discovery paradigms – Information search and retrieval – Information filtering – On-demand education and digital copy rights: Computer based education and training – Digital copy rights and Electronics commerce – Multimedia and digital video: Key multimedia concepts – Desk top video processing – Desk top video conferencing.



Total No. of Periods: 45

## Course Outcomes:

- CO1. Students would be familiar with digital business and the opportunities and obstacles.
- CO2. Acquire clarity in digital management practices and Advertising on the search engines.
- CO3. Students would be familiar with use of technology in retailing business.
- CO4. Analyze and critically evaluate by adding social media and the practice of digital marketing.
- CO5. Identify and analyses the different components of Computer based education and training in digital marketing.

## REFERENCES

1. Dawn McGruer, "Dynamic Digital Marketing", Wiley Publication, 2020.
2. Damian Ryan , Understanding Digital Marketing : Marketing Strategies for Engaging the Digital Generation. Kogan Page publisher, 3rd Edition, 2014.
3. Ravi Kalakota and Andrew B.Whinston. 'Frontiers of Electronic Commerce'. Pearson Edu Inc., 9<sup>th</sup> Ed, 2009.
4. Deepak Bansal. A Complete Guide To Search Engine Optimization, B.R Publishing Corporation. 1st Edition, 2009.
5. Grienstein and Feinman- 'E-commerce –Security, Risk Management and Control'. McGraw-Hill Inc.,US, Ed 2. 2009.
6. Jonah Berger, Contagious Why Things Catch On. Simon & Schuster, 2013.
7. E-Marketing: The essential guide to marketing in a digital world, Rob Stokes. Quirk eMarketing (Pty) Ltd. 5th Ed. 2013.

  
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## 220CAL01 - JAVA PROGRAMMING LAB

### Course Objectives

- Understand the fundamental concepts of OOPs.
- Practice Interface, Abstract and Multithreading
- Knowledge in Window Based applications
- Understand Database Connectivity and Network Classes
- Knowledge about an application built using API.

### LIST OF EXPERIMENTS

1. Practice Control Structure through simple program.
2. Program to implement interface and packages
3. Program to implement caught and uncaught exception
4. Program to implement Multithreading concept
5. Develop Window Based Application using Menu and Menu Bar.
6. Design an application based on event listener.
7. Develop a simple java database connectivity program.
8. Implement Network Classes and sockets.
9. Write a simple java program to implement Set and sortSet Interface
10. Design and Develop a Chat Application using Java API

**Total No. of Periods: 45**

### Course Outcomes

- CO1.** Able to Know the fundamental concepts of OOPs.  
**CO2.** To obtain the knowledge about Interface, Abstract and Multithreading Concepts.  
**CO3.** Design and Develop a window based applications.  
**CO4.** Deploy an application with database.  
**CO5.** To Develop and Deploy an application with API.

  
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## 220CAL05 DATA MINING AND DATA WAREHOUSING LAB

### Course Objectives :

- Practical exposure on implementation of well-known data mining tasks.
- Exposure to real life data sets for analysis and prediction.
- Practice data mining project for a given practical domain.

### LIST OF EXPERIMENTS

1. Performing data pre-processing tasks for data mining in WEKA.
2. Implement the algorithm to generate a decision tree and convert it into "if –then – else rules"
3. Implement FP-Growth and Apriori algorithm.
4. Implement association rule mining.
5. Implement clustering algorithms
6. Implement Naïve Bayes classification.
7. Implement K- nearest neighbor classification
8. Implement Linear Regression
9. Implement defining subject area, design of fact dimension table.
10. Implement OLAP, roll up, drill down, slice and dice operation.

Total No. of Periods: 45

### Course outcomes :

- CO1. The data mining process and important issues around data cleaning, pre-processing and integration.
- CO2. Practice the principle algorithms and techniques used in data mining, such as clustering, association mining, classification and prediction.



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## 318CAT01 – JAVA PROGRAMMING

### Objectives :

- To provide an overview of working principles of internet, web related functionalities
- To understand and apply the fundamentals core java, packages, database connectivity for computing
- To enhance the knowledge to server side programming.
- To Understand the OOPS concept & how to apply in programming.

### UNIT - I JAVA FUNDAMENTALS AND EXCEPTIONS

9

Class fundamentals-Declaring Objects-Overloading methods-Inheritance basic-Multilevel Hierarchy-Dynamic method dispatch-Packages-Packages and Member access-Interfaces-Default Interface Methods-Static method Interface-Exception handling-Exception Types-Multiple catch clauses-Java Built-in Exceptions.

### UNIT - II I/O & MULTITHREADING CONCEPTS

9

I/O Basics-Reading Console Input-Writing Console Output-I/O Classes and Interfaces-The Byte Streams-Primitive type Wrappers-Process system -Runtime Memory management-Thread-Thread group and Runnable-Runnable Interface-The Java Thread Model-Main Thread-Creating a Thread.

### UNIT - III AWT & EVENT HANDLING

9

AWT Classes-Windows Fundamentals-Working with Frame Windows-Working with Font-AWT Control Fundamentals-AWT Components-Understanding Layout Managers-Menu Bars and Menus-Event Handling Mechanisms-Delegation Event Model-Event classes-Key Event class-Event Listener Interfaces.

### UNIT - IV NETWORKING AND SQL PACAKAGES

9

Networking Basics-Networking Classes and Interface-InetAddress-Inet4 and Inet6 Address-TCP/IP Client Socket -URL Connections-Cookies-TCP/IP Server Socket-Java Database Connectivity-Introduction JDBC Drivers-JDBC connectivity with MySQL/Oracle-Prepared Statement & Result Set.

### UNIT - V JAVA SERVLETS

9

The Life Cycle of a Servlet-Servlet Development Options-A Simple Servlet-Servlet API- Servlet Packages-Reading Servlet Parameters-Handling HTTP GET Request-Handling HTTP GET Request -Using Cookies-Session Tracking-Introduction Swing-Swing Is Built On AWT.

**Total No. of Periods: 45**

### Course Outcomes :

- Implement Java programs
- Make use of hierarchy of Java classes to provide a solution to a given set of requirements found in the Java API
- Use the Java Swing.
- Design and implement server side programs using Servlets.

  
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1. Amritendu De, "Spring 4 and Hibernate 4: Agile Java Design and Development", McGraw-Hill Education, 2015
2. Herbert Schildt, The Complete Reference – Java 2, 11th Edition, Tata McGraw Hill, 2019.
3. Joyce Farrell, "Java Programming", Cengage Learning, Seventh Edition,
4. John Dean, Raymond Dean, "Introduction to Programming with JAVA – A Problem Solving Approach", Tata Mc Graw Hill, 2014.
6. Mahesh P. Matha, "Core Java A Comprehensive Study", Prentice Hall of India, 2011



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## 318CAT03 - C# & DOT NET PROGRAMMING

### Objectives :

- Understand the foundations of CLR execution and learn the technologies of the .NET framework.
- Know the object oriented aspects of C#.
- Be aware of application development in .NET.

### UNIT - I INTRODUCTION TO C#

9

Introducing C#: Evolution, characteristics and applications, Understanding .NET, Overview of C#. Literals, Variables, Data Types, Operators, Expressions.

### UNIT - II DECISION MAKING STATEMENT

9

Decision Making and Branching, Decision Making and Looping, Methods, Arrays: One dimensional, Two dimensional and variable array size, Strings: String Manipulation and Regular Expression, Structures: Structures, structs with method, Nested structs Enumerations.

### UNIT - III OBJECT ORIENTED ASPECTS OF C#

9

Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Managing Console I/O Operations, Managing Errors and Exceptions, Multithreading.

### UNIT - IV APPLICATION DEVELOPMENT ON .NET

9

Building Windows Applications, Managing Data with ADO.NET: ADO.NET Architecture, Making Connection, viewing data, manipulating data, Calling Stored Procedure, Working with disconnected data

### UNIT - V WEB BASED APPLICATION DEVELOPMENT ON .NET

9

Programming Web Applications with Web Forms, Master pages, Programming Web Services, Case Study - Create and run some sample window applications

**Total No. of Periods 45**

### Course Outcomes :

- Explain how C# fits into the .NET platform and analyze the basic structure of a C# application.
- Design and develop Develop programs using C# on .NET.
- Web based applications on .NET.

### REFERENCES

1. E. Balagurusamy, "Programming in C#", 4th ed., Tata McGraw-Hill, 2011.
2. J. Liberty, "Programming C# 4.0 ", 4th ed., O'Reilly, 2010.
3. Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2012.
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## 318CAP06 – JAVA PROGRAMMING LAB

### Objectives:

- To learn Java and Enterprise Java intensively.
- To understand many advanced technologies of Java such as Multithreading, Streaming, Networking, Generic collections, RMI.
- To learn and use MVC architecture for application development.
- To learn and use web services and advanced frameworks for web application development

### LIST OF EXPERIMENTS

1. Writing Java programs by making use of class, interface, and package.
2. Writing a Java program to **handle Exception**.
3. Construct a Java Application to handle threads.
4. Generate a Code for Reading and writing text files.
5. Design a Socket Programming in Java.
6. Design a Java program to handle Event (Applet/Swing).
7. Writing an RMI application to access a remote method.
8. **Establishing the JDBC Connection in Java to store few records.**
9. **Interfacing Java Servlet Program with JDBC Connection.**

**Total No. of Periods: 45**

### Course Outcomes:

- Become an intermediate or advanced developer of Java.
- Write programs on advanced technologies of Java such as Streaming Generic collections.
- Implement Server Side Programming and dynamic software components.
- Design and Develop GUI based components.
- Design and implementation of interactive web sites.
- Create MVC applications using advanced frameworks.



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## 318CAE03 - ADVANCED DATABASE MANAGEMENT SYSTEMS

### Objectives:

- Learn new ways to query and model data.
- Become familiar with the expanding role of database technology.
- Design and implement advanced queries using Structured Query Language
- To the design and implement Distributed Databases.

### UNIT - I PARALLEL DATABASE

9

Database System Architectures: Centralized and Client-Server Architectures – Server System Architectures – Parallel Systems- Distributed Systems – Parallel Databases: I/O Parallelism – Inter and Intra Query Parallelism – Inter and Intra operation Parallelism – Design of Parallel Systems

### UNIT - II DISTRIBUTED DATABASES AND OBJECT RELATIONAL DATABASES

9

Distributed Database Concepts - Distributed Data Storage – Distributed Transactions – Concurrency Control – Distributed Query Processing -Concepts for Object Databases: Object Identity – Object structure – Type Constructors – Encapsulation of Operations – Methods – Persistence – Type and Class Hierarchies – Inheritance – Complex Objects – Object Database Standards.

### UNIT - III INTELLIGENT DATABASES

9

Intelligent database Active – Knowledge Representation – Traditional Databases Vs IDBs – Traditional DB – Database concepts and triggers - Temporal Database - Spatial Databases - Deductive databases – Introduction to Database security – Challenges of database security.

### UNIT - IV DATA MODELS

9

Internet databases – Digital libraries – Mobile Transaction Models - - Information Retrieval-Data Warehousing architecture - Data Mining - Text Mining – Information retrieval-Indexing of Documents –Measuring Retrieval Effectiveness.

### UNIT - V XML DATABASE

9

XML Databases: XML-Related Technologies-XML Schema- XML Query Languages- Storing XML in Databases-XML and SQL- Native XML Databases- Web Databases.

**Total No. of Periods: 45**

### Course Outcomes:

- To understand the basic concepts regarding database, know about query processing and techniques involved in query optimization and understand the concepts of database transaction and related database facilities including concurrency control, backup and recovery.
- To understand the introductory concepts of some advanced topics in data management like distributed databases, data warehousing, deductive databases and be aware of some advanced databases like partial multimedia and mobile databases.
- To understand the difference between DBMS and advanced DBMS and use of advanced database concepts and become proficient in creating database applications.

## 318CAE07 - HUMAN RESOURCE MANAGEMENT

### Objectives :

- The objective of the course is to equip students with knowledge, skill and competencies to manage people along with capital, material, information and knowledge asset in the organization
- In addition to providing a basic legal and conceptual framework for managers, the course will introduce the manager to practices and techniques for evaluating performance, structuring teams, coaching and mentoring people, and performing the wide range of other people related duties of a manager in today's increasingly complex workplace.
- The course will provide students logic and rationale to make fundamental choice about their own assumption and belief in dealing with people.

### UNIT I INTRODUCTION TO HRM

9

Meaning, Scope, Definition and Objectives of HRM –Importance of human factor-Challenges-Inclusive growth and Affirmative action- Functions of HRM and Models of HRM - Activities and Challenges of HRM - Role of HR Manager - HRM as Linked to Environmental changes.

### UNIT II HUMAN RESOURCE PLANNING & RECRUITMENT, SELECTION

9

HR Planning process - Job analysis, Job description & Job specification - Job Rotation, Job enlargement & Job enrichment - Job evaluation – RECRUITMENT: - Recruitment -Process & Methods of Recruitment, SELECTION: - Selection process - type of tests & types of interviews - Designing and conducting the effective interview - Induction and Placement.

### UNIT III WAGE AND SALARY ADMINISTRATION & APPRAISING AND MANAGING PERFORMANCE

9

Principles and techniques of wage fixation - Incentive schemes and plans, Appraisal process, methods, and potential problems in performance evaluations, Traditional Modern methods - Potential Appraisal - Methods to improve performance - Career Planning and Development.

### UNIT IV TRAINING AND EXECUTIVE DEVELOPMENT

9

Nature of Training – Methods of Training – Training Need Analysis- Training Design – Training Evaluation-Management Development –Succession Planning-Coaching.

### UNIT V RECENT TRENDS IN HR

9

HR outsourcing - Managing Attrition and Retention - Collective Bargaining - Grievance Management - Quality of work life – HR Accounting and Audit – Whistle Blowing – Employee poaching - HRIS- Diversity of Workforce Programs.

**Total No. of Periods: 45**

### Course Outcomes:

- Explain the importance of human resources and their effective management in organizations.
- Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs.
- Analyse the key issues related to administering the human elements such as motivation, compensation, appraisal, career planning, diversity, ethics, and training.

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## LAB ELECTIVE – III

### 318CAL01 C# & DOT NET PROGRAMMING LAB

#### Objectives :

- Design, document, code and test small C# console and GUI applications.
- Design, document, code and unit test class libraries.
- Use an object browser and .NET documentation to examine C# and the .NET framework namespace contents.

#### LIST OF EXPERIMENTS

1. Programs using Branching, Looping.
2. Programs using Methods, Arrays, Strings.
3. Programs using Inheritance.
4. Programs using Delegates, Events, Errors and Exceptions.
5. Program to Build a Calculator Widget.
6. Development of Window Application using ADO.net
7. Design a web site with master page using ASP . Net.
8. Design a web page using web services.
9. Develop a window based applications and generate appropriate reports.
10. Development of Web Applications using Ajax tool kit.

Total No. of Periods: 45

#### Course Outcomes :

- The students able to create simple web applications and window applications.
- To learn fundamentals of window application programming and create a window application.
- To develop web applications and learn advanced features of C#.

  
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## 418CAT01 - WEB PROGRAMMING

### Objectives :

- To understand the core PHP concepts of.
- To understand the types of PHP array and functions
- To learn the concepts of web applications and MVC architecture.

### UNIT - I INTRODUCTION 9

Getting PHP - Creating a First PHP Page - Printing Some Text - Working with Variables - Creating Constants - Understanding PHP's Internal Data types - Operators and Flow Control - String: String Functions - Formatting text Strings.

### UNIT - II ARRAYS AND FUNCTIONS 9

Arrays: Handling Arrays with Loops - PHP Array Functions-Converting String and Arrays - Sorting Arrays - Handling Multidimensional Arrays - Moving through Arrays - Splitting and Merging Arrays - Other Array functions - Functions: Creating function in PHP - Introduction to Variable Scope in PHP - Nesting Functions.

### UNIT - III WORKING WITH DATABASES AND COOKIES 9

Database Introduction - Creating MYSQL Database - Accessing database in PHP - Updating Databases - Inserting item into a Database - Delete Records. Setting a Cookie - Reading a Cookie - Session - Working with FTP - Downloading Files with FTP - Deleting a File with FTP.

### UNIT - IV FILE HANDLING & OBJECT ORIENTED CONCEPTS 9

Handling Form Controls - Handling Hidden Controls - Image Maps - Handling file Uploads. File Handling: Opening Files - Closing a File - Reading and Writing to a File - Appending to File - Classes and Objects - Constructors and Destructors Inheritance - Overriding Methods - Overloading Methods.

### UNIT - V PHP FRAMEWORKS 9

Frameworks Introduction - Types of Frame works - Codeigniter Framework Installation - Query manipulations: Insert - Update - Retrieve - Delete -File Upload - Import / Export Excel - Laravel Framework view.

**Total No. of Periods: 45**

### Course outcomes :

- Work with session and cookies for real time applications.
- Work with Web application server side code.
- Work with manipulation of Object oriented concepts
- Design and develop applications using advanced frameworks.

  
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## 418CAT02- DATA WAREHOUSING AND DATA MINING

### Objectives :

- To expose the concepts of Data warehousing Architecture and Implementation.
- To learn the association rule mining for handling large data.
- To understand the concept of classification for the retrieval purposes.
- To identify Business applications and Trends of Data mining.

### UNIT – I INTRODUCTION 9

Relation to Statistics, Databases – Data Mining Functionalities – Steps in Data mining Process – Architecture of a Typical Data Mining Systems – Classification of Data Mining Systems – Overview of Data mining Techniques.

### UNIT – II DATA PREPROCESSING AND ASSOCIATION RULES 9

Data Preprocessing – Data Cleaning, Integration, Transformation, Reduction, Discretization  
Concept Hierarchies – Concept Description: Data Generalization and Summarization based  
Characterization – Mining Association Rules: Apriori Algorithm, Partition Algorithm and FP-  
Tree Growth Algorithm.

### UNIT – III PREDICTIVE MODELING 9

Classification and Prediction: Issues Regarding Classification and Prediction – Classification by  
Decision Tree Induction – Bayesian Classification – Other Classification Methods: Genetic  
Algorithms, Rough Set Theory and Fuzzy Set Approach - Prediction – Cluster Analysis: Types  
of Data in Cluster Analysis – Categorization of Major Clustering Methods: Partitioning Methods:  
K- Means and K- Medoids Methods – Hierarchical Methods: BIRCH, ROCK and CHAMELON.

### UNIT – IV DATA WAREHOUSING 9

Data Warehousing Components – Multi Dimensional Data Model – Data Warehouse  
Architecture – Data Warehouse Implementation – Mapping the Data Warehouse to  
Multiprocessor Architecture – OLAP – Need – OLAP Operations – Categorization of OLAP  
Tools.

### UNIT – V APPLICATIONS 9

Applications of Data Mining – Social Impacts of Data Mining – Tools – An Introduction to  
WEKA – DB2 – MOA – DBMiner – Case Studies – Mining WWW – Mining Text Databases –  
Mining Spatial Databases.

Total No. of Periods: 45

### Course outcomes :

- Preprocess the data for mining applications
- Apply data mining techniques and methods to large data sets
- Apply the association rules for mining the data
- Use data mining tools.
- Compare and contrast various classifiers

  
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# 418CAT03 - MOBILE APPLICATION DEVELOPMENT

## Objectives :

- Importance of Mobile Strategies in Business World
- Generate Mobile User Interface Design
- Develop android application
- Understanding of IOS and Windows phone

## UNIT-I INTRODUCTION

9

Introduction to Android- Features of Android – Architecture of Android – Android device in the market – Obtaining the required tools: Eclipse- Android SDK – Android Development tool(ADT) – Creating Android Virtual Devices- Creating your first application- Anatomy of an application

## UNIT-II ACTIVITIES, INTENTS and COMPONENTS

9

Understanding Activities: Applying Style and Themes to Activity- Displaying a Dialog Window- Displaying a Progress Window-Linking Activities Using Intents – Calling Built in Application using Intents- Understanding the component of a screen- Adapting to display orientation- Managing changes to screen orientation.

## UNIT-III VIEWS AND DATA PERSISTENCE

9

Basic Views- Picker Views- List Views – Using Images Views to Display Pictures – Using Menus with Views – Some Analog View: Analog Clock View-Digital Clock View – Web View- Saving and Loading User Preferences – Persisting Data to Files – Creating and Using Databases: insert, delete, update, search database –Building the database with applications.

## UNIT – IV MESSAGING, NETWORKING AND LOCATION BASED SERVICES

9

Sharing data in android-Using a Content provider: Projection-Filtering-Sorting-Creating own content provider- SMS Messaging- Sending E-mail – Networking – Displaying Maps – Getting Location Data – Creating your own Services.

## UNIT – V IOS


9

Getting the Tools - iOS Project: Anatomy of an iOS App. XCode ide - Debugging iOS App – iOS simulator – Debugging Code – Instruments - Objective C Basics – Simple App Development – Building the Derby App in iOS – Other Useful iOS things.

**Total No. of Periods: 45**

## Course Outcomes:

- Knowledge about mobile strategies in business world
- Design Mobile User Interface
- Implement Android Application using Android SDK
- Knowledge about IOS and Windows Phone.

  
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## 418CAP06 – WEB PROGRAMMING LAB

### Objectives :

- To understand the core PHP concepts of.
- To understand the types of PHP array and functions
- To learn the concepts GET / POST of form handling.

### LIST OF EXPERIMENTS

1. Implement
  - a. Array Types
  - b. String function
  - c. Date function
  - d. User Defined function
2. Design a User Registration Form and display the user information in another form (Use GET/POST).
3. Design any simple Web Application using PHP and MYSQL
4. Design a Responsive Web Page using PHP.
5. Set Cookies and Retrieve the same in another page.
6. Practice Session Handling in PHP.
7. Implement File Concept in PHP.
8. PHP code for Login signIn.
9. PHP code for File Upload, PHP code for Import / Export using any Framework.

**Total No. of Periods: 45**

### Course outcomes :

- Can able to work with PDO PHP code
- Can able to work with query manipulations.
- Can able to work with new frameworks like Larvel and CodeIgniter.
- Can able to work with dynamic base applications

  
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## 418CAE08 - PROFESSIONAL COMMUNICATION

### Objectives :

- To facilitate students amplify suitable language skills for academic and professional purposes
- To inculcate and develop strategies to understand and to increase students' efficiency in their academic and general reading
- To strengthen students' vocabulary power
- To familiarize students with different functions of technical and scientific English
- To coach the students in augmenting the technical writing skills like writing letters and reports in formal and business situations
- To strengthen Students' Creative skill

### UNIT – I BASICS OF TECHNICAL COMMUNICATION

9

Technical Communication – features - Distinction between General and Technical communication - Language as a tool of communication - Levels of communication: Interpersonal, Organizational, Mass communication - The flow of Communication: Downward, Upward, Horizontal, Diagonal - Importance of technical communication - Barriers to Communication.

### UNIT – II CONSTITUENTS OF TECHNICAL WRITTEN COMMUNICATION

9

Word formation - Synonyms and Antonyms – Acronyms – Homonyms - Word Power - Select vocabulary of about 500- 1000 New words – Odd man Out – Jumbled Words and Sentences- Creative and Critical Thinking - Requisites of Sentence Construction - Paragraph Development: Techniques and Methods - Inductive, Deductive, Spatial, Linear, Chronological etc; Essay Writing – Narrative – Argumentative - Reading and Interpretation.

### UNIT – III FORMS OF TECHNICAL COMMUNICATION

9

Business Letters: Sales and Credit letters - Letter of Enquiry - Letter of Quotation, Order, Claim and Adjustment Letters - Job application and Resumes - Reports: Types – Significance – Structure - Style & Writing of Reports – Agenda – Minutes of Meeting – Advertisement – Fliers – Brochures – Faxes – Internet Websites – Intranet Websites – Extranet Websites – Blogging.

### UNIT – IV PRESENTATION STRATEGIES

9

Defining Purpose Analyzing Audience & Locale - Organizing Contents - Modes of Delivery: Extemporaneous, Manuscript, Impromptu, Memorization - Kinesics – proxemics – Paralinguistics – Chronemics.

### UNIT – V CAREER SKILLS

9

Transfer of Information: Pie Chart, Bar Chart, Flow Chart - Check List – Recommendation – Instruction - E-mail Writing – Verbal Analogy – HR Questions – Theme Detection – Deriving conclusions from Passages.

**Total No. of Periods: 45**

  
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### Course outcomes :

- The ability to strengthen technical writing and speaking
- The ability to be proactively read, listen, speak and present facts in a persuasive manner in both oral and written medium
- The ability to interact, translate and delegate information.
- The ability to face various levels of competitive examinations to upgrade educational and career options

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## EMPLOYABILITY ENHANCEMENT COURSE –IV

### 418CAL04 – EXECUTIVE COMMUNICATION LAB

#### Objectives :

- To equip students with effective receptive and productive skills in English.
- To help them develop their soft skills and interpersonal skills, which will make the transition from college to workplace smoother and help them excel in their job.
- To enhance the performance of the students at Placement Interviews, Group Discussions and other recruitment exercises.

#### LIST OF EXPERIMENTS

##### 1. Introduction – Soft Skills:

Team Skills: Team Building and Leadership, Evolution of Groups Into Teams, Group Dynamics, Emergence Of Leadership, Intra-Group Dynamics, Inter-Group Dynamics, Conflict Management, Inter Dependency, Assessment of Team-Based Projects.  
Time Management: Goal Setting, Effective Time Management.  
Interpersonal Skills: Negotiations, Listening Skills, Social Skills, Assertive Skills, Cross-Cultural Communications, Organizing functions and Meetings  
Leadership Skills: Concepts of Leadership, Leadership Styles, Insights from Great Leaders.  
Soft skills – video clips

##### 2. Listening Comprehension:

- a) Phonetics
- b) Conversations – video clips

##### 3. Reading comprehension:

##### 4. Presentation skills – video clips

Preparing For Effective Presentations,  
Presentation For Small Groups And Large Groups,  
Marketing And Business Presentations

##### 5. Body language: Importance of Non-Verbal Communication

##### 6. Training in Group Discussion and Personal Interview

Training in Group Discussion (GD),  
Interview Skills,  
Interview FAQ's,  
Mock Interview.

##### 7. Resume / Letter writing/E-Mail Etiquettes

##### 8. Report preparation

##### 9. Grammar: Concord, Error Correction, Editing etc.,

**Total No. of Periods: 45**

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### Course outcomes :

- The ability to strengthen technical writing and speaking
- The ability to be proactively read, listen, speak and present facts in a persuasive manner in both oral and written medium
- The ability to interact, translate and delegate information
- The ability to face various levels of competitive examinations to upgrade educational and career options

### REFERENCE BOOKS

1. Andrea J. Rutherford, "Basic Communication Skills for Technology", 1st Edition, Pearson Education Asia (Singapore) Pvt. Ltd., Bangalore, 2001.
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## 518CAT01 – INTERNET OF THINGS

### Objectives :

- Vision and Introduction to IoT.
- Understand IoT Market perspective.
- Data and Knowledge Management and use of Devices in IoT Technology.
- Understand State of the Art – IoT Architecture.
- Real World IoT Design Constraints, Industrial Automation and Commercial Building Automation in IoT.

### UNIT - I M2M to IoT

9

The vision – Introduction, M2M towards IoT - the Global context, a use case example, differing characteristics.

### UNIT - II M2M to IoT –A MARKET PERSPECTIVE

9

Introduction, some definitions, M2M Value chains, IoT value chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies – **An Architectural Overview** – Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

### UNIT - III M2M and IoT TECHNOLOGY FUNDAMENTALS

9

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

### UNIT - IV IoT ARCHITECTURE –STATE OF THE ART

9

Introduction, state of the art, **Architecture Reference Model** and architecture, IoT references Model – Functional View – Information View – Deployment and operational view.

### UNIT - V IoT REFERENCE ARCHITECTURE

9

**Real – World Design Constraints** – Introduction, Technical Design constraints – Data representation and visualization, interaction and remote control, - IoT Platform : Raspberry Pi Interface - **Commercial Building automation** - Introduction, case study: phase one – commercial building automation today, case study: phase two – commercial building automation in the future.

**Total No. of Periods : 45**

### Course Outcomes :

- Understand the vision of IoT from a global context.
- Determine the Market perspective of IoT.
- Use of Devices, Gateways and Data Management in IoT.
- Building state of the art architecture in IoT.
- Application of IoT in Industrial and Commercial Building Automation and Real World Design Constraints.

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4. Samvel Greengard, "The Internet of Things, MIT Press Essential Knowledge Series, Paperback, 2015.
5. Olivier Hersent , David Boswarthick, Omar Elloumi , "The Internet of Things –Key applications and Protocols", Wiley, 2012

  
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## 518CAT02 – ADVANCED JAVA SCRIPTING LANGUAGE

### Course Objectives :

- Understand the Basic Concept of JavaScript
- Provide the conceptual understanding of JavaScript Object
- Obtain the fundamental knowledge of Angular JS
- To apply technical strategies of NodeJS and ReactJS

### UNIT -I INTRODUCTION TO JAVASCRIPT 9

Fundamental of JavaScript – Types and Variable – Operators – Decision statement – Looping Statement – Branching Statement – Functions – Events – Form Handling.

### UNIT –II JAVASCRIPT OBJECT 9

Introduction to JavaScript Object – Array- String – date – math – Number – Boolean – RegExp – DOM – Error and Exception Handling – Animation – Multimedia.

### UNIT –III ANGULAR JS BASICS 9

Introduction to Angular JS – Directive and Expression – MVC- Filter: Create Filter – Built in Filter – Custom Filter – Module – Directives: Built in Directives – Create Directives – Custom Directives – Service – Server Communication – Organizing View

### UNIT IV – NODE JS 9

Setting up Node JS- Understanding of Node JS – Core Node.JS – Node.JS Packages – Events and Stream – Getting Started with Http – Introducing Express- Persisting Data – Front End Basics

### UNIT V – REACT JS 9

Introduction to React JS – The Core of React – React – Discovery of React Component – Understanding of Components – Component Properties and Methods – Component Lifecycle and Redundancy- JSX- JSX Fundamental – Built a React web application

**Total No. of Periods : 45**

### Course Outcomes :

- Provide the basic knowledge of JavaScript
- Improve the technical aspects of JavaScript Object
- Knowledge gained with fundamental of Angular JS
- Improve the Technical Knowledge in Node JS and React JS

  
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## 515CAT03 – OPEN SOURCE TECHNOLOGIES

### Objectives :

- To introduce the concepts of open source technologies.
- To develop web application using python.
- To understand the python visualization tool.
- To understand the advantages of scripting tool.

### UNIT – I INTRODUCTION TO PYTHON 9

Python Basics: Statements and Syntax – Style Guidelines – Memory Management. Python Objects: Built-in and Internal types – Standard Type Operators and Built-in Functions – Categorizing the Standard and Unsupported Types. Numbers: Complex Numbers – Built-in functions – Numeric Types.

### UNIT – II SEQUENCES, CONDITIONALS, LOOPS AND FILE I/O 9

Sequences – Strings – Lists – Tuples – Conditional Statements and Expressions – File Objects – File Built-in Functions. Methods and Attributes – Standard Files – Command-Line Arguments – File System and Execution.

### UNIT – III PYTHON NETWORK AND GUI PROGRAMMING 9

Network Programming in Python – SocketServer Module – Introduction to the Twisted Framework. GUI Programming – Tkinter and Python Programming – Tkinter Examples – Tour of other GUIs.

### UNIT – VI PYTHON FOR DATA ANALYSIS 9

Data Loading, Storage and File Formats: Reading and Writing Data in Text Format – Binary Data Formats – Interacting with HTML, Web APIs and Database. Plotting and Visualization: A brief matplotlib API Primer – Plotting Functions in pandas – Python Visualization Tool Ecosystem: Chaco and mayavi.

### UNIT – V PYTHON & AWS 9

Elastic Compute Cloud (EC2): Launching an Instance – Keeping Tracks of Instances with Tag – Accessing the Console – Uploading and Synchronizing SSH Keypair – Attach a Persistent EBS Volume and Back Up – Find All Running EC2 Instance – Monitoring the Performance of Instance. Simple Storage Service (S3): Create a Bucket in a Specific Location – Store Private Data and Metadata – Computing Total Storage Used by a Bucket.

**Total No. of Periods: 45**

### Course outcomes :

- Able to understand the concepts of open source languages.
- Analyses and model requirements and constraints for the purpose of designing and implementing open source software in python.
- Design and implement programs using open source programming languages for data analysis.
- Able to understand the features of the Web Services.

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1. Wesley J. Chun. "Core Python Programming", Second Edition. Pearson. 2016.
2. Mitch Garnaat. "Python and AWS Cookbook", First Edition, O'Reilly Media, Inc., 2012.
3. Wes Mckinney. "Python for Data Analysis", First Edition. O'Reilly Media, Inc., 2012.
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## 518CAE02 – BIG DATA MANAGEMENT

### Objectives :

- To understand big data analytics as the next wave for businesses looking for competitive advantage.
- To understand the financial value of big data analytics.
- To explore tools and practices for working with big data.
- To understand how big data analytics can leverage into a key component.
- To understand how to mine the data.

### UNIT I - BASICS OF DATA AND NOSQL DATA MANAGEMENT 9

Introduction - Big Data - Data-Data Storage and Analysis - Comparison with Other Systems - Convergence of Key Trends - Unstructured Data - Industry Examples of Big Data - Big Data Technologies - NOSQL Data Management - Introduction to NOSQL - Aggregate Data Models - Relationships - Graph Databases - Schemaless Databases - Materialized Views - Distribution Models - Version Stamps - Mapreduce - Partitioning and Combining - Composing Mapreduce Calculations.

### UNIT II – HADOOP INTRODUCTION 9

Hadoop : History of Hadoop - Components of Hadoop -Application Development in Hadoop - Getting your Data into Hadoop - Other Hadoop Components - Basics of Hadoop - Data Format - Analyzing Data with Hadoop - Scaling out – DataFlow - Hadoop Streaming - Hadoop Pipes - Design of Hadoop Distributed File System - HDFS Concepts-Java Interface-Hadoop I/O.

### UNIT III –MAPREDUCE APPLICATIONS 9

Map Reduce Applications - Mapreduce Workflows - Unit Tests With MRUnit - Test Data and Local Tests - Anatomy of Mapreduce Job Run - Failures in Classic Mapreduce and Yarn - Job Scheduling - Shuffle and Sort - Task Execution - Map Reduce Types.

### UNIT IV – PIG, HIVE AND HBASE 9

Pig-Installing and Running Pig - An Example - Comparison with Databases - Pig Latin -Data Processing Operators – Hive - Installing Hive - An Example - Running Hive -Comparison with Traditional Databases – HiveQL – Tables - Querying Data – HBase – HBasics – Concepts – Installation – Clients - HBase versus RDBMS - Praxis.

### UNIT V – DATA STREAMING AND HADOOP CLUSTERING 9

Mining Data Streams : Stream Data Model – Sampling Data in a Stream – Filtering Streams - Setting Up a Hadoop Cluster - Cluster Specification – Cluster Setup and Installation – Hadoop Configuration – Security – Benchmarking a Hadoop Cluster.

**Total No. of Periods: 45**

### Course Outcomes:

- Identify the need for big data analytics for a domain.
- Use Hadoop, Map Reduce Framework.
- Apply big data analytics for a given problem.
- Suggest areas to apply big data to increase business outcomes.

  
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1. Chandrakant Naikodi "Managing the Big Data", Vikas Publishing House Pvt Ltd, New Delhi 2015.
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3. Tom White, "Hadoop: The Definitive Guide: Storage and Analysis At Internet Scale", Fourth Edition, Oreilly Media, 2015.
4. Anand Rajaraman and Jeffrey David Ullman, "Mining Massive Datasets", Cambridge University Press, 2012.
5. Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics", John Willey & Sons 2012.



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## 518CAE09 – DIGITAL MARKETING MANAGEMENT

### Objectives :

- To understand the basics of digital marketing.
- Develop a comprehensive digital marketing strategy
- Able to use new media such as search engine and social networking.

### UNIT – I INTRODUCTION

9

Going Digital - The changing face of advertising - The Technology behind digital marketing - Strategic thinking: Why you need a digital marketing strategy - Defining your digital marketing strategy - Understanding the digital marketing strategy - Understanding the digital consumer - Mind your Ps - Your window to the digital world.

### UNIT – II SEARCH ENGINE MARKETING

9

The search for success: Search: the online marketer's holy grail - About the engines - Optimizing your site for the engines - Advertising on the search engines - Black Hat, the darker side of search - Bringing in the pros - Universal search - more opportunities to rank - Website intelligence and return on investment.

### UNIT – III MARKETING TRENDS

9

E-mail marketing: The new direct mail - what exactly is e-mail marketing - Planning your campaign - Dos and Don'ts of an e-mail marketing campaign - Measuring your success - Still a vital component of digital marketing - Social media and online consumer engagement: join the conversation - What is social media - The different forms of social media - The rules of engagement - Adding social media to your own site - Online PR and reputation management.

### UNIT – IV AFFILIATE AND MARKETING ON INTERNET

9

Affiliate marketing and strategic partnerships: Recognizing opportunities for strategic partnership - What is affiliate marketing - The click that really counts - What advertisers should do - Digital media creative: Creative application of digital media - using an agency Digital creative: what works and what doesn't - The age of new information-Based marketing - Advertising on internet - Charting the on-line Marketing Process.

### UNIT – V CONSUMER SEARCH AND RESOURCE DISCOVERY

9

Search and resource discovery paradigms - Information search and retrieval - Information filtering - On-demand education and digital copy rights: Computer based education and training - Digital copy rights and Electronics commerce - Multimedia and digital video: Key multimedia concepts - Desk top video processing - Desk top video conferencing.

**Total No. of Periods: 45**

### Course outcomes :

- The student will be able to evaluate the risks involved in Digital marketing.
- It shall make them be able to attract and retain customers online.
- Students will get to know the influence of internet marketing

  
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5. Jonah Berger. Contagious Why Things Catch On, Simon & Schuster, 2013.
6. E-Marketing: The essential guide to marketing in a digital world, Rob Stokes, Quirk eMarketing (Pty) Ltd, 5th Ed, 2013.



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## Lab Elective – V

### 518CAL01 – ADVANCED JAVASCRIPT LAB

#### Course Objectives

- Practice Fundamental Concept of JavaScript
- It enables to Understand the Angular JS concepts
- Help the Student to apply the technical strategies in Node JS
- To Gain the knowledge of React JS

#### LIST OF EXPERIMENTS

1. Design and Develop any simple script using Looping and Branching Statement
2. Write a JavaScript to design a simple calculator to perform the various mathematical operation using function with form handling.
3. Write a JavaScript Code to implement multidimensional array with exception handling.
4. Develop a Script using Animation.
5. Design and Develop a script using Directives
6. Implement MVC Custom Filter of your own.
7. Write any simple application using Node.JS
8. Develop an application using events and streams.
9. Built a React Web Applications

**Total No. of Periods: 45**

#### Course Outcomes :

- Understand the fundamental concept of JavaScript
- Develop an Angular JS Application
- Deploy React JS Application
- Implementation of Node JS Applications.



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## 518CAL02 – OPEN SOURCE TECHNOLOGIES LAB

### Objectives :

- Expose students to open source environment.
- To understand the role and future of open source software in the industry along with the impact of legal, economic and social issues for such software.
- Ability to gather information about open source software projects.

### LIST OF EXPERIMENTS

1. Create a MDI GUI component using Python PyQt.
2. Create a QMessageBox using Python language.
3. Draw an API for geometric shapes using wxPython.
4. Performing basic cloud storage operations using python.
5. Explore the basic plot interface using Matplotlib.
6. Performing data analysis using Pandas.
7. Implement File/Image uploading using Python Django.
8. Design login page using Python Flask web application.

Total No. of Periods: 45

### Course outcomes :

- Design and implement web applications using open sources.
- Demonstrate knowledge of working python.
- Able to recognize the benefits and features of open source technologies.
- Able use and develop open source packages and to contribute in open source community.

  
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