

## DEPARTMENT OF COMPUTER SCIENCE

### PROGRAMME OUTCOMES AND COURSE OUTCOMES OF UNDER GRADUATE & POST GRADUATE PROGRAMME (2023 ONWARDS)

NAME OF THE PROGRAMME: BACHELOR OF COMPUTER SCIENCE	
PROGRAMME OUTCOME	
<b>PO1</b>	<b>Knowledge:</b> Think in a critical and logical based manner
<b>PO2</b>	<b>Problem Analysis:</b> Familiarize the students with suitable software tools of computer science and industrial applications to handle issues and solve problems in mathematics or statistics and real-time application related sciences.
<b>PO3</b>	<b>Design / Development of Solutions:</b> Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
<b>PO4</b>	<b>Conduct investigations of complex problems:</b> Understand, formulate, develop programming model with logical approaches to a Address issues arising in social science, business and other contexts.
<b>PO5</b>	<b>Modern tool usage:</b> Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer science and Industrial statistics.
<b>PO6</b>	<b>Applying to society:</b> Provide students/learners sufficient knowledge and skills enabling them to undertake further studies in Computer Science or Applications or Information Technology and its allied areas on multiple disciplines linked with Computer Science.
<b>PO7</b>	<b>Employment:</b> Equip with Computer science technical ability, problem solving skills, creative talent and power of communication necessary for various forms of employment.
<b>PO8</b>	<b>Employment &amp; Internship activities:</b> Develop a range of generic skills helpful in employment, internships& societal activities.
<b>PO9</b>	<b>Aspects of Computer Science:</b> Get adequate exposure to global and local concerns that provides platform for further exploration into multi-dimensional aspects of computing sciences.

**NAME OF THE PROGRAMME: B.Sc Computer Science – COURSE OUTCOMES**

**SEMESTER I**

**Object Oriented  
Programming  
Concepts Using C++**

1. Remember the program structure of C with its syntax and semantics.
2. Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)
3. Apply the programming principles learnt in real- time problems
4. Analyze the various methods of solving a problem and choose the best method
5. Code, debug and test the programs with appropriate test cases

**Object oriented  
programming  
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C++lab**

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<p><b>Introduction To HTML</b></p>	<ol style="list-style-type: none"> <li>1.Knows the basic concept in HTML</li> <li>2.Concept of resources in HTML</li> <li>3.Knows Design concept.</li> <li>4.Concept of Meta Data Understand the concept of save the files.</li> <li>5.Understand the page formatting Concept of list</li> <li>6.Creating Links Know the concept of creating link to email address</li> <li>7,Concept of adding images Understand the table creation.</li> </ol>
<p><b>Problem Solving Techniques</b></p>	<ol style="list-style-type: none"> <li>1. Study the basic knowledge of Computers. Analyze the programming languages.</li> <li>2. Study the data types and arithmetic operations. Know about the algorithms.</li> <li>3. Develop program using flow chart and pseudocode.Determine the various operators.Explain about the structures. Illustrate the concept of Loops</li> <li>4. Study about Numeric data and character-based data. Analyze about Arrays</li> <li>5. Explain about DFD Illustrate program modules.</li> <li>6. Creating and reading Files</li> </ol>
<p><b>SEMESTER-II</b></p>	

<b>Data Structure and Algorithms</b>	<ol style="list-style-type: none"> <li>1.Understand the concept of Dynamic memory management, data types, algorithms, Big O notation</li> <li>2.Understand basic data structures such as arrays, linked lists, stacks and queues</li> <li>3.Describe the hash function and concepts of collision and its resolution methods Solve problem involving graphs, trees and heaps</li> <li>4.Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data</li> </ol>
<b>Data Structure and Algorithms Lab</b>	<ol style="list-style-type: none"> <li>1.Understand the concept of Dynamic memory management, data types, algorithms, Big O notation</li> <li>2.Understand basic data structures such as arrays, linked lists, stacks and queues</li> <li>3.Describe the hash function and concepts of collision and its resolution methods Solve problem involving graphs, trees and heaps</li> <li>4.Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data</li> </ol>
<b>Office Automation</b>	<ol style="list-style-type: none"> <li>1.Possess the knowledge on the basics of computers and its components</li> <li>2.Gain knowledge on Creating Documents, spreadsheet and presentation.</li> <li>3.Learn the concepts of Database and implement the Query in Database.</li> <li>4.Demonstrate the understanding of different automation tools.</li> <li>5.Utilize the automation tools for documentation, calculation and presentation purpose.</li> </ol>

<b>PHP Programming</b>	1. Write PHP scripts to handle HTML forms 2. Write regular expressions including modifiers, operators, and meta characters. 3. Create PHP Program using the concept of Array 4. Create PHP programs that use various PHP library functions 5. Manipulate files and directories.
\ <b>SEMESTER III</b>	
<b>Python programming</b>	1. Learn the basics of python, Do simple programs on python, Learn how to use an array. 2. Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements. 3. Concept of function, function arguments, Implementing the concept of List, tuples and dictionary 4. Basic concept of Object Oriented Programming : Class , Object and Inheritance 5. Usage of File handlings in python, Concept of GUI programs.
<b>Python Programming Lab</b>	1. Learn the basics of python, Do simple programs on python, Learn how to use an array. 2. Develop program using selection statement, Work with Looping and jump statements, Do programs on Loops and jump statements. 3. Concept of function, function arguments, Implementing the concept of List, tuples and dictionary 4. Basic concept of Object Oriented Programming : Class , Object and Inheritance 5. Usage of File handlings in python, Concept of GUI program
<b>Statistical Methods and their Applications-I</b>	1. On completion of this course, students will 2. Learn the basics of statistical methods 3. Understanding of measures of location 4. understanding of measures of dispersion 5. Understand about Measures of skewness

	6. Understand about correlation
<b>Physics-I</b>	<ol style="list-style-type: none"> <li>1. On completion of this course, students will</li> <li>2. Learn the basics of Gravitation and Elasticity.</li> <li>3. Understanding of Seeback</li> <li>4. understanding of Magnetism</li> <li>5. Understand about sound and ultrasonics</li> <li>6. Understand about laser and fiber optics.</li> </ol>
<b>Fundamentals of Information Technology</b>	<ol style="list-style-type: none"> <li>1. On completion of this course, students will Learn the basics of computer, Construct the structure of the required things in</li> <li>2. Computer, learn how to use it. Develop organizational structure using for the devices present currently under input or output unit.</li> <li>3. Concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis.</li> <li>4. Work with different software, Write program in the software and applications of software.</li> <li>5. Usage of Operating system in information technology which really acts as a interpreter between software and hardware.</li> </ol>
<b>Understanding Internet</b>	<ol style="list-style-type: none"> <li>1. On completion of this course, students will</li> <li>2. Knows the basic concept in internet Concept of internet.</li> <li>3. Know the concept of TCP/IP – Internet Technologies and Protocol</li> <li>4. Understand the concept of Internet connectivity.</li> <li>5. Can be able to know about internet networks</li> <li>6. Understand the concept of Electronic mail.</li> </ol>

<b>SEMESTER IV</b>	
<b>Java Programming</b>	1.Understand the basic Object-oriented concepts. 2.Implement the basic constructs of Core Java. 3.Implement inheritance, packages, interfaces and exception handling of Core Java. 4.Implement multi-threading and I/O Streams of Core Java 5.Implement AWT and Event handling. 6.Use Swing to create GUI.
<b>Java Programming Lab</b>	1 .Understand the basic Object-oriented concepts. Implement the basic constructs of Core Java. 2. Implement inheritance, packages, interfaces and exception handling of Core Java. 3. Implement multi-threading and I/O Streams of Core Java . 4 .Implement AWT and Event handling. 5. Use Swing to create GUI.
<b>SEMESTER V</b>	
<b>Statistical Methods and their Applications-II</b>	1.Learn the basics of curve fitting methods 2.Understanding of Sample Space 3.Understanding of standard distribution 4.Understand about Test of Significance 5.Understand about Analysis of variance
<b>Physics-II</b>	1.Learn the basics of Frames of reference 2.Understanding of atom model 3.Understanding of Binding energy

	<p>4.Understand about Number systems</p> <p>5.Understand about Nano material</p>
<b>Web Designing</b>	<p>1.Develop working knowledge of HTML</p> <p>2.Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).</p> <p>3.Ability to optimize page styles and layout with Cascading Style Sheets (CSS).</p> <p>4.Ability to develop a java script</p> <p>5.An ability to develop web application using Ajax.</p>
<b>Cyber Forensics</b>	<p>1.Understand the definition of computer forensics fundamentals.</p> <p>2.Evaluate the different types of computer forensics technology Analyze various computer forensics systems.</p> <p>3.Apply the methods for data recovery, evidence collection and data seizure.</p> <p>4.Gain your knowledge of duplication and preservation of digital evidence.</p>
<b>SEMESTER V</b>	
<b>Operating Systems</b>	<p>1.Define the fundamentals of OS and identify the concepts relevant to process , process life cycle, Scheduling Algorithms, Deadlock and Memory management</p> <p>2 know the critical analysis of process involving various algorithms, an exposure to threads and semaphores</p> <p>3 Have a complete study about Deadlock and its impact over OS. Knowledge of handling Deadlock with respective algorithms and measures to retrieve from deadlock. .</p>



	<p>4 Have complete knowledge of Scheduling Algorithms and its types.</p> <p>5 .Understand memory organization and management</p>
<b>Operating System lab</b>	<p>1.Able to understand the basics of UNIX commands and shell programming</p> <p>2.Able to understand the programming knowledge of scheduling algorithms.</p> <p>3.Able to understand the working of semaphores in operating system</p> <p>4.Able to understand how to code various algorithm used in operating system.</p> <p>5.Able to understand how to code and working procedure of file management concepts in operating system.</p>
<b>Database Management System</b>	<p>1.Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.</p> <p>2.Define the integrity constraints. Understand basic concepts of Relational Data Model, Entity-Relationship Model.</p> <p>3.Design database schema considering normalization and relationships within database. Understand and construct database using Structured Query Language. Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)</p> <p>4. Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.</p> <p>5. Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions</p>
<b>Database Management System lab</b>	<p>1.Understand the various basic concepts of Data Base System. Difference between file system and DBMS and compare various data models.</p> <p>2.Define the integrity constraints. Understand the</p>

	<p>basic concepts of Relational Data Model, Entity-Relationship Model.</p> <p>3.Design database schema considering normalization and relationships within database. Understand and construct database using Structured Query Language. Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)</p> <p>4.Classify the different functions and various join operations and enhance the knowledge of handling multiple tables.</p> <p>4.Learn to design Data base operations and implement using PL/SQL programs. Learn basics of PL/SQL and develop programs using Cursors, Exceptions</p>
<b>Introduction to Data Science</b>	<p>1.Understand the basics in Data Science and Big data.</p> <p>2.Understand overview and building process in Data Science</p> <p>3.Understand various Algorithms in Data Science.</p> <p>4.Understand Hadoop Framework in Data Science. Case study in Data Science.</p>
<b>Artificial Intelligence</b>	<p>1.Understand the various concepts of AI Techniques.</p> <p>2.Understand various Search Algorithm in AI.</p> <p>3. Understand probabilistic reasoning and models in AI.</p> <p>4. Understand Markov Decision Process.</p> <p>5 .Understand various type of Reinforcement learning Techniques.</p>
<b>Computer Networks</b>	<p>1.To Understand the basics of Computer Network architecture, OSI and TCP/IP reference models</p> <p>2.To gain knowledge on Telephone systems using wireless network .</p> <p>3.To understand the concept of MAC.</p>

	<p>4.To analyze the characteristics of Routing and Congestion control algorithms.</p> <p>5.To understand network security and define various protocols such as FTP, HTTP, Telnet, DNS.</p>
<b>Data mining and warehousing</b>	<p>1.To understand the basic concepts and the functionality of the various data mining and data warehousing component</p> <p>2.To know the concepts of Data mining system architectures</p> <p>3.To analyze the principles of association rules</p> <p>4.To get analytical idea on Classification and prediction methods</p> <p>5.To Gain knowledge on Cluster analysis and its methods.</p>
<b>Mobile Computing</b>	<p>1.To understand basic concepts of mobile computing.</p> <p>2. To learn the basics of mobile telecommunication system</p> <p>3. To comprehend wireless LAN and cellular systems.</p> <p>4.To understand protocols at network and transport layer</p> <p>5.To understand protocols at network and transport layer</p>
<b>Natural Language Processing</b>	<p>1.Describe the fundamental concepts and techniques of natural language processing.</p> <p>2Explain the advantages and disadvantages of different NLP technologies and their applicability in different business situations.</p> <p>3.Distinguish among the various techniques, taking into account the assumptions, strengths, and weaknesses of each</p> <p>Use NLP technologies to explore and gain a broad understanding of text data.</p> <p>4..Use appropriate descriptions, visualizations, and statistics to communicate the problems and their solutions.</p>

	<p>5..Use NLP methods to analyse sentiment of a text document.</p> <p>6.Analyze large volume text data generated from a range of real-world applications.</p> <p>7.Use NLP methods to perform topic modelling.</p> <p>8.Develop robotic process automation to manage business processes and to increase and monitor their efficiency and effectiveness.</p> <p>9.Determine the framework in which artificial intelligence and the Internet of things may function, including interactions with people, enterprise functions, and environments.</p>
<b>Project with Viva voce</b>	<p>1.Show leadership skills and learn time management</p> <p>2. Identify various tools to be applied to a specific problem</p> <p>3. Evaluate the reports</p> <p>4. Take part in a team as well as manage it to deliver Stunning outcomes</p> <p>5.Assess and develop the individual skills to present</p> <p>And organize projects</p>

<b>NAME OF THE PROGRAMME: MASTER OF COMPUTER SCIENCE- PROGRAMME OUTCOME</b>	
<b>PO1</b>	<b>Problem Solving Skill</b> Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.
<b>PO2</b>	<b>Decision Making Skill</b> Foster analytical and critical thinking abilities for data-based decision-making.
<b>PO3</b>	<b>Ethical Value Ability</b> to incorporate quality, ethical and legal value-based perspectives to all organizational activities.
<b>PO4</b>	<b>Communication Skill</b> Ability to develop communication, managerial and interpersonal skills.
<b>PO5</b>	<b>Individual and Team Leadership Skill</b>

	Capability to lead themselves and the team to achieve organizational
<b>PO6</b>	<b>Employability Skill</b> Inculcate contemporary business practices to enhance employability skills in the competitive environment.
<b>PO7</b>	<b>Entrepreneurial Skill</b> Equip with skills and competencies to become an entrepreneur.
<b>PO8</b>	<b>Contribution to Society</b> Succeed in career endeavors and contribute significantly to society.
<b>PO9</b>	<b>Multicultural competence</b> Possess knowledge of the values and beliefs of multiple cultures and a global perspective.
<b>P10</b>	<b>Moral and ethical awareness/reasoning</b> Ability to embrace moral/ethical values in conducting one's life.

NAME OF THE PROGRAMME: MASTER OF COMPUTER SCIENCE- COURSE OUTCOME	
SEMESTER -I	
<b>Analysis and Design of Algorithms</b>	<ol style="list-style-type: none"> <li>1. Get knowledge about algorithms and determine their time complexity. Demonstrate specific search and sort algorithms using divide and conquer Technique.</li> <li>2. Gain good understanding of Greedy method and its algorithm.</li> <li>3. Able to describe about graphs using dynamic programming technique.</li> <li>4. Demonstrate the concept of backtracking &amp; branch and bound technique.</li> <li>5. Explore the traversal and searching technique and apply it for trees and graphs..</li> </ol>
<b>Object Oriented Analysis And Design &amp; C++</b>	<ol style="list-style-type: none"> <li>1. Understand the concept of Object-Oriented development and modeling techniques</li> <li>2. Gain knowledge about the various steps performed during object design</li> <li>3. Abstract object-based views for generics of Software systems</li> <li>4. Link OOAD with C++ language</li> <li>5. Apply the basic concept of OOPs and familiarize to write C++ program</li> </ol>
<b>python programming</b>	<ol style="list-style-type: none"> <li>1 Understand the basic concepts of Python Programming</li> <li>2 Understand File operations, Classes, and Objects</li> <li>3 Acquire Object Oriented Skills in Python</li> <li>4 Develop web applications using Python</li> <li>5 Develop Client Server Networking applications</li> </ol>

<b>Advanced Software Engineering</b>	1.Understand about Software Engineering process 2.Understand about Software project management skills, design and quality management 3.Analyze on Software Requirements and Specification 4.Analyze on Software Testing, Maintenance and Software, Re-Engineering 5.Design and conduct various types and levels of software quality for a software project
<b>principles of compiler design</b>	1.Understand the phases and tools available in Compiler 2.Design and implement a Lexical Analyzer 3.Compare and analyze different types of Compilers 4.Specify appropriate translations to generate Intermediate Code 5.Identify sources for Code Optimization
<b>Practical : algorithm and oops lab</b>	1.Understand the concepts of object oriented with respect to c++ 2.Able to understand and implement oops concepts 3.Implementation of data structures like stack, queue, tree, list using c++ 4.Application of the data structures for sorting, searching using different techniques.
<b>Practical : python programming lab</b>	1.Able to write programs in Python using OOPS concepts 2.To understand the concepts of File operations and Modules in Python 3.Implementation of lists, dictionaries, sets and tuples as programs 4.To develop web applications using Python
<b>SEMESTER-II</b>	
<b>Data mining and warehousing</b>	1 Understand the basic data mining techniques and algorithms 2 Understand the Association rules, Clustering techniques and Data warehousing contents 3 Compare and evaluate different data mining techniques like classification, prediction, Clustering, and association rule mining 4 Design data warehouse with dimensional modeling and apply OLAP operations 5 Identify appropriate data mining algorithms to solve real world problems
<b>Advanced java programming</b>	1 Understand the advanced concepts of Java Programming 2 Understand JDBC and RMI concepts 3 Apply and analyze Java in Database 4 Handle different event in java using the delegation event model, event listener and class 5 Design interactive applications using Java Servlet, JSP and JDBC

<b>Artificial intelligence and machine learning</b>	1.Demonstrate AI problems and techniques 2.Understand machine learning concepts 3.Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning 4 Analyze the impact of machine learning on applications 5.Analyze and design of AI world problem for implementation and understand the dynamic behavior of a system
<b>Practical : advanced java programming</b>	1.Understand to the implement concepts of Java using HTML forms, JSP & JAR 2.Must be capable of implementing JDBC and RMI concepts 3.Able to write Applets with Event handling mechanism 4.To Create interactive web-based applications using servlets and jsp.
<b>Practical : web application development and hosting</b>	1.Understand & implement the basic HTML tags to create static web pages 2.Capable of using hyperlinks, frames, images, tables,...in a web page 3.Able to write dynamic web applications using HTML forms 4.Must be able to write dynamic web applications in PHP & HTML tags using XAMPP.
<b>Practical : data mining using r</b>	1.Able to write programs using R for Association rules, Clustering techniques 2.To implement data mining techniques like classification, prediction 3.Able to use different visualizations techniques using R 4.To apply different data mining algorithms to solve real world applications
<b>SEMESTER-III</b>	
<b>Digital image processing</b>	1.Understand the fundamentals of Digital Image Processing. 2.Understand the mathematical foundations for digital image representation, image acquisition, image transformation, and image enhancement. 3.Apply, Design, and Implement and get solutions for digital image processing problems. 4.Apply the concepts of filtering and segmentation for digital image retrieval. 5.Explore the concepts of Multi-resolution process and recognize the objects in an efficient manner
<b>Cloud computing</b>	1.Understand the concepts of Cloud and its services 2.Collaborate Cloud for Event & Project Management 3.Analyze on cloud in –Word Processing, Spread Sheets, Mail, Calendar, Database 4.Analyze cloud in social networks 5.Explore cloud storage and sharing
<b>Network security and cryptography</b>	1.Understand the process of the cryptographic algorithms 2.Compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication 3.Apply and analyze appropriate security techniques to solve network security problem

	<p>4.Explore suitable cryptographic algorithms</p> <p>5.Analyze different digital signature algorithms to achieve authentication and design secure applications</p>
<b>Data science and analytics</b>	<p>1.Understand the concept of data science and its techniques</p> <p>2.Review data analytics</p> <p>3.Apply and determine appropriate Data Mining techniques using R to real time applications</p> <p>4.Analyze on clustering algorithms</p> <p>5.Analyze on regression methods in AI</p>
<b>Practical : digital image processing using matlab</b>	<p>1.To write programs in MATLAB for image processing using the techniques.</p> <p>2.To able to implement Image Enhancements &amp; Restoration techniques.</p> <p>3.Capable of using Compression techniques in an Image.</p> <p>4.Must be able to manipulate the image and Segment it.</p>
<b>Practical : network security and cryptography lab</b>	<p>1.Comprehend the programming skills in classical encryption techniques and to develop advanced encryption standards</p> <p>2.Understand and implement the various cryptographic algorithms including secret key cryptography, hashes, and message digests</p> <p>3.Evaluate the use of different encryption and decryption techniques</p> <p>4.Design to Solve related confidentiality and authentication problems</p> <p>5.Create public key algorithms</p>
<b>Practical : cloud computing lab</b>	<p>1.Articulate the main concepts, key technologies, strengths, and limitations of Cloud Computing and deploy applications over commercial cloud computing infrastructures.</p> <p>2.Gain knowledge about cloud and virtualization along with it, how one can migrate over it.</p> <p>3.Develop the ability to manage the cloud environment and understand the concepts of cloud storage, security.</p> <p>4.Choose the appropriate technologies, algorithms, and approaches for implementation of cloud environment using Openstack / AWS / Microsoft Azure / Google App Engine, etc.,</p>
<b>Internship</b>	<p>1.Find the specific areas of interest, refine their skills and abilities</p> <p>2.Show a greater sense of self-awareness and appreciation for others</p> <p>3.Develop work habits and attitudes that are essential to succeed in the workplace</p> <p>4.Discover the importance of communication, interpersonal and other critical skills</p> <p>5.Choose and prioritize employment contacts leading directly to a full-time job immediately after the graduation from the college.</p>



<b>SEMESTER-IV</b>	
<b>Internet of things</b>	<ol style="list-style-type: none"> <li>1.Understand about IoT, its Architecture and its Applications.</li> <li>2.Understand basic electronics used in IoT &amp; its role.</li> <li>3.Develop applications with C using Arduino IDE.</li> <li>4.Analyze about sensors and actuators.</li> <li>5.Design IoT in real time applications using today's internet &amp; wireless technologies.</li> </ol>
<b>Block chain technology</b>	<ol style="list-style-type: none"> <li>1.Demonstrate blockchain technology and crypto currency.</li> <li>2.Understand the mining mechanism in blockchain.</li> <li>3.Apply and identify security measures, and various types of services that allow people to trade and transact with bitcoins.</li> <li>4.Apply and analyze Blockchain in health care industry</li> <li>5.Analyze security, privacy, and efficiency of a given Blockchain system</li> </ol>
<b>Project work and viva-voce</b>	<ol style="list-style-type: none"> <li>1.Show Leadership Skills and Learn Time Management</li> <li>2.Identify various Tools to be applied to a specific Problem</li> <li>3.Evaluate the Reports</li> <li>4.Involve in the Team and Manage it to deliver the excellent Outcomes</li> <li>5.Assess and Develop the Individual Skills to Present and Organize the Projects</li> </ol>
<b>Practical : internet of things lab</b>	<ol style="list-style-type: none"> <li>1.Implement IoT programs to turn ON/OFF LED.</li> <li>2.Develop IoT programs for object detection.</li> <li>3.Create IoT programs for agricultural purpose.</li> <li>4.Implement web server program for local hosting.</li> <li>5.Design various IoT applications.</li> </ol>
<b>Practical : block chain technologies lab</b>	<ol style="list-style-type: none"> <li>1.Enable to setup your own private Blockchain and deploy smart contracts on Ethereum.</li> <li>2.Gains familiarity and implement with cryptography and Consensus algorithms.</li> <li>3.Create and deploy projects using Web3j.</li> <li>4.Recall and deploy the structure &amp; mechanism of Bitcoin, Ethereum, Hyperledger</li> <li>5.Implement Blockchain for various use cases</li> </ol>
<b>Practical : soft skill development lab</b>	<ol style="list-style-type: none"> <li>1.Gain basic communication skills in professional and social contexts effectively.</li> <li>2.Acquire useful words and apply them in situational context.</li> <li>3.Develop listening and reading skills through comprehension passages.</li> <li>4.Enrich leadership qualities and interpersonal communication.</li> <li>5.Enhance essential characteristics in writing.</li> </ol>

<b>Practical : data visualization lab</b>	<ol style="list-style-type: none"> <li>1.Enable to create and apply Spread sheet and Tableau for various data processing</li> <li>2.Gains knowledge to create and design various visualization tools in Excel and Tableau.</li> <li>3.Comprehend, create, and deploy labels and heat map.</li> <li>4.Enable to create and apply dashboard for various data processing</li> <li>5.Illustrate and apply data visualization tool for any data set</li> </ol>
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