Key Indicator - 1.1 Curriculum Design and Development

1.1.1 Curricula developed and implemented have relevance to the local, regional, national and global developmental needs, which is reflected in the Programme outcomes (POs) and Course Outcomes (COs) of the Programmes offered by the institution

Programme Outcomes (POs) and Course Outcomes (COs) – (2021-2022 Onwards)

DEPARTMENT OF COMPUTER SCIENCE

B. Sc-Computer Science with Cognitive Systems

PROGRAMME OUTCOMES (POs)

POs	Programme Outcome On completion of B. Sc Computer Science with Cognitive Systems Programme, the students will be able to
PO1	To gain knowledge in the core topics of ComputerScience and to develop an equal appreciation of current industry standards.
PO2	To equip industry ready students and teaching ecosystem thatprovide values to business needs in the area of IT Infrastructureand IT Application, Maintenance & Service Support
PO3	Learn to comprehend and integrate learners research practice in computational languages, Artificial Intelligence, Machine Learning, Robotics and Human Computer Integration
PO4	To create awareness on current issues and latest trends in technological development and thereby implement innovativeideas and solutions to existing problems in society

COURSE OUTCOMES (COs)

COURSE CODE: 21UCG1CC1 COURSE TITLE: OPERATING SYSTEM (THEORY&PRACTICALS)		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Ability to work in Windows 10 operating system, its tools and utilities.	K1
CO2	Understand the roles and features of windows server	K2
CO3	Analyze the basics of server management	K3
CO4	Monitor Windows servers	K3
CO5	Perform server backup and restoration	K4

CRITERION I **POs and COs**

COURSE CODE: 21UCG1CC1P **COURSE TITLE: INTRODUCTION TOWORKSHEETS**		
CO Number	**CO Statement**	**Knowledge level**
CO1	Demonstrate the use of basic functions, LOOKUPS and formatting	**K2**
CO2	Build Applications using VBA code	**K3**
CO3	Ability to write Macros and implement data visualization	**K3**

COURSE CODE: 21UCG1CC2 **COURSE TITLE: IT COGNITION & PROBLEM SOLVING**		
CO Number	**CO Statement**	**KnowledgeLevel**
CO1	Outline Cognitive Process	**K1**
CO2	Reproduce perceptual process	**K1**
CO3	Identify factors affecting memory	**K2**
CO4	Solve different types of problems	**K3**
CO5	Experiment different skills	**K4**

COURSE CODE: 21UCG2CC3 **COURSE TITLE: COMPUTER NETWORKS (THEORY&PRACTICALS)**		
CO Number	**CO Statement**	**KnowledgeLevel**
CO1	Identify the components of Computer Networks	**K1**
CO2	Explain the functions of layers in OSI ReferenceModel and TCP/IP Reference Model	**K2**
CO3	State the routing principles	**K1**
CO4	Execute Switch basic commands	**K3**
CO5	Perform routing in Cisco Packet Tracer Software	**K3**

CRITERION I **POs and COs**

COURSE CODE: 21UCG2CC4 **COURSE TITLE: INFORMATION TECHNOLOGY INFRASTRUCTURE LIBRARY-ITIL**		
CO Number	**CO Statement**	**KnowledgeLevel**
CO1	Describe service lifecycle model	**K1**
CO2	Classify the key principles models and conceptsof service management	**K2**
CO3	Express the process management and risk management	**K2**
CO4	Identify the challenges in providing IT infrastructure services	**K3**
CO5	Illustrate the event management concepts.	**K3**

COURSE CODE: 21UCG3CC5 **COURSE TITLE: JAVA PROGRAMMING (Theory & Practicals)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand OOPs concepts and implement in Java	**K1**
CO2	Demonstrate the concept of object-oriented programming through Java	**K2**
CO3	Apply the concept of inheritance, interfaces ad Exception handling methods to develop java programs	**K3**
CO4	Develop java programs for applets and graphics programming	**K3**

COURSE CODE: 21UCG3CC6 **COURSE TITLE: INFRASTRUCTURE MANAGEMENT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Basics of installation and configuration processof Windows 10	**K1**
CO2	Know the basics of configuration manager andits deployment process	**K2**
CO3	Managing configuration management systems	**K3**
CO4	Understanding the SCOM prerequisites and itsinstallation	**K1**
CO5	Know the Monitoring and creation of Reporting	**K2**

CRITERION I **POs and COs**

COURSE CODE: 21UCG3CC6 **COURSE TITLE: INFRASTRUCTURE MANAGEMENT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Basics of installation and configuration processof Windows 10	**K1**
CO2	Know the basics of configuration manager andits deployment process	**K2**
CO3	Managing configuration management systems	**K3**
CO4	Understanding the SCOM prerequisites and itsinstallation	**K1**
CO5	Know the Monitoring and creation of Reporting	**K2**

COURSE CODE: 21UCG4CC7 **COURSE TITLE: DATABASE MANAGEMENT SYSTEMS (Theory & Practicals)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Remember and understand the fundamental concepts ofdatabases	**K1,K2**
CO2	Classify and make use of the database models	**K2,K3**
CO3	Utilize and Examine database functionality	**K3,K4**
CO4	Analyze and Select the queries for data retrieval from the database	**K4,K5**
CO5	Evaluate a database for real-time applications	**K5**

COURSE CODE: 21UCG4NME2P **COURSE TITLE: MULTIMEDIA PRACTICAL**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Identify the basic tools and components of a multimedia	**K1**
CO2	Explain / Outline the concepts of Multimedia	**K2**
CO3	Create simple shapes using animation editing software anddesign simple animation by applying shape tweens and motion tweens	**K3**
CO4	Apply basic elements and principles of photo editing software to achieve a great photo effect by applying effects like color, shadows, alteration of backgrounds, cropping and collage making	**K4**
CO5	Design and implement the various graphic and text information in Photoshop	**K6**

CRITERION I **POs and COs**

COURSE CODE: 21UCG4SBE1AP
COURSE TITLE: HTML,CSS, JavaScript PRACTICAL

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of web design.	K2
CO2	Build real time web applications	K3
CO3	Analyze a web page and identify its elements andattributes	K4
CO4	Compare static and dynamic web pages	K5

COURSE CODE: 21UCG4SBE1BP
COURSE TITLE: COMPUTER HARDWARE AND TROUBLESHOOTING

CO Number	CO Statement	Knowledge Level
CO1	Recall the fundamentals of a computer system	K1
CO2	Explain the connection and functions of a computer system and peripheral devices	K2
CO3	Predict the computer hardware problems	K3
CO4	Apply the built in tools and guidelines for troubleshooting	K4

COURSE CODE: 21UCG5CC8
COURSE TITLE: SOFTWARE TESTING (Theory & Practicals)

CO Number	CO Statement	Knowledge Level
CO1	Recite the basic concepts of Selenium	K1
CO2	Identify and examine the test scripts to validate functionalityusing Selenium	K1, K2
CO3	Explain and demonstrate the software testing based onSelenium	K2, K3
CO4	Apply and analyze various problems using Selenium	K3, K4
CO5	Examine and evaluate the automated test across browsersusing Selenium testing tool	K4, K5

CRITERION I **POs and COs**

COURSE CODE: 21UCG5CC9
COURSE TITLE: INTRODUCTION TO DIGITAL TECHNOLOGIES (Theory & Practicals)

CO Number	CO Statement	KnowledgeLevel
CO1	Remember and understand the key concepts of digital technologies	K1,K2
CO2	Classify and make use of current technologies	K2
CO3	Implement information in new situations	K3
CO4	Analyze the different use cases	K4
CO5	Evaluate new ideas	K5

COURSE CODE: 21UCG5CC10
COURSE TITLE: CLIENT RELATIONSHIPMANAGEMENT (Theory &Practicals)

CO Number	CO Statement	Knowledge Level
CO1	Understand ServiceNow Intermediate Level	K1
CO2	Acquire ServiceNow features and tools	K2
CO3	Get the database for process automation	K2
CO4	Analyze comprehensive knowledge in ServiceNow Interface	K3
CO5	Evaluate script types throughout the platform	K3

COURSE CODE: 21UCG5CC11
COURSE TITLE: VIRTUALIZATION& CLOUD

CO Number	CO Statement	Knowledge Level
CO1	Define the recent trends in computing and list the basics ofcloud computing	K1
CO2	Interpret about Data centers and its transformations	K2
CO3	Apply the concept of Virtualization and identify thetechnologies of Virtualization.	K3
CO4	Examine and discover the concept of cloud computing	K4
CO5	Assess and perceive the knowledge of Hybrid Cloud	K5

CRITERION I **POs and COs**

COURSE CODE: 21UCG5MBE1A
COURSE TITLE: COMPUTER ORGANIZATION &ARCHITECTURE

CO Number	CO Statement	Knowledge Level
CO1	Recall and summarize the basic concept of computer fundamentals	K1, K2
CO2	Identify and interpret digital representation of data in acomputer system	K2, K3
CO3	Discuss and discover the internal structure of the processorand the use of microprogramming.	K3, K4
CO4	Apply and explain the concept of stored program,components of the computers with each other	K3, K5
CO5	Examine and evaluate problems, understand the performance requirements of systems	K4, K5

COURSE CODE: 21UCG5MBE1B
COURSE TITLE: PROCESS MANAGEMENT

CO Number	CO Statement	Knowledge Level
CO1	Define and summarize the process models in software industry	K1, K2
CO2	Interpret and use the agile concepts in processmanagement	K2, K3
CO3	Apply and correlate the principles of Scrum and DevOps	K3, K4
CO4	Illustrate the strategies work of Design Thinking	K4
CO5	Plan and develop applications using Agile, Scrum and DevOps for real world scenario	K5, K6

COURSE CODE: 21UCG5MBE1C
COURSE TITLE: COMPUTER GRAPHICS

CO Number	CO Statement	Knowledge Level
CO1	Define the basic concepts of Computer Graphics	K1
CO2	Explain about the basic principles of Graphics systems	K2
CO3	Describe the hardware system architecture for Computer Graphics	K2
CO4	Analyze and Apply algorithm to draw different mathematical objects	K3, K4
CO5	Access and Illustrate various 2D, 3D Geometric & modeling techniques	K3, K5

CRITERION I **POs and COs**

COURSE CODE: 19PCS3EC3B
COURSE TITLE: PARALLEL PROCESSING

CO Number	CO Statement	Knowledge Level
CO1	Discuss the concepts of parallel processing including various kinds of system architectures	K2
CO2	Illustrate the issues and techniques in improving performance of SIMD Computers	K3
CO3	Compare the pipeline and parallel concepts	K4
CO4	Categorize the Multiprocessor systems, cache coherence and Interconnection networks	K5

COURSE CODE: 21UCG5SBE2AP
COURSE TITLE: VIRTUALIZATION& CLOUD PRACTICAL

CO Number	CO Statement	Knowledge Level
CO1	Demonstrate the workstation Player Preference settings	K2
CO2	Apply the knowledge to install, upgrade and configureon VMware tools	K3
CO3	Examine the knowledge on Virtual Machines	K4

COURSE CODE: 21UCG5SBE2BP
COURSE TITLE: DOT NET PRACTICAL

CO Number	CO Statement	Knowledge Level
CO1	Build a web form using server and standard controls	K3
CO2	Apply form validation in Dot Net	K3
CO3	Examine the database connectivity with Dot Net	K4
CO4	Analyze and assess a web portal	K5

COURSE CODE: 21UCG6CC12
COURSE TITLE: PYTHON PROGRAMMING (Theory & Practicals)

CO Number	CO Statement	Knowledge Level
CO1	Recall execution and debugging of Python program	K1
CO2	Demonstrate the concept of classes and objects usingPython	K2
CO3	Make use of Python features to build real-timeapplications	K3
CO4	Analyze the various functionalities of Python	K4
CO5	Access the performance of inheritance and methodoverriding	K5

COURSE CODE: 21UCG6CC13
COURSE TITLE: DATA STRUCTURES & ALGORITHMS

CO Number	CO Statement	Knowledge Level
CO1	Understand data organization &data structure operations	K1,K2
CO2	Design the various types of algorithms and data structure	K2,K3
CO3	Demonstrate problems to represent the linear and non linear structures by recognizing its memory representation and traversal techniques.	K3,K4
CO4	Implement various techniques of algorithms by using suitabledata structures	K3,K4
CO5	Analyze the different design technique of algorithm and recommend the technique for practical problems	K4,K5

COURSE CODE: 21UCG6MBE2A
COURSE TITLE: ARTIFICIAL INTELLIGENCE

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of ArtificialIntelligence (AI) and expert systems.	K1
CO2	Identify the type of search strategy that is moreappropriate to address a particular problem andimplement the selected strategy	K3
CO3	Apply basic principles of AI in solutions that requireproblem solving, inference, perception, knowledge representation, and learning	K3
CO4	Analyze the future trends of AI applications	K4
CO5	Assess the importance of knowledge representation inintelligent and expert systems	K5

COURSE CODE: 21UCG6MBE2B COURSE TITLE: MOBILE COMPUTING		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the basic concepts of mobile telecommunication systems	**K1**
CO2	Explain the generations of telecommunication systems	**K2**
CO3	Identify the functionality of Network layer and its protocols	**K3**
CO4	Analyze the functions of Transport and Application Layer	**K4**
CO5	Asses the mobile platforms and applications	**K5**

COURSE CODE: 21UCG6MBE2C COURSE TITLE: DATA MINING &WAREHOUSING		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recognize the basic concepts of data mining	**K1**
CO2	Understand the techniques of data classification using various algorithms	**K2**
CO3	Explain the simple data classification task and mining strategies in web	**K2**
CO4	Apply various clustering methods for analysis	**K3**
CO5	Illustrate the role of data mining techniques in various fields	**K3**

COURSE CODE: 21UCG6MBE3A COURSE TITLE: NETWORK SECURITY		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define and summarize the basic concepts of network security	**K1, K2**
CO2	Classify and explain the techniques for encryption	**K2, K2**
CO3	Understand and apply the encryption algorithms	**K2, K3**
CO4	Summarize and analyze the network and internet security	**K2, K3**
CO5	Discuss and explain security features for system security	**K2, K2**

COURSE CODE: 21UCG6MBE3B COURSE TITLE: HUMAN COMPUTER INTERACTION		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand HCI core writing new programs	**K1**
CO2	Demonstrate different decision-making statements	**K2**
CO3	Use the knowledge of Design concepts	**K3**
CO4	Analyze the evaluation techniques	**K4**
CO5	Illustrate the design principles	**K4**

COURSE CODE: 21UCG6MBE3C COURSE TITLE: BIG DATA & IOT		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Outline to provide an overview and its classifications of a growing field of big data analytics.	**K1**
CO2	Use the tools required to manage and analyse big data like Hadoop.	**K2**
CO3	Apply knowledge using MongoDB & No SQL.	**K3**
CO4	Illustrate IoT enabling Technologies	**K3**
CO5	Recommend the required features of Bigdata and IoT for Real time environment	**K4**

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Signed by: Sujatha.V
Designation: Principal
Reason: NAAC
Location: Tiruchirappalli, Tamil Nadu, India
Date: 30-Sep-2024 10:43:48

Key Indicator - 1.1 Curriculum Design and Development

1.1.1 Curricula developed and implemented have relevance to the local, regional, national and global developmental needs, which is reflected in the Programme outcomes (POs) and Course Outcomes (COs) of the Programmes offered by the institution

Programme Outcomes (POs) and Course Outcomes (COs) – (2022-2023 Onwards)

DEPARTMENT OF COMPUTER SCIENCE

B. Sc-Computer Science with Cognitive Systems

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	**LEARNING ENVIRONMENT** To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	**ACADEMIC EXCELLENCE** To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	**EMPLOYABILITY** To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	**PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY** To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strongattitude towards the development of the nation.
PEO5	**GREEN SUSTAINABILITY** To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overallsustainable development.

PROGRAMME OUTCOMES (POs)

POs	Programme Outcome **On completion of B. Sc Computer Science / B. Sc Computer Science with Cognitive Systems / BCA/ B. Sc Information Technology Programme, the students will be able to,**
PO1	**Academic Skills & Social Responsibility** Apply Computing, Mathematical and Scientific Knowledge in Various disciplines by understanding the concerns of the society.
PO2	**Critical Thinking and Innovative Progress** Design the software applications with varying intricacies using programming languages for innovative learning in techno world to meet the changing demands.
PO3	**Personality Development** Perceive Leadership skills to accomplish a common goal with effective communication and understanding of professional, ethical, and social responsibilities.
PO4	**Lifelong Learning** Identify resources for professional development and apply the skills and tools necessary for computing practice to gain real life experiences.
PO5	**Creativity and Holistic Approach** Create a scientific temperament and novelties of ideas to support research and development in Computer Science to uphold scientific integrity and objectivity.

CRITERION I **POs and COs**

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO NO.	The students of B.Sc Computer Science with Cognitive Systems will be able to,	POs Addressed
PSO1	Gain knowledge in the core topics of Computer Science and to develop an equal appreciation of current industry standards.	PO1, PO2
PSO2	Equip them as industry ready students and an entrepreneur with significant knowledge on digital ecosystem that provide values to business needs in the area of IT Infrastructure and IT Application, Maintenance & Service Support.	PO2, PO3, PO4, PO5
PSO3	Apply appropriate techniques and skills in various domains of computer science to solve real world problems.	PO1, PO2, PO4
PSO4	Create awareness on current issues and latest trends in technological development and thereby implement innovative ideas and solutions to existing problems in society.	PO2, PO4 PO5
PSO5	Implement independent projects of their own choice using latest tools and also work as an effective team member to attain the predefined goals.	PO1, PO3, PO5

COURSE OUTCOMES (COs)

COURSE CODE: 22UCG1CC1 COURSE TITLE: OPERATING SYSTEM (T&P)		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall and Understand the fundamentals of computer and Operating Systems	K1,K2
CO2	Analyze and Categorize the components of Operating Systems	K3,K4
CO3	Examine and Explain the performance of Operating Systems services	K4,K5
CO4	Identify and Apply the appropriate methods or instructions to manage the resources	K3, K5
CO5	Compare and Interpret the functionalities of Operating Systems	K4,K5

CRITERION I **POs and COs**

COURSE CODE: 22UCG1CC1P **COURSE TITLE: INTRODUCTION TO WORKSHEET(P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate the use of basic functions, LOOKUPS andFormatting	**K2**
CO2	Build Applications using VBA code	**K3**
CO3	Write Macros	**K3**
CO4	Implement data visualization	**K3**
CO5	Handle large amount of data using Pivot table	**K3**

COURSE CODE: 22UCG1CC2 **COURSE TITLE: IT COGNITION**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Outline and Construction of Mental Activity	**K1,K2**
CO2	Summarize and Experiment with the Functions of Brain	**K2,K3**
CO3	Interpret and make use of Mental Representation	**K2,K3**
CO4	Classify and Explain the Sensory Activity	**K4,K5**
CO5	Build and Analyze the Intellectual ability	**K3,K4**

COURSE CODE: 22UCG2CC3 **COURSE TITLE: COMPUTER NETWORKS**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the fundamental concepts of Computer Networks	**K1**
CO2	Summarize the Process of Data communication between the nodes	**K2**
CO3	Explain the performance of Devices, Models, Addressing and Routing	**K2**
CO4	Make use of the various techniques of Networks	**K3**
CO5	Analyze and determine the functionalities of different Components of Networks	**K4, K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG2CC2P
COURSE TITLE: COMPUTER NETWORKS (P)

CO Number	CO Statement	Knowledge Level
CO1	Demonstrate the installation of CISCO Packet Tracer	K2
CO2	Make use of Switch Interface	K3
CO3	Experiment with VLAN	K3
CO4	Implement and examine the router setup and static routing	K3
CO5	Execute dynamic routing in CISCO Packet Tracer	K3

COURSE CODE: 22UCG2CC4
COURSE TITLE: INFORMATION TECHNOLOGY INFRASTRUCTURE LIBRARY

CO Number	CO Statement	Knowledge Level
CO1	Recall and Rephrase the key concepts of ITIL	K1,K2
CO2	Outline the models of Service Management	K2
CO3	Utilize the various functionalities of Service Management	K3
CO4	Categorize the different types of Management Practices	K4
CO5	Analyze and Explain the Service Management features in Infrastructure Library	K4,K5

COURSE CODE: 22UCG3CC5
COURSE TITLE: JAVA PROGRAMMING

CO Number	CO Statement	Knowledge Level
CO1	Understand OOPs concepts.	K1
CO2	Demonstrate the concept of object oriented programming through Java	K2
CO3	Apply the concept of interface, exceptions and threads to develop Java programs	K3
CO4	Develop Java program graphics programming	K4
CO5	Create the interactive Java program.	K5

CRITERION I **POs and COs**

COURSE CODE: 22UCG3CC3P **COURSE TITLE: JAVA PROGRAMMING (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate and implement the fundamental OOPs concept	**K1,K2**
CO2	Apply the reusability and develop the Java program	**K3**
CO3	Analyze the working of exception handling and threads	**K4**
CO4	Illustrate of the applet concept to design interactive program	**K4**
CO5	Design the animation program using graphics class	**K5**

COURSE CODE: 22UCG3CC6 **COURSE TITLE: INFRASTRUCTURE MANAGEMENT (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the key concepts of Infrastructure Management	**K1**
CO2	Outline the functions of Configuration manager	**K2**
CO3	Utilize the knowledge to deploy client and server	**K3**
CO4	Analyze the performance of OS and able to monitor the infrastructure	**K4**
CO5	Categorize and explain the functions of SCCM and SCOM	**K4, K5**

COURSE CODE: 22UCG3GEC1P **COURSE TITLE: OFFICE AUTOMATION (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Describe the concepts of Office Package.	**K1**
CO2	Recognize when to use each of the Office programs to create professional and academic documents.	**K2**
CO3	Use Office programs to create personal, academic and business documents following current professional and/or industry standards.	**K3**
CO4	Test the working knowledge of advanced concepts of Office Software.	**K4**
CO5	Assess oneself to get employment with this practical hands on training.	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG4CC7 **COURSE TITLE: DATABASE MANAGEMENTSYSTEMS (T& P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Remember and understand the fundamental concepts ofdatabases	**K1,K2**
CO2	Classify and make use of the database models	**K2,K3**
CO3	Utilize and Examine database functionality	**K3,K4**
CO4	Analyze and Select the queries for data retrieval from the database	**K4,K5**
CO5	Evaluate a database for real-time applications	**K5**

COURSE CODE: 22UCG4GEC2P **COURSE TITLE: MULTIMEDIA (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Identify the basic tools and components of a Multimedia	**K1**
CO2	Explain / Outline the concepts of Multimedia	**K2**
CO3	Create simple shapes using animation editing software and design simple animation by applying shape tweens and motion tweens	**K3**
CO4	Apply the basic elements and principles of photo editing software to achieve a great photo effect by applying effects like color, shadows, alteration of backgrounds, cropping and collage making	**K4**
CO5	Design and implement the various graphic and text information in Photoshop	**K6**

COURSE CODE: 22UCG5CC8 **COURSE TITLE: SOFTWARE TESTING(T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recite the basic concepts of Selenium	**K1**
CO2	Identify and examine the test scripts to validate functionality using Selenium	**K1, K2**
CO3	Explain and demonstrate the software testing based on Selenium	**K2, K3**
CO4	Apply and analyze various problems using Selenium	**K3, K4**
CO5	Experiment and evaluate the automated test across browsers using Selenium testing tool	**K4, K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG5CC9 **COURSE TITLE: INTRODUCTION TO DIGITAL TECHNOLOGIES (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Remember and understand the key concepts of digital technologies	**K1,K2**
CO2	Classify and make use of current technologies	**K2**
CO3	Implement information in new situations	**K3**
CO4	Analyze the different use cases	**K4**
CO5	Evaluate new ideas	**K5**

COURSE CODE: 221UCG5CC10 **COURSE TITLE: CLIENT RELATIONSHIPMANAGEMENT (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand ServiceNow Intermediate Level	**K1**
CO2	Acquire ServiceNow features and tools	**K2**
CO3	Get the database for process automation	**K2**
CO4	Analyze comprehensive knowledge in ServiceNow Interface	**K3**
CO5	Compare the script types throughout the platform	**K5**

COURSE CODE: 22UCG5CC11 **COURSE TITLE: VIRTUALIZATION& CLOUD**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the recent trends in computing and list the basics ofcloud computing	**K1**
CO2	Interpret about Data centers and its transformations	**K2**
CO3	Apply the concept of Virtualization and identify thetechnologies of Virtualization.	**K3**
CO4	Examine and discover the concept of cloud computing	**K4**
CO5	Assess and perceive the knowledge of Hybrid Cloud	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG5DSE1A **COURSE TITLE: COMPUTER ORGANIZATION &ARCHITECTURE**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall and summarize the basic concept of computer fundamentals	**K1, K2**
CO2	Identify and interpret digital representation of data in acomputer system	**K2, K3**
CO3	Discuss and discover the internal structure of the processorand the use of microprogramming.	**K3, K4**
CO4	Apply and explain the concept of stored program,components of the computers with each other	**K3, K5**
CO5	Examine and evaluate problems, understand the performance requirements of systems	**K4, K5**

COURSE CODE: 22UCG5DSE1B **COURSE TITLE: PROCESS MANAGEMENT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define and summarize the process models in software industry	**K1, K2**
CO2	Interpret and use the agile concepts in processmanagement	**K2, K3**
CO3	Apply and correlate the principles of Scrum and DevOps	**K3, K4**
CO4	Illustrate the strategies work of Design Thinking	**K4**
CO5	Plan and develop applications using Agile, Scrum and DevOps for real world scenario	**K5, K6**

COURSE CODE: 22UCG5SEC1P **COURSE TITLE: VIRTUALIZATION& CLOUD (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate the workstation Player Preference settings	**K2**
CO2	Apply the knowledge to install, upgrade and configureon VMware tools	**K3**
CO3	Examine the knowledge on Virtual Machines	**K4**
CO4	Analyze the hardware settings of the Virtual Machines	**K4**
CO5	Assess the Network connections	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG6CC12 **COURSE TITLE: PYTHON PROGRAMMING (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall execution and debugging of Python program	**K1**
CO2	Demonstrate the concept of classes and objects usingPython	**K2**
CO3	Make use of Python features to build real-timeapplications	**K3**
CO4	Analyze the various functionalities of Python	**K4**
CO5	Access the performance of inheritance and methodoverriding	**K5**

COURSE CODE: 22UCG6CC13 **COURSE TITLE: DATA STRUCTURES & ALGORITHMS**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand data organization &data structure operations	**K1,K2**
CO2	Design the various types of algorithms and data structure	**K2,K3**
CO3	Demonstrate problems to represent the linear and non linear structures by recognizing its memory representation and traversal techniques.	**K3,K4**
CO4	Implement various techniques of algorithms by using suitable data structures	**K3,K4**
CO5	Analyze the different design technique of algorithm and recommend the technique for practical problems	**K4,K5**

COURSE CODE: 22UCG6DSE2A **COURSE TITLE: ARTIFICIAL INTELLIGENCE**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the fundamentals of ArtificialIntelligence (AI) and expert systems.	**K1**
CO2	Identify the type of search strategy that is moreappropriate to address a particular problem andimplement the selected strategy	**K3**
CO3	Apply basic principles of AI in solutions that requireproblem solving, inference, perception, knowledge representation, and learning	**K3**
CO4	Analyze the future trends of AI applications	**K4**
CO5	Assess the importance of knowledge representation inintelligent and expert systems	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG6DSE2B **COURSE TITLE: NETWORK SECURITY**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define and summarize the basic concepts of network security	**K1, K2**
CO2	Classify and explain the techniques for encryption	**K2, K5**
CO3	Understand and apply the encryption algorithms	**K2, K3**
CO4	Summarize and analyze the network and internet security	**K2, K4**
CO5	Discuss and explain security features for system security	**K2, K5**

COURSE CODE: 21UCG6DSE2C **COURSE TITLE: BIG DATA & IOT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Outline to provide an overview and its classifications of a growing field of big data analytics.	**K1**
CO2	Use the tools required to manage and analyse big data like Hadoop.	**K2**
CO3	Apply knowledge using MongoDB & NoSQL.	**K3**
CO4	Illustrate IoT enabling Technologies	**K3**
CO5	Recommend the required features of Bigdata and IoT for Real time environment	**K4**

COURSE CODE: 22UCG6SEC2P **COURSE TITLE: HTML, CSS, JavaScript (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the basic concept of web design	**K2**
CO2	Apply custom styles to style the web	**K3**
CO3	Build real time web applications	**K3**
CO4	Analyze a web page and identify its elements andattributes	**K4**
CO5	Compare static and dynamic web page	**K5**

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Designation: Principal
Reason: NAAC
Location: Tiruchirappalli, Tamil Nadu, India
Date: 30-Sep-2024 10:43:48

Key Indicator - 1.1 Curriculum Design and Development

1.1.1 Curricula developed and implemented have relevance to the local, regional, national and global developmental needs, which is reflected in the Programme outcomes (POs) and Course Outcomes (COs) of the Programmes offered by the institution

Programme Outcomes (POs) and Course Outcomes (COs) – (2023-2024 Onwards)

DEPARTMENT OF COMPUTER SCIENCE

B. Sc-Computer Science with Cognitive Systems

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	**LEARNING ENVIRONMENT** To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	**ACADEMIC EXCELLENCE** To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	**EMPLOYABILITY** To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	**PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY** To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strongattitude towards the development of the nation.
PEO5	**GREEN SUSTAINABILITY** To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overallsustainable development.

PROGRAMME OUTCOMES (POs)

POs	Programme Outcome On completion of B. Sc Computer Science / B. Sc Computer Science with Cognitive Systems / BCA/ B. Sc Information Technology Programme, the students will be able to,
PO1	**Academic Skills & Social Responsibility** Apply Computing, Mathematical and Scientific Knowledge in Various disciplines by understanding the concerns of the society.
PO2	**Critical Thinking and Innovative Progress** Design the software applications with varying intricacies using programming languages for innovative learning in techno world to meet the changing demands.
PO3	**Personality Development** Perceive Leadership skills to accomplish a common goal with effective communication and understanding of professional, ethical, and social responsibilities.
PO4	**Lifelong Learning** Identify resources for professional development and apply the skills and tools necessary for computing practice to gain real life experiences.
PO5	**Creativity and Holistic Approach** Create a scientific temperament and novelties of ideas to support research and development in Computer Science to uphold scientific integrity and objectivity.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO NO.	The students of B.Sc Computer Science with Cognitive Systems will be able to,	POs Addressed
PSO1	Gain knowledge in the core topics of Computer Science and to develop an equal appreciation of current industry standards.	PO1, PO2
PSO2	Equip them as industry ready students and an entrepreneur with significant knowledge on digital ecosystem that provide values to business needs in the area of IT Infrastructure and IT Application, Maintenance & Service Support.	PO2, PO3, PO4, PO5
PSO3	Apply appropriate techniques and skills in various domains of computer science to solve real world problems.	PO1, PO2, PO4
PSO4	Create awareness on current issues and latest trends in technological development and thereby implement innovative ideas and solutions to existing problems in society.	PO2, PO4 PO5
PSO5	Implement independent projects of their own choice using latest tools and also work as an effective team member to attain the predefined goals.	PO1, PO3, PO5

COURSE OUTCOMES (COs)

COURSE CODE: 23UCG1CC1 COURSE TITLE: IT COGNITION AND PROBLEM SOLVING		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the foundations of computer science	**K1**
CO2	Acquire a comprehensive understanding of cognitive systems	**K2**
CO3	Apply cognitive techniques to problem-solving	**K3**
CO4	Analyze the integrating computer science principles and acquire the skills to design and develop cognitive systems	**K4**
CO5	Evaluate and optimize cognitive system performance	**K5**

COURSE CODE: 23UCG1CC1P COURSE TITLE: PROBLEM SOLVING USING ADVANCED EXCEL (P)		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the basic functions in worksheets	**K2**
CO2	Writing simple functions to perform simple tasks	**K3**
CO3	Develop the user forms	**K3**
CO4	Applying functions in generating reports	**K3**
CO5	Import and Export Data from different applications	**K5**

COURSE CODE: 23UCG1CC2 COURSE TITLE: OPERATING SYSTEMS (T & P)		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall and understand the basic concepts of Operating System	**K1, K2**
CO2	Analyze and categorize the components of Operating System	**K3, K4**
CO3	Examine and explain the performance of Operating System services	**K4, K5**
CO4	Identify and apply the appropriate methods or instructions to manage the resources	**K3, K5**
CO5	Compare and interpret the functionalities of Operating Systems	**K4, K5**

CRITERION I **POs and COs**

COURSE CODE: 23UCG2CC3 **COURSE TITLE: JAVA PROGRAMMING**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand OOPs concepts.	**K1**
CO2	Demonstrate the concept of Object Oriented programming through Java	**K2**
CO3	Apply the concept of interface, exceptions and threads to develop Java programs	**K3**
CO4	Develop Java program using Collection Interfaces	**K4**
CO5	Explain the Java program with Collection Interfaces and Classes	**K5**

COURSE CODE: 23UCG2CC2P **COURSE TITLE: JAVA PROGRAMMING (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate and implement the fundamental OOPs concept	**K1, K2**
CO2	Apply the reusability and develop the Java program	**K3**
CO3	Analyze the working of exception handling and threads	**K4**
CO4	Illustrate of the Collection concept to design Java program	**K4**
CO5	Design the Java program using Collection classes and interfaces	**K5**

COURSE CODE: 22UCG2CC4 **COURSE TITLE: INFORMATION TECHNOLOGY INFRASTRUCTURE LIBRARY**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall and Rephrase the key concepts of ITIL	**K1,K2**
CO2	Outline the models of Service Management	**K2**
CO3	Utilize the various functionalities of Service Management	**K3**
CO4	Categorize the different types of Management Practices	**K4**
CO5	Analyze and Explain the Service Management features in Infrastructure Library	**K4,K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG3CC5 **COURSE TITLE: JAVA PROGRAMMING**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand OOPs concepts.	**K1**
CO2	Demonstrate the concept of object-oriented programming through Java	**K2**
CO3	Apply the concept of interface, exceptions and threads to develop Java programs	**K3**
CO4	Develop Java program graphics programming	**K4**
CO5	Create the interactive Java program.	**K5**

COURSE CODE: 22UCG3CC3P **COURSE TITLE: JAVA PROGRAMMING (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate and implement the fundamental OOPs concept	**K1, K2**
CO2	Apply the reusability and develop the Java program	**K3**
CO3	Analyze the working of exception handling and threads	**K4**
CO4	Illustrate of the applet concept to design interactive program	**K4**
CO5	Design the animation program using graphics class	**K5**

COURSE CODE: 22UCG3CC6 **COURSE TITLE: INFRASTRUCTURE MANAGEMENT (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the key concepts of Infrastructure Management	**K1**
CO2	Outline the functions of Configuration manager	**K2**
CO3	Utilize the knowledge to deploy client and server	**K3**
CO4	Analyze the performance of OS and able to monitor the infrastructure	**K4**
CO5	Categorize and explain the functions of SCCM and SCOM	**K4, K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG3GEC1P **COURSE TITLE: OFFICE AUTOMATION (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Describe the concepts of Office Package.	**K1**
CO2	Recognize when to use each of the Office programs to create professional and academic documents.	**K2**
CO3	Use Office programs to create personal, academic and business documents following current professional and/or industry standards.	**K3**
CO4	Test the working knowledge of advanced concepts of Office Software.	**K4**
CO5	Assess oneself to get employment with this practical hands on training.	**K5**

COURSE CODE: 22UCG4CC7 **COURSE TITLE: DATABASE MANAGEMENTSYSTEMS (T& P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Remember and understand the fundamental concepts ofdatabases	**K1,K2**
CO2	Classify and make use of the database models	**K2,K3**
CO3	Utilize and Examine database functionality	**K3,K4**
CO4	Analyze and Select the queries for data retrieval from the database	**K4,K5**
CO5	Evaluate a database for real-time applications	**K5**

COURSE CODE: 22UCG4GEC2P **COURSE TITLE: MULTIMEDIA (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Identify the basic tools and components of a Multimedia	**K1**
CO2	Explain / Outline the concepts of Multimedia	**K2**
CO3	Create simple shapes using animation editing software and design simple animation by applying shape tweens and motion tweens	**K3**
CO4	Apply the basic elements and principles of photo editing software to achieve a great photo effect by applying effects like color, shadows, alteration of backgrounds, cropping and collage making	**K4**
CO5	Design and implement the various graphic and text information in Photoshop	**K6**

CRITERION I **POs and COs**

COURSE CODE: 22UCG5CC8 **COURSE TITLE: SOFTWARE TESTING(T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recite the basic concepts of Selenium	**K1**
CO2	Identify and examine the test scripts to validate functionality using Selenium	**K1, K2**
CO3	Explain and demonstrate the software testing based on Selenium	**K2, K3**
CO4	Apply and analyze various problems using Selenium	**K3, K4**
CO5	Experiment and evaluate the automated test across browsers using Selenium testing tool	**K4, K5**

COURSE CODE: 22UCG5CC9 **COURSE TITLE: INTRODUCTION TO DIGITAL TECHNOLOGIES (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Remember and understand the key concepts of digital technologies	**K1,K2**
CO2	Classify and make use of current technologies	**K2**
CO3	Implement information in new situations	**K3**
CO4	Analyze the different use cases	**K4**
CO5	Evaluate new ideas	**K5**

COURSE CODE: 221UCG5CC10 **COURSE TITLE: CLIENT RELATIONSHIPMANAGEMENT (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand ServiceNow Intermediate Level	**K1**
CO2	Acquire ServiceNow features and tools	**K2**
CO3	Get the database for process automation	**K2**
CO4	Analyze comprehensive knowledge in ServiceNow Interface	**K3**
CO5	Compare the script types throughout the platform	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG5CC11 **COURSE TITLE: VIRTUALIZATION& CLOUD**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the recent trends in computing and list the basics ofcloud computing	**K1**
CO2	Interpret about Data centers and its transformations	**K2**
CO3	Apply the concept of Virtualization and identify thetechnologies of Virtualization.	**K3**
CO4	Examine and discover the concept of cloud computing	**K4**
CO5	Assess and perceive the knowledge of Hybrid Cloud	**K5**

COURSE CODE: 22UCG5DSE1A **COURSE TITLE: COMPUTER ORGANIZATION &ARCHITECTURE**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall and summarize the basic concept of computer fundamentals	**K1, K2**
CO2	Identify and interpret digital representation of data in acomputer system	**K2, K3**
CO3	Discuss and discover the internal structure of the processorand the use of microprogramming.	**K3, K4**
CO4	Apply and explain the concept of stored program,components of the computers with each other	**K3, K5**
CO5	Examine and evaluate problems, understand the performance requirements of systems	**K4, K5**

COURSE CODE: 22UCG5DSE1B **COURSE TITLE: PROCESS MANAGEMENT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define and summarize the process models in software industry	**K1, K2**
CO2	Interpret and use the agile concepts in processmanagement	**K2, K3**
CO3	Apply and correlate the principles of Scrum and DevOps	**K3, K4**
CO4	Illustrate the strategies work of Design Thinking	**K4**
CO5	Plan and develop applications using Agile, Scrum and DevOps for real world scenario	**K5, K6**

CRITERION I **POs and COs**

COURSE CODE: 22UCG5DSE1C **COURSE TITLE: COMPUTER GRAPHICS**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define the basic concepts of Computer Graphics	**K1**
CO2	Explain about the basic principles of Graphics systems	**K2**
CO3	Describe the hardware system architecture for Computer Graphics	**K2**
CO4	Analyze and Apply algorithm to draw different mathematical objects	**K3, K4**
CO5	Access and illustrate various 2D, 3D Geometric & modeling techniques	**K3, K5**

COURSE CODE: 22UCG5SEC1P **COURSE TITLE: VIRTUALIZATION& CLOUD (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Demonstrate the workstation Player Preference settings	**K2**
CO2	Apply the knowledge to install, upgrade and configureon VMware tools	**K3**
CO3	Examine the knowledge on Virtual Machines	**K4**
CO4	Analyze the hardware settings of the Virtual Machines	**K4**
CO5	Assess the Network connections	**K5**

COURSE CODE: 22UCG6CC12 **COURSE TITLE: PYTHON PROGRAMMING (T & P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Recall execution and debugging of Python program	**K1**
CO2	Demonstrate the concept of classes and objects usingPython	**K2**
CO3	Make use of Python features to build real-timeapplications	**K3**
CO4	Analyze the various functionalities of Python	**K4**
CO5	Access the performance of inheritance and methodoverriding	**K5**

CRITERION I **POs and COs**

COURSE CODE: 22UCG6CC13 **COURSE TITLE: DATA STRUCTURES & ALGORITHMS**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand data organization &data structure operations	**K1,K2**
CO2	Design the various types of algorithms and data structure	**K2,K3**
CO3	Demonstrate problems to represent the linear and non linear structures by recognizing its memory representation and traversal techniques.	**K3,K4**
CO4	Implement various techniques of algorithms by using suitable data structures	**K3,K4**
CO5	Analyze the different design technique of algorithm and recommend the technique for practical problems	**K4,K5**

COURSE CODE: 22UCG6DSE2A **COURSE TITLE: ARTIFICIAL INTELLIGENCE**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the fundamentals of ArtificialIntelligence (AI) and expert systems.	**K1**
CO2	Identify the type of search strategy that is moreappropriate to address a particular problem andimplement the selected strategy	**K3**
CO3	Apply basic principles of AI in solutions that requireproblem solving, inference, perception, knowledge representation, and learning	**K3**
CO4	Analyze the future trends of AI applications	**K4**
CO5	Assess the importance of knowledge representation inintelligent and expert systems	**K5**

COURSE CODE: 22UCG6DSE2B **COURSE TITLE: NETWORK SECURITY**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Define and summarize the basic concepts of network security	**K1, K2**
CO2	Classify and explain the techniques for encryption	**K2, K5**
CO3	Understand and apply the encryption algorithms	**K2, K3**
CO4	Summarize and analyze the network and internet security	**K2, K4**
CO5	Discuss and explain security features for system security	**K2, K5**

CRITERION I **POs and COs**

COURSE CODE: 21UCG6DSE2C **COURSE TITLE: BIG DATA & IOT**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Outline to provide an overview and its classifications of a growing field of big data analytics.	**K1**
CO2	Use the tools required to manage and analyse big data like Hadoop.	**K2**
CO3	Apply knowledge using MongoDB & NoSQL.	**K3**
CO4	Illustrate IoT enabling Technologies	**K3**
CO5	Recommend the required features of Bigdata and IoT for Real time environment	**K4**

COURSE CODE: 22UCG6SEC2P **COURSE TITLE: HTML, CSS, JavaScript (P)**		
CO Number	**CO Statement**	**Knowledge Level**
CO1	Understand the basic concept of web design	**K2**
CO2	Apply custom styles to style the web	**K3**
CO3	Build real time web applications	**K3**
CO4	Analyze a web page and identify its elements andattributes	**K4**
CO5	Compare static and dynamic web page	**K5**

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