



Department of Computer Science

B.Sc. Computer Science

S.No.	Course Code	Course Name	Course Outcomes
SEMESTER- I			
1.	21UCSC11	Core Course - I: Programming in C	CO1[K1]: describe preprocessor, data types, control statement, formatted I/O, functions, arrays, pointers, structures, strings and file processing. CO2[K2]: illustrate preprocessor, control statement, formatted I/O, functions, arrays, pointers, structures, strings and file processing. CO3[K3]: apply control statements, formatted I/O, functions, arrays, pointers, structures, strings and file processing. CO4[K4]: compare data types, control statements, various I/O functions and string functions. CO5[K6]: develop simple program using control statements, arrays and functions
2.	21UCSC1P	Core Course - II: Practical: C Programming	CO1[K2]: demonstrate control statements, operators and built-in functions CO2[K3]: perform operations using user defined functions, pointers, structures, arrays and file I/O. CO3[K4]: examine looping statements and various functions math.h and string.h CO4[K5]: choose the way for providing a solution for the given problem. CO5[K6]: develop simple programs using decision making statements, looping controls and functions.



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3.	21UCSS1P	Skill Enhancement Course – I: Office Automation	<p>CO1[K2]: demonstrate the Basic Formatting options, Tables, Charts, Mail Merge, Graphs.</p> <p>CO2[K3]: apply Bullets and Numbering, Mathematical formulas and various designs using office</p> <p>CO3[K3]: use the tools to apply borders, charts, graphs and custom animation</p> <p>CO4[K4]: choose appropriate tools and options to create document, worksheet and presentation</p> <p>CO5[K6]: design a simple document, presentation slide and do Calculation in Worksheets</p>
SEMESTER- II			
4.	21UCSC21	Core Course – III: Data Structures and Algorithms	<p>CO1[K1]: describe the fundamental concepts of Data Structure.</p> <p>CO2[K2]: demonstrate the concepts of Stack, Queue, Linked List, Trees, Graphs, Searching and Sorting.</p> <p>CO3[K3]: apply Stack, Queue, Linked List and basic sorting technique for a given simple application</p> <p>CO4[K4]: compare the Stack and Queue, Linked List and Arrays, Trees and Graphs, Searching and Sorting techniques.</p> <p>CO5[K6]: develop simple Data Structure Programs using Stack, Queue, LinkedList, Trees and Graphs.</p>



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5.	21UCSC2P	Core Course – IV: Practical: Data Structure	CO1[K2]: demonstrate Prim's, Dijkstra, Kruskal Algorithms. CO2[K3]: develop simple Data Structure Programs using C. CO3[K3]: apply Stack, Queue, Linked List and basic sorting technique for a givensimple application CO4[K4]: compare the working of different Searching and Sorting Algorithms. CO5[K6]: design the Data Structure programs using Trees, Graphs, Searchingand Sorting.
6.	21UCSS2P	Skill Enhancement Course – II: DTP and Multimedia	CO1[K2]: demonstrate the vector image editor tools and prototyping tools. CO2[K3]: use the Smudge tool, lasso tool and filters to add effects to images. CO3[K4]: examine the tools used for creating effects in images and animation CO4[K5]: select suitable Tween, shape and timeline effects to develop animatedimages and videos. CO5[K6]: create flyers, brochures and animated files.
SEMESTER- III			



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7.	21UCSC31	Core Course – V: Relational Database Management Systems	CO1[K1]: outline the fundamental concepts and relational language CO2[K2]: explain database architecture, relational algebra, structure of relational database, advanced SQL Concepts, normalization, transaction model and concurrency control CO3[K3]: use keys in database schema, aggregate function in queries and nested sub queries, functional dependencies in decomposition CO4[K4]: analyze query languages, relational algebra and SQL query language
8.	21UCSC3P	Core Course – VI: Practical: SQL and PLSQL	CO1[K2]: specify commands to create, alter and handle tables and views CO2[K3]: apply limit, range queries and use string, aggregate and date function CO3[K3]: perform join and exception handling while accessing data CO4[K6]: construct PL/SQL program to execute procedure, function and cursor CO5[K6]: create trigger to handle database event



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9.	21UCSN31	Non Major Elective Course – I: Fundamentals of Internet	CO1[K1]: describe anatomy of computer, memory unit, input and output units, basics of operating system, computer software and computer networks CO2[K2]: explain characteristics, generations and classification of computers, memory unit, input and output units, fundamentals of operating system and computer networks CO3[K3]: perform numeric conversions and binary arithmetic operations using number system CO4[K4]: distinguish various generations of computer, types of printer, types of network topologies and types of ROM CO5[K4]: examine classification of computers, input and output devices and types of network
10.	21UCSS3P	Skill Enhancement Course – III: Practical: Linux and Shell Programming	CO1[K2]: illustrate the basic UNIX general purpose commands CO2[K3]: apply linux commands in shell programming CO3[K3]: perform different file operations in shell programming CO4[K4]: examine sort, grep and file commands CO5[K5]: choose the appropriate shell commands to develop simple applications
SEMESTER- IV			



S.No.	Course Code	Course Name	Course Outcomes
11.	21UCSC41	Core Course – VII: Programming in Java	CO1[K1]: describe the concepts of object oriented programming, string handling, arrays, exception and packages CO2[K2]: illustrate the principles of inheritance, packages, interfaces, exceptions and multithreading CO3[K3]: develop Java programs using OOPs concepts, strings and arrays CO4[K4]: differentiate iterative, conditional and looping statements and analyze string operation CO5[K6]: develop solution for a simple problem using control statements, strings, arrays and inheritance
12.	21UCSC4P	Core Course – VIII: Practical: Java Programming	CO1[K2]: illustrate the concepts of Object Oriented Programming CO2[K2]: demonstrate the functionalities of inheritance, packages, interfaces, exceptions and multithreading CO3[K3]: apply OOP's concepts in Java programming to solve problems CO4[K5]: choose appropriate iterative, conditional and looping statements to solve problems CO5[K6]: develop solution for a simple problem using Java



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13.	21UCSA41	Allied Course – IV: Microprocessor and Computer Organization	<p>C01[K1]: describe fundamentals of microprocessors, microprocessor architecture, modes of input and output transfer and memory organization</p> <p>C02[K2]: explain instruction set of 8085, data representation and general register organization</p> <p>C03[K3]: develop simple assembly code for different data and instruction format, number representation</p> <p>C04[K4]: analyse large computer to single chip microcontroller, synchronous and asynchronous data transfer, microcomputer system, modes of I/O transaction</p> <p>C05[K4]: examine various number system and different types of</p>
14.	21UCSM41	Self-Paced Learning(Swayam Course): Programming in C++	<p>C01[K1]: identify the background and the key words in C++</p> <p>C02[K2]: demonstrate independent and self-paced learning for clear understanding of the concept</p> <p>C03[K3]: develop computer and communication skills to broaden their knowledge in the course</p> <p>C04[K3]: use high quality reading resources, communication tools and technology to send assignments and to take up test</p> <p>C05[K4]: analyse critically and apply technical skills to comprehend the ideas or theories in the video lectures</p>



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15.	21UCSM42	Self-Paced Learning(Swayam Course): Programing, Data Structures and Algorithms using Python	CO1[K1]: identify the background and the key words in C++ CO2[K2]: demonstrate independent and self-paced learning for clear understanding of the concept CO3[K3]: develop computer and communication skills to broaden their knowledge in the course CO4[K3]: use high quality reading resources, communication tools and technology to send assignments and to take up test CO5[K4]: analyse critically and apply technical skills to comprehend the ideas or theories in the video lectures
16.	21UCSN41	Non-Major Elective – II: Fundamentals of Internet	CO1[K1]: describe sending emails, searching in the web, modems, domains, computer virus and components of webpage CO2[K2]: explain the basics of internet and web, E-mail and its components, domain name, URL, Downloading and installing a software CO3[K3]: apply the knowledge of basic elements in HTML to create a simple web page CO4[K4]: distinguish types of top level domain and types of computer viruses, modem and layers of TCP/IP CO5[K4]: examine types of modem and layers in TCP/IP model



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17.	21UCSS4P	Skill Enhancement Course – IV: Practical: Assembly Language Programming	CO1[K2]: demonstrate arithmetic operations using assembly language programming CO2[K3]: use logical operations in assembly code CO3[K3]: utilize data transfer instruction, looping instruction and shift and rotate instruction CO4[K5]: choose appropriate register and memory level instruction CO5[K6]: design simple assembly program for a given problem
SEMESTER- V			
18.	21UCSC51	Core Course – IX: Web Technology	CO1[K1]: describe the basic tags of HTML, attributes of CSS and constructs of PHP CO2[K2]: explain HTML tags, stylesheets, PHP operators ,flow controls, arrays, strings and functions CO3[K3]: develop a webpage using links, tables, lists, images and CSS CO4[K4]: analyze and write programs using HTML tags, CSS and PHP CO5[K6]: construct PHP programs that use various numeric functions, string functions, cookies and session



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19.	21UCSC52	Core Course – X: System Software and Operating System	<p>CO1[K1]: describe the functions of assembler, compiler, loader, linker, operating system, thread, deadlock concept and process synchronization</p> <p>CO2[K2]: explain features of assembler, compiler, loader, linker, main and virtual memory, file system and inter process communication</p> <p>CO3[K3]: calculate turn around and waiting time using process & CPU scheduling algorithm</p> <p>CO4[K4]: analyse machine independent and dependent assembler, compiler, loader, linker design option, main, virtual memory & file system management</p> <p>CO5[K5]: justify various process and CPU scheduling algorithm, paging techniques in memory management</p>
20.	21UCSC5P	Core Course – X: Practical: Web Technology	<p>CO1[K2]: illustrate HTML tags, PHP built-in functions and connecting database</p> <p>CO2[K3]: develop simple web applications using HTML tags, CSS and PHP</p> <p>CO3[K5]: choose PHP constructs, cookies and sessions to design simple web applications</p> <p>CO4[K6]: create simple client and server side web applications</p>



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21.	21UCSC5Q	Core Course – XII: Practical: Android Programming	CO1[K2]: demonstrate the tools in an android platform CO2[K3]: apply Java programming concepts to build an android application CO3[K3]: use the various android form widgets CO4[K6]: design and develop user interface for mobile application CO5[K6]: create simple android application by using layouts and various views
22.	21UCS051	Major Elective Course – I: Computer Graphics	CO1[K1]: describe the concepts of computer graphics, GUI, basic 2D,different graphics systems and applications of computer graphics, Output Primitives, two dimensional geometric transformations, two dimensional viewing. CO2[K2]: explain the concepts of video display devices, output primitives and its attributes, transformations, viewing and clipping. CO3[K3]: use transformations for 2D,raster scan systems, random scan systems for video display devices and various clipping operations. CO4[K4]: compare the Raster Scan & Random Scan Systems, transformations, clipping algorithms. CO5[K4]: examine the concepts of transformations, viewing and clipping in



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23.	21UCS052	Major Elective Course – I: Software Testing	<p>C01[K1]: describe software testing, control flow graph, predicate analysis, regression testing, unit testing and integration testing.</p> <p>C02[K2]: explain the basics of software testing, predicate and boolean expressions</p> <p>C03[K3]: use appropriate testing methods.</p> <p>C04[K4]: distinguish various testing methods in the software.</p> <p>C05[K6]: select appropriate testing strategy to test the particular software</p>
24.	21UCS053	Major Elective Course – I: Digital Image Processing	<p>C01[K1]: describe the fundamental concepts of digital image, image enhancement, image restoration, image compression, image segmentation and edge detection</p> <p>C02[K2]: explain the image enhancement using filters, filters in image restoration, morphological image processing, image segmentation and edge detection.</p> <p>C03[K3]: use various filters in image enhancement and image restoration and basic algorithms for morphological image processing, image compression and various operators in edge detection.</p> <p>C04[K4]: compare lossy and lossless compression and various operators in Edge detection</p> <p>C05[K5]: choose appropriate technique for image enhancement, restoration, compression, segmentation and Edge detection</p>



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25.	21UCS054	Major Elective Course – II: Data Mining and Warehousing	<p>CO1[K1]: describe different methodologies used in data Mining and data warehousing</p> <p>CO2[K2]: explain the basic principles and algorithms used in data mining and data warehousing</p> <p>CO3[K3]: apply data mining techniques to solve simple mining problems</p> <p>CO4[K4]: differentiate frequent pattern mining, association, correlation, prediction, outlier, clustering and classification rules</p> <p>CO5[K4]: examine the application of data mining, models of OLAP and preprocessing</p>
26.	21UCS055	Major Elective Course – II: Network Security	<p>CO1[K1]: describe the concepts of Cryptography and Security</p> <p>CO2[K2]: explain the encryption techniques, number theory, authentication requirement and application, intrusion detection and countermeasures</p> <p>CO3[K3]: apply number theory, basic encryption and decryption techniques</p> <p>CO4[K4]: examine the usage of number theory, key management and authentication functions</p> <p>CO5[K4]: differentiate various block cipher and authentication protocol for an algorithm</p>



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27.	21UCS056	Major Elective Course – II: Artificial Intelligence	<p>CO1[K1]: describe the basics and applications of artificial intelligence</p> <p>CO2[K2]: explain agents, problem solving techniques, robotics, natural language processing and propositional logic</p> <p>CO3[K3]: use the problem solving, knowledge, reasoning and planning techniques in artificial intelligence</p> <p>CO4[K4]: analyze learning, communication and acting techniques</p> <p>CO5[K4]: examine the algorithms of gaming, machine learning and natural language processing</p>
28.	21UCSS5P	Skill Enhancement Course – V: Practical: Soft Skill Training	<p>CO1[K1]: identify their interpersonal skill</p> <p>CO2[K3]: present their view confidently among a group of people</p> <p>CO3[K4]: examine themselves in mock HR and stress interview</p> <p>CO4[K5]: prioritize their work using time management skill</p> <p>CO5[K6]: design standard resume</p>
29.	21UCSJ51	Internship	<p>CO1[K2]: demonstrate the capability of software, hardware and modern development tools which are used in an industry or real-world and trained during the Internship period</p> <p>CO2[K3]: apply the acquired knowledge in the trained area to solve real world problems</p> <p>CO3[K3]: present their learned skill</p> <p>CO4[K4]: compare different roles in an industry</p> <p>CO5[K6]: design a powerpoint presentation and explain the software used for their training</p>
SEMESTER- VI			



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30.	21UCSC61	Core Course – XIII: Computer Networks	<p>CO1[K1]: describe the functions of each layer in OSI and TCP/IP model, Encoding, Wireless, Internetworking, End to End protocols, Congestion Control mechanism, Network security, Applications and Infrastructure services</p> <p>CO2[K2]: explain performance of network, Framing, Error Detection, ReliableTransmission, Internetworking, Congestion control mechanism, Application and Infrastructure services</p> <p>CO3[K3]: apply the basic knowledge of networks to implement network software, Reliabletransmission, Switching and Bridging, Congestion control and Network Security</p> <p>CO4[K4]: distinguish various types of network architecture, encoding, error detectiontechniques, congestion control mechanism and network security</p> <p>CO5[K5]: choose any protocols for each layer in networks</p>



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31.	21UCSC62	Core Course – XIV: Software Engineering	<p>CO1[K1]: describe process models, Agile development, Requirement modeling, Design concepts, software testing strategies, SQA, ISO 9001, CMMI Model and software process improvement</p> <p>CO2[K2]: explain the basic knowledge of software, process models, agile development, requirements modeling, design concepts, software testing strategies, SQA and Software Process Improvement</p> <p>CO3[K3]: apply the knowledge of software engineering in designing, testing and ensuring quality of a software</p> <p>CO4[K4]: distinguish various types of process model, requirements modelling, Design concepts and testing strategies</p> <p>CO5[K5]: select any process model, requirements modelling and testing strategies for software products</p>



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32.	21UCSC63	Core Course – XV: Open Source Technology	<p>CO1[K1]: describe the need of an open sources, advantages of open source application, UML diagrams, data types, decision control statements,function, file handling and data structures.</p> <p>CO2[K2]: explain open source, the concept of UML diagrams & their constructs,decision control statements, function, file handling and data structures.</p> <p>CO3[K3]: apply UML diagrams to visualize the design of a system and decisioncontrol statements, function, file handling and data structures.</p> <p>CO4[K4]: examine the user requirement specification and system requirementspecification, concepts of python and differentiate between the data types and compare the functions and modules.</p> <p>CO5[K6]: develop simple programs using list, tuple, sets, dictionary, control andlooping statements, functions and modules in python.</p>
33.	21UCSC6P	Core Course – XVI: Practical: Open Source Technology	<p>CO1[K2]: draw the use case diagram, sequence diagram, activity diagram, deployment diagram and illustrate conditional & looping statements,list, tuple, dictionary.</p> <p>CO2[K3]: perform the operations using operators, function and modules in python</p> <p>CO3[K4]: analyze the usage of compound data types like list, tuple and dictionary to solve a problem.</p> <p>CO4[K5]: choose the UML diagrams to visualize the design of the system.</p> <p>CO5[K6]: design the UML notation for a SRS and also develop a simple pythonprogram.</p>



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34.	21UCSJ61	Core Course – XVII: Project	CO1[K2]: demonstrate the acquired basic knowledge of technological tools and techniques in specific domain CO2[K3]: apply the domain specific subject knowledge in project CO3[K3]: present the solution orally and in the form of project report CO4[K5]: choose alternative solution for the existing problem definition CO5[K6]: prepare formal report which describes the work undertaken using ICT tools
35.	21UCS061	Major Elective Course –III: Advanced Computing	CO1[K1]: describe android platform and design essentials, cloud architecture and deployment model, green computing CO2[K2]: explain the anatomy of android, cloud components and architecture, green IT Strategies CO3[K2]: outline cloud deployment, green strategies and android terminologies CO4[K4]: compare the types of cloud services, android anatomy and green computing strategies CO5[K5]: justify the usage of android services, cloud services and green IT fundamentals



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36.	21UCS062	Major Elective Course – III: Internet of Things	<p>CO1[K1]: describe IoT, internet principles, prototyping for embedded devices and four pillars of IoT</p> <p>CO2[K2]: explain the principles of IoT and applications</p> <p>CO3[K2]: illustrate the usage of connected devices, MAC addresses, Non-digital methods, 3D printing and four pillars of IoT</p> <p>CO4[K4]: examine internet principles and embedded devices required for IoT</p> <p>CO5[K5]: choose the IOT connected devices, TCP and UDP Ports and Embedded devices to solve real time applications</p>
37.	21UCS063	Major Elective Course – III: Big Data	<p>CO1[K1]: outline the concepts of big data, statistical concepts, data analysis, clustering and map reduce hadoop framework</p> <p>CO2[K2]: explain time series, neural networks and fuzzy logic analysis, mining data streams and frequent itemset and various visualization techniques</p> <p>CO3[K3]: apply regression, clustering and classification techniques</p> <p>CO4[K4]: distinguish the stream concepts and the clustering techniques</p> <p>CO5[K4]: analyze regression modeling, time series and market based model</p>



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38.	21UCSS6P	Skill Enhancement Course – VI: Practical: Image Processing	CO1[K2]: demonstrate the image effects, image filters and geometric transformation, color and contrast adjustment. CO2[K3]: use filtering techniques in image enhancement CO3[K3]: apply the effects of various image transformation CO4[K4]: examine the usage of geometric transformation and color channelization in image CO5[K6]: combine various image effects, filters and transformations to image



B.A.(Tamil)

S.No	Course Code	Course Name	Course Outcomes
SEMESTER- V			
1.	21UTAC54	Core Course - XII: Practical: Office Automation	CO1 [K2]: அடிப்படை வடிவமைப்பு விருப்பங்கள், அட்டவணைகள், வரைபடங்கள், அஞ்சல் ஒன்றிணைப்பு வரைபடங்கள் ஆகியவற்றை செய்வர் CO2 [K3]: மைக்ரோசாஃப்ட் அலுவலகத்தைப் பயன்படுத்தி தோட்டாக்கள் மற்றும் எண், கணித சூத்திரங்கள் மற்றும் மற்றும் பல்வேறு வடிவமைப்புகளைப் பயன்படுத்துவர் CO3 [K3]: கணித சூத்திரங்கள், எழுத்துரு, பத்தி, பக்க வடிவமைப்பு விருப்பங்களுக்கான CO4 [K4]: பல்வேறு வகையான எடிட்டிங் கருவிகள், பட்டியல்கள் மற்றும் விளக்கப்படங்களை ஒப்பிடுவர் CO5 [K6]: ஒரு ஆவணம், விளக்கக்காட்சி ஸ்லைடை வடிவமைத்து பணித்தாளர்களில் கணக்கீடு செய்வர்