DEPARTMENT OF COMPUTER TECHNOLOGY(IT & CT- UG)

Programme: B.Sc., Computer Technology

PO No.	Programme Outcomes Upon completion of the B.Sc. Degree Programme,the graduate will be able to
PO-1	emerge with competency in the subject of Computer Technology and apply knowledge to cater to the needs of Society / Employer / Institution / Own Business Enterprise
PO-2	imbibe analytical/critical/logical/innovative thinking skills in the field of software development, problem solving and hardware designing
PO-3	acquire distinct traits and ethics with high professionalism to gain a broader insight into the domain concerned for nation building
PO-4	develop students with the basic knowledge of Computer Fundamentals, digital systems hardware and operating system.
PO-5	provide students a deep insight into the principles of programming, various cutting edge technologies and tools, thereby creating diverse career opportunities

PSO No.	Programme Specific Outcomes Upon completion of these courses the student would
PSO-1	transform and empower women graduates to meet global challenges through holistic education in terms of recent Teaching-Learning methodologies
PSO-2	groom the graduates towards excellence through building communication skills, handling leadership challenges and negotiating career path ways
PSO-3	heighten the conscious of the graduates on socio-economic concern and to inculcate moral and ethical values to chisel them as better human being
PSO-4	learn future technologies through acquired foundational skills and to develop software solutions for modern business environments by employing appropriate problem solving strategies
PSO-5	analyze the local and global impact of computing on individuals, organizations, and society by applying ethical principles and responsibilities during professional practice

Course Title	C PROGRAMMING WITH DATA STRUCTURES	
CODE	**18ITUC101/ 18CTUC101**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	State the concept of Problem solving Techniques and the usage of control structures	K_1
CO-2	Demonstrate the organizational view of arrays, structure and union	K_3
CO-3	Apply the concept of pointers, various string formats and usage of functions	K_3
CO-4	Establish the basics of data structure and implement the techniques of stack, list and queue	K_3
CO-5	Compute sorting and searching techniques using C programming	K_3

Course Title	C PROGRAMMING AND DATA STRUCTURES LAB	
CODE	**18ITUCP01/ 18CTUCP01**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Demonstrate the concept of prime numbers, palindrome and binomial coefficients	K3
CO-2	Implement the concept of arrays	K3
CO-3	Apply the string functions	K3
CO-4	Implement the data structure concepts	K3
CO-5	Implement the searching and sorting techniques	K3

Course Title	MATHEMATICS – I (NUMERICAL METHODS AND BIO STATISTICS) (Derivations not included – Problems only)	
CODE	**18CSUA101/18CAUA101 / 18ITUA101/18CTUA101**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Identify and Apply the matrix operations for solving any matrix related problems	K1 - K3
CO-2	Determine and apply appropriate numerical methods for solving System of Linear Equations	K2 - K4
CO-3	Compare and distinguish the use of differentiation / integration methods and plan for solving scientific problems	K3 - K4
CO-4	Analyze and infer the type of data for using measures of location and measures of dispersion	K2 - K4
CO-5	Recognize and apply the correlation/regression methods for finding the association between the dependent and independent variables	K2 - K3

Course Title	OPERATING SYSTEM	
CODE	18CTUC202	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand basic OS concepts	K1
CO-2	Describe the process of disk performance	K1
CO-3	Analyze the concepts of real and virtual storage	K2
CO-4	Compare the common algorithm used for both preemptive and non-preemptive scheduling	K3
CO-5	Classify the process management and file system	K3

Course Title	DIGITAL COMPUTER FUNDAMENTALS	
CODE	**18CTUC203**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Compare and illustrate the memory concepts, peripherals and standard I/O interfaces	K2
CO-2	Study and investigate the sequential networks using counters and shift registers	K2
CO-3	Acquire number systems and perform various conversions, binary manipulation and complements	K3
CO-4	Apply the knowledge of boolean algebra to simplify the boolean expressions using the standard forms or Karnaugh map method	K3
CO-5	Get knowledge of ALU operations and can design electronic circuits using different types of adders	K3

Course Title	DIGITAL LAB	
CODE	**18CTUCP02**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Demonstrate a code conversion and n-bit parallel addition	K3
CO-2	Implement assembly language program for addition of 32 – bit signed numbers, ASCII number, BCD number	K3
CO-3	Construct a Half adder, Full adder, Half subtractor and Full subtractor	K3
CO-4	Illustrate NAND as universal building block, De - Morgan's Laws	K3
CO-5	Implement assembly language program for string comparison and number of character present in a string	K3

Course Title	MATHEMATICS – II (OPTIMIZATION TECHNIQUES)	
CODE	**18CAUA202/ 18CTUA202**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Define the basic skills and knowledge of operations research to solve Linear Programming Problem	K_2
CO-2	Relate and solve different Transportation Models to find the feasible and optimum solutions and apply Hungarian method for assignment problems	K_3
CO-3	Describe various costs in Inventory and apply EOQ models with shortage and without shortage in Inventory control	K_3
CO-4	Examine the appropriate period for replacement of equipments and analyze new simple models, like CPM and PERT to improve decision-making and develop critical thinking	K_3
CO-5	Analyze the characteristics and classification of queuing system and apply them to the problems of finite/infinite models	K_3

Course Title	COMPUTER ORGANIZATION AND ARCHITECTURE	
CODE	**18CTUC306**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Know data representations in binary coded form in computer registers and different micro operations and its associated hardware	K2
CO-2	Comprehend the operation of ALU and algorithms to implement arithmetic operations	K3
CO-3	Express different processor organizations and instruction formats	K2
CO-4	Understand Memory hierarchy and types of memory organization	K2

CO-5	Describe input/output mechanisms and interfaces	K1

Course Title	**MICROPROCESSORS AND ITS ARCHITECTURE**	
CODE	**18ITUA303/ 18CTUA303**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Know different processor concepts and intel 8086 architecture	K1
CO-2	Demonstrate the 8086 instruction sets process and assembly language programs	K2
CO-3	Infer the Intel 386 and Intel 486 microprocessor	K2
CO-4	Describe IO devices, interfacing chips and 32 and 64 bit processors	K1
CO-5	Know the techniques of connecting convertors with microprocessor	K1

Course Title	**PRINCIPLES OF COMPILER DESIGN**	
CODE	**18CTUC407**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the various phases of compiler	K1
CO-2	Interpret a Lexical analyzer and a parser	K2
CO-3	Recall storage allocation and construct intermediate code for a given high level programming language	K3

CO-4	Build the target optimized assembly code for the given three address code	K3
CO-5	Rephrase the intermediate code to optimized form	K2

Course Title	**C#.NET PROGRAMMING**	
CODE	**18CTUC408**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Define the basic concepts of .NET framework.	K1
CO-2	Understand the general programming structure of C# in developing software solutions based on user requirements.	K2
CO-3	Apply console based applications.	K3
CO-4	Examine the background process with the help of windows application.	K3
CO-5	Illustrate the concepts of database access.	K3

Course Title	COMPUTER NETWORKS AND SECURITY	
CODE	**18CTUC409**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the basic concept of network and its architecture	K1
CO-2	Understand the network characteristics	K1
CO-3	Gain the knowledge of encoding methods and transmission links	K2
CO-4	Learn various concepts of network security	K2
CO-5	Identify the various cryptographic algorithms and securities	K2

Course Title	C#.NET PROGRAMMING LAB	
CODE	**18CTUCP04**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Identify the basic terminology used in computer programming.	K2
CO-2	Understand the execution of the C# program using arrays, control structures and exceptions.	K3
CO-3	Use C# to implement object oriented concepts in developing solutions.	K3
CO-4	Apply the GUI tools to develop the windows application.	K3
CO-5	Demonstrate the use of various controls and connectivity in windows application.	K3

Course Title	EMBEDDED SYSTEMS	
CODE	18CTUA404	
CO No.	Course Outcomes	Knowledge Level
CO-1	Describes a detailed introduction to embedded systems, its architecture by its processor and memory organization	K1
CO-2	Identify devices like parallel and serial devices, timing devices and device drivers	K1
CO-3	Explains the programming concepts and source code engineering tools for embedded system	K2
CO-4	Apply program modeling concepts during the single and multi-processor system development. It also explains software engineering practices.	K3
CO-5	Explains the real-time programming and also describes RTOS concepts	K2

Course Title	PC HARDWARE AND TROUBLESHOOTING	
CODE	18CTUC510	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the basic concepts of PC hardware &motherboard components.	K1
CO-2	Identify various types of chips in the motherboard.	K2
CO-3	Describe the various motherboard logic and principles of display adapters.	K2
CO-4	Implement the various Installation and assembling techniques in PC.	K3
CO-5	Perform the diagnosing, troubleshooting, and repairing operations for computer hardware components.	K3

Course Title	SOFTWARE ENGINEERING	
CODE	18CSUC511/18CAUC511/19ITUC306 /18CTUC511	
CO No.	Course Outcomes	Knowledge Level
CO-1	Comprehend various software process models	K1
CO-2	Elicit requirements for a software project and develop a Requirement model	K3
CO-3	Apply software engineering principles, techniques, tools and practices	K4
CO-4	Identify and address design and implementation issues todevelop a quality software product	K3
CO-5	Study and Compare various software testing approaches	K3

Course Title	PYTHON PROGRAMMING	
CODE	18CSUC512 / 18CAUC512/18ITUC510 / 18CTUC512	
CO No.	Course Outcomes	Knowledge Level
CO-1	Apply decision making and repetition structures in program design.	K2
CO-2	Develop functions to improve readability of programs	K1
CO-3	Design the programs using Python data types such as tuples, strings, lists and dictionaries	K4
CO-4	Adopt file and exception handling mechanisms	K3
CO-5	Ability to build python program to solve real world problems	K3

Course Title	PYTHON PROGRAMMING LAB	
CODE	**18CSUCP05/18CAUCP05/18ITUCP05/18CTUCP05**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Demonstrate branching and looping concepts	K2
CO-2	Develop code using Lists and Tuples	K4
CO-3	Construct programs using Strings and Functions	K3
CO-4	Build Code for Problems using Dictionary and Sets	K3
CO-5	Make use of Class in Python Programs	K3

Course Title	CYBER SECURITY AND CYBER LAW	
CODE	**18CTUE511**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Classify hacking, cracking and reconnaissance	K1
CO-2	Describe scanning tools and vulnerabilities	K2
CO-3	Understand about password cracking and prevention	K2
CO-4	Assess the cyber crimes, Session Hijacking	K2
CO-5	Practice cyber ethics by learning the Information Technology Act and Indian cyber law	K3

Course Title	PREDICTIVE ANALYTICS	
CODE	18CSUE531/18CAUE521/ 18ITUE531/18CTUE521	
CO No.	Course Outcomes	Knowledge Level
CO-1	Know about the fundamentals concepts of big data	K1
CO-2	Gain knowledge about data mining and predictive analytics.	K1
CO-3	Analyze various types of Predictive Models and develop a Predictive Model	K3
CO-4	Analyze various types of social networks and mapping of social networks	K3

Course Title	GSM ARCHITECTURE	
CODE	18CTUE531	
CO No.	Course Outcomes	Knowledge Level
CO-1	Know history, architecture and services of GSM	K1
CO-2	Understand the various channels and the components of mobile station	K2
CO-3	Explains Core Network's Entities, Interfaces and Functions	K2
CO-4	Describe the procedures in GSM	K2
CO-5	Understands the different types of services and switched data	K2

Course Title	OPEN SOURCE TECHNOLOGIES	
CODE	18CSUC613/18CAUC613/ 18ITUC613/ 18CTUC613	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge on open source, principles and its methodology.	K2
CO-2	Develop the knowledge of different software licenses and their usage.	K2
CO-3	Practice the concepts of control structures and functions in PHP applications	K2-K3
CO-4	Use string handling and array operations in PHP applications	K2-K3
CO-5	Apply the connectivity between PHP and MySQL database and develop web pages using PHP, HTML and MySQL	K4

Course Title	ANDROID PROGRAMMING	
CODE	18CSUC512 / 18CAUC512 / 18CTUC614	
CO No.	Course Outcomes	Knowledge Level
CO-1	Demonstrate the Android Platform, Architecture and Features	K1 – K2
CO-2	Design User Interface and Develop Activity for Android Applications	K1 – K2
CO-3	Use Indent, Broadcast Receivers and Internet Services in Android Applications	K3
CO-4	Apply Multimedia, Camera and Location Based Services in Android Applications	K3
CO-5	Develop and Implement Database Applications using JSON	K3 – K5

Course Title	ANDROID PROGRAMMING LAB	
CODE	18CSUCP05/18CAUCP05/18CTUCP06	
CO No.	Course Outcomes	Knowledge Level
CO-1	Demonstrate the functions of UI components.	K2
CO-2	Ability to design clean UI for Android Applications	K3-K5
CO-3	Construct Mobile apps incorporating message sending, camera activation, audio playing and google maps features	K3-K5
CO-4	Build Mobile apps with database using SQLite	K3-K5
CO-5	Create simple login applications using PHP and MySQL	K3-K5

Course Title	MOBILE COMPUTING	
CODE	18ITUE632 / 18CTUE612	
CO No.	Course Outcomes	Knowledge Level
CO-1	Discuss the basic concepts of networking and mobile computing architecture	K1
CO-2	Demonstrate the mobile computing technology through telephone	K2
CO-3	Understand the emerging technologies Bluetooth, wimax, RFID, mobile IP and GSM card	K2
CO-4	Demonstrate the concept of GPRS and WAP	K2
CO-5	Illustrate the concept of CDMA and 3G technology	K2

Course Title	INTERNET OF THINGS AND ITS APPLICATIONS	
CODE	**18CAUE632 / 18CTUE622/ 18ITUE612**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the physical, logical design of IoT and to identify various IoT levels	K1
CO-2	Describe conceptual framework, architectural views ,technology behind IoT and design principles for connected devices	K2
CO-3	Understand the Physical Servers and different types of applications in various domains	K1
CO-4	Demonstrate the design methodology and building blocks of IoT devices	K2
CO-5	Understand IoT privacy, security, vulnerabilities solutions and business models with applications	K1

Course Title	WIRELESS APPLICATION PROTOCOL	
CODE	**18CSUE612 / 18CAUC613 / 18CTUE632**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the basic concepts of wireless application protocol.	K1-K2
CO-2	Explain the architecture, functioning, and protocols, of various WAP.	K2-K4
CO-3	Enhance the knowledge of gateway and hosting for WAP pages.	K2-K3
CO-4	Demonstrate the concept of wireless markup language and its applications.	K2-K3
CO-5	Demonstrate an ability to evaluate security issues associated with wireless application protocol.	K1-K4