

## COURSE OUTCOMES

<b>Digital Electronic Architecture (BTES-301-18) : C201</b>		<b>Year of Study: 2020-21</b>
C201.1	Demonstrate the operation of simple digital gates, combine simple gates into more complex circuits; change binary, hexadecimal, octal numbers to their decimal equivalent and vice versa.	
C201.2	Demonstrate the operation of a flip-flop. Design counters and clear the concept of shift registers.	
C201.3	Design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.	
C201.4	Identify, analyze and design combinational and Sequential Circuits.	
C201.5	Study different types of memories and their applications. Convert digital signal into analog and vice versa.	
C201.6	Acquired knowledge about internal circuitry and logic behind any digital system.	

<b>Data structure &amp; Algorithms (BTCS-301-18) : C202</b>		<b>Year of Study: 2020-21</b>
C202.1	Define the basis about hierarchy of data and how the data is organized as well as categorize between various data structures and explain the analysis of algorithms.	
C202.2	Describe linear and non-linear data structures along with their algorithms and uses.	
C202.3	Use appropriate data structures like arrays, linked list, stacks and queues to solve real world problems efficiently.	
C202.4	Know about the graph data structure and outline different algorithm design strategies.	
C202.5	Compare different programming methodologies and define asymptotic notations to analyze performance of algorithms.	
C202.6	Illustrate and compare various techniques for searching and sorting.	

<b>Object Oriented Programming (BTCS-302-18) : C203</b>		<b>Year of Study: 2020-21</b>
C203.1	Identify classes, objects, members of a class and the relationships among them needed to solve a specific problem.	
C203.2	Demonstrate the concept of constructors and destructors. And create new definitions for some of the operators.	
C203.3	Create function templates, overload function templates.	
C203.4	Understand and demonstrate the concept of data encapsulation, inheritance, polymorphism with virtual functions.	
C203.5	Demonstrate the concept of file operations, streams in C++ and various I/O manipulators.	

<b>Development of Societies (HSMC-101-18) : C204</b>		<b>Year of Study: 2020-21</b>
C204.1	Understand concepts of structure of Society Family and Clan and Cultural system.	
C204.2	Know relationship of an individual activities and society by understanding the role of each individual as a member of social system	
C204.3	Understand the concept of social development human needs and social issues in different ages by rational comparative study	
C204.4	Understand different political and governing system and judging their pros and cons	
C204.5	Understand the need of group behaviour in managing work scenario as capitalism socialism and Marxism developed in the world	
C204.6	Get idea about economic development in different eras and according to different thinkers.	

<b>Data structure &amp; Algorithms Lab (BTCS-303-18) : C205</b>		<b>Year of Study: 2020-21</b>
C205.1	Appreciate the importance of structure and abstract data type, and their basic usability in different applications.	
C205.2	Analyze and differentiate different algorithms based on their time complexity.	
C205.3	Implement linear and non-linear data structures using linked lists.	
C205.4	Understand and apply various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.	
C205.5	Implement various kinds of searching and sorting techniques, and decide when to choose which technique.	
C205.6	Identify and use a suitable data structure and algorithm to solve a real world problem.	

<b>Mathematics-III (BTAM-304-18) : C206</b>		<b>Year of Study: 2020-21</b>
C206.1	Understand the functions of several variables that are essential in most branches of engineering.	
C206.2	Apply multiple integrals to deal with areas and volumes of various structures which are quite significant in real world.	
C206.3	Formulate and solve engineering problems related to convergence, infinite series, power series and Taylor series.	
C206.4	Create, select and utilize the learnt techniques of first degree ordinary differential equations to model real world problems.	
C206.5	Be acquainted with the knowledge required to solve higher order ordinary differential equations.	

<b>Digital electronics Lab (BTES-302-18) : C207</b>		<b>Year of Study: 2020-21</b>
C207.1	Verify the operations of basic and universal gates	
C207.2	Design and verify the standard of combinational circuits using logic gates	
C207.3	Realize various types of Flip-flops and counters	
C207.4	Realize sequential circuits using logic gates	
C207.5	Verify counters using flip flops	
C207.6	Write experimental reports and work in a team in a professional way	

<b>Data structure &amp; Algorithms Lab (BTCS-303-18) : C208</b>		<b>Year of Study: 2020-21</b>
C208.1	Appreciate the importance of structure and abstract data type, and their basic usability in different applications.	
C208.2	Analyze and differentiate different algorithms based on their time complexity.	
C208.3	Implement linear and non-linear data structures using linked lists.	
C208.4	Understand and apply various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.	
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C208.6	Identify and use a suitable data structure and algorithm to solve a real world problem.	

<b>Object Oriented Programming Using C++ Lab (BTCS-304-18) : C209</b>		<b>Year of Study: 2020-21</b>
C209.1	Develop classes incorporating object-oriented techniques	
C209.2	Design and implement object-oriented concepts of inheritance and polymorphism	

C209.3	Illustrate and implement STL class of containers and need for exceptions to handle errors for object-oriented programs
C209.4	Design and implement any real world-based problem involving GUI interface using object-oriented concepts

<b>IT Workshop (BTCS 305-18) : C210</b>		<b>Year of Study: 2020-21</b>
C210.1	Learning about various data structures available and apply them in solving computational problems.	
C210.2	Design and implement programs to process data.	
C210.3	Apply control structures, use lists and tuple, set and file operations to organize the data in real world problems.	
C210.4	Explore the usage of exception handling and database interaction.	

<b>Computer Organization &amp; Architecture (BTES401-18) : C211</b>		<b>Year of Study: 2020-21</b>
C211.1	Understand functional block diagram of microprocessor;	
C211.2	Apply instruction set for Writing assembly language programs	
C211.3	Design a memory module and analyse its operation by interfacing with the CPU	
C211.4	Classify hardwired and micro programmed control units	
C211.5	Understand the concept of pipelining and its performance metrics.	

<b>Operating System (BTCS 402-18) : C212</b>		<b>Year of Study: 2020-21</b>
C212.1	Know the roles and responsibilities of an Operating system	
C212.2	Develop algorithms for process scheduling for a given specification of CPU utilization, Throughput, Turnaround Time, Waiting Time, and Response Time.	
C212.3	Develop the techniques for optimally allocating memory to processes by increasing memory utilization and for improving the access time for a given specification of memory organization,	
C212.4	Design and implement file management system.	
C212.5	Develop the I/O management functions in OS as part of a uniform device abstraction by performing operations for synchronization between CPU and I/O controllers for a given I/O device and OS (specify),	

<b>Design &amp; Analysis of Algorithms (BTCS 403-18) : C213</b>		<b>Year of Study: 2020-21</b>
C213.1	Analyze worst-case running times of algorithms based on asymptotic analysis and justify the correctness of algorithms.	
C213.2	Explain when an algorithmic design situation calls for which design paradigm (greedy/ divide and conquer/backtrack etc.)	
C213.3	Explain model for a given engineering problem, using tree or graph, and write the corresponding algorithm to solve the problems	
C213.4	Demonstrate the ways to analyze approximation/randomized algorithms (expected running time, probability of error)	
C213.5	Examine the necessity for NP class-based problems and explain the use of heuristic techniques	

<b>Universal Human Values (HSMC-122-18) : C214</b>		<b>Year of Study: 2020-21</b>
C214.1	Comprehend the need of getting value based education in technical and professional institutions.	
C214.2	Understand the process and content of self exploration and natural acceptance and its need in the present scenario.	
C214.3	Understand the basic human aspirations and the ways to fulfil these aspirations.	

C214.4	Identify the comprehensive human goal for a sustainable happiness and prosperity for all and the state of society and clean environment for the healthy life today.
C214.5	Recognize their role as individual and their responsibility in life towards their own self and towards one's family, society and nature.

<b>Environmental Studies (EVS101-18) : C215</b>		<b>Year of Study: 2020-21</b>
C215.1	Develop the knowledge on various renewable & non-renewable resources, their causes and their effects.	
C215.2	Understand the values, threats and conservation of biodiversity and classify various Ecosystems.	
C215.3	Identify and implement technological and economical solution to environmental problems.	
C215.4	Research on environmental solutions and perform activities to generate public awareness.	

<b>Computer Organization &amp; Architecture Lab (BTES 402-18) : C216</b>		<b>Year of Study: 2020-21</b>
C216.1	Prepare and plan to Assemble personal computer	
C216.2	Investigate the various assembly language programs for basic arithmetic operations	
C216.3	Illustrate the various assembly language programs for basic logical operations	
C216.4	Sequence the functioning of microprocessor/microcontroller based systems with I/O interface.	

<b>Operating System Lab (BTCS-404-18) : C217</b>		<b>Year of Study: 2020-21</b>
C217.1	Understand and implement basic services and functionalities of the operating system	
C217.2	Analyze and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority	
C217.3	Implement commands on virtual machines for files and directories	
C217.4	Compute and implement the concepts of shell programming, files and directories.	
C217.5	Simulate file allocation and organization techniques for shell programming	
C217.6	Develop the concepts of deadlock in operating systems and implement them in multiprogramming system	

<b>Design &amp; Analysis of Algorithms Lab (BTCS-405-18) : C218</b>		<b>Year of Study: 2020-21</b>
C218.1	Improve practical skills in designing and implementing complex problems with different techniques.	
C218.2	Understand comparative performance of strategies and hence choose appropriate, to apply to specific problem definition.	
C218.3	Implement Various tree and graph based algorithms and become familiar with their design methods.	
C218.4	Design and Implement heuristics for real world problems.	

<b>General Fitness : C219</b>		<b>Year of Study: 2020-21</b>
C219.1	Aware the students with desired health related physical fitness.	
C219.2	Learn and apply professional ethics in engineering practice and understand their responsibilities.	
C219.3	Blend the moral values in students to make them morally and socially responsible citizens of the society.	
C219.4	Instill in them the need to follow professional ethics and ethical practices in their profession.	
C219.5	Learn and demonstrate skills used in various sports and cultural activities.	