

Course Outcomes

After the successful completion of this Program student will be able to:

S. Y. B. Tech (COMPUTER ENGINEERING) SEM- III		
Course Code and Title		Course Outcomes
BTBS301: Engineering Mathematics - III	CO1	Solve higher order linear differential equation using appropriate techniques for modelling and analysing electrical circuits.
	CO2	CO2 Solve problems related to Fourier transform, Laplace transform and applications to communication systems and signal processing.
	CO3	Obtain numerical solutions of differential equations using iterative methods used in modern scientific computing.
	CO4	Find vector differentiation and integration, analyze the vector fields and apply to Electromagnetic fields.
	CO5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.
BTCOC302: Discrete Mathematics	CO1	Solve real world problems logically using appropriate set, function and relation models.
	CO2	Analyze logical Propositions via truth tables.
	CO3	Identify various types of relations and their properties.
	CO4	Demonstrate and use the concept of graphs, trees and related discrete mathematics, apply the methods from these subjects in problem solving.
	CO5	Analyze the properties of binary operations, apply abstract algebra in coding theory and evaluate the algebraic structures.
BTCOC303: Data Structures	CO1	Explain different ways of data representation.

	CO2	Implement linear data structures.
	CO3	Analyze the data structures allocation and its use in memory.
	CO4	Design and implement various basic and advanced data structures.
	CO5	Develop application using data structures and improve their logical ability.
BTCOC304: Computer Architecture & Organization	CO1	To understand the basic hardware and software issues of computer organization
	CO2	Understand principles of instruction set design including RISC and CISC architectures and Addressing modes and Demonstrate problems on Addressing modes
	CO3	Understand and solve the different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. Explain and Use fixed point multiplication (Booth's) and division (Restoring and non-restoring) algorithms
	CO4	Design and explain the function of each element of a memory hierarchy.
	CO5	Understand functionality of major components of a computer system like CPU, control unit, memory, I/O and storage.
(A) BTCOC 305: Object Oriented Programming in C++	CO1	Understand key features of the object-oriented programming language such as encapsulation (abstraction), inheritance and polymorphism.
	CO2	Understand and Apply the concepts of friend function, constructors & destructors in program design.
	CO3	Design & implement various forms of inheritance, String class, calling base class constructors .
	CO4	Apply & Analyze operator overloading, polymorphism

	CO5	Analyze and explore various Stream classes, I/O operations and exception handling.
BTCOL306	CO1	Demonstrate various operations on stack and queue.
: Data Structures Lab & Object Oriented Programming Lab	CO2	Apply knowledge of data structures.
	CO3	Demonstrate fundamental algorithmic problems on searching and sorting.
	CO4	Understand and apply the concepts like inheritance, polymorphism, exception handling for implementing programming codes.
	CO5	Able to use various object oriented concepts to solve different problems.
BTCOS307: Seminar - I	CO1	To study research papers for understanding of a new field, in the absence of a textbook , to summarise and review them. Establish motivation for any topic of interest and develop a thought process for technical presentation.
	CO2	Organize a detailed literature survey and build a document with respect to technical publications.
	CO3	Analysis and comprehension of proof-of-concept and related data.
	CO4	Effective presentation and improve soft skills.
	CO5	To impart skills in preparing detailed report describing the project and results. Make use of new and recent technology (e.g. Latex) for creating technical reports

S. Y. B. Tech (COMPUTER ENGINEERING) SEM- IV

<p align="center">BTCOC401: Design and Analysis of Algorithms</p>	CO1	Analyze the algorithm and express its time and space complexities in asymptotic notations.
	CO2	Able to solve recurrences using the master, the iteration, and the substitution method, variety of sorting algorithms.
	CO3	Design algorithms using divide and conquer strategy and compare it with dynamic programming.
	CO4	Design algorithms using back tracking, Branch Bound techniques and Greedy strategy for solving problems.
	CO5	Classify computational problems into P, NP, NP-Hard and NP complete.
<p align="center">BTCOC402: Operating Systems</p>	CO1	Interpret the basic concepts of operating systems.
	CO2	Describe concepts of process, process scheduling and inter process communications.
	CO3	Illustrate importance of process synchronization and deadlock handling in design of operating system.
	CO4	Explain basic principle of memory management and its alternative methods.
	CO5	Analyse various file management and disk scheduling techniques.
<p align="center">BTHM403: Basic Human Rights</p>	CO1	Describe human rights law, relationships, legal values and authority of declarations, decisions and judgments.
	CO2	Explain the primary areas of human rights and law.
	CO3	Conceptualize the scope of human rights towards self, society and human beings.

BTBS404: Probability Theory and Random Processes	CO1	Develop probabilistic model for problems of algorithmic nature and compute its statistical parameters.
	CO2	Explain different methods of statistics for data analysis.
	CO3	Model various real life problems of operation research.
	CO4	Determine service time and waiting time in a queue.
	CO5	Describe elementary queuing concepts and apply in computer science.
BTES405: Digital Logic Design & Microprocessors	CO1	Understanding the basics of Digital Electronics and different number systems and conversion between them
	CO2	Design and analyze combinational logic circuits.
	CO3	Study and construction of sequential logic circuits, understanding various design of flip flops and also Studying the programmable logic devices, shift registers, counters and various memory devices.
	CO4	To understand well the organization of 8086 and comparison of 8085 and 80386, memory structure and study of timing diagram.
	CO5	Study and describe memory and addressing modes and List, describe and use different types of instructions, directives and interrupts.
BTCOL406	CO1	Execution of Unix commands to study operating system environment.
: Operating Systems & Python Programming Lab	CO2	Develop programs of multiple threads, deadlock and CPU scheduling algorithm to understand working of process in the OS.
	CO3	Implement page replacement and disk scheduling algorithms to know concepts of memory management.

	CO4	Define and demonstrate the use of built-in data structures “lists” and “dictionary”.
	CO5	To learn and understand python looping, control statements and string manipulations.
BTCOS407: Seminar -II	CO1	Explain the basic tags and properties in HTML.
	CO2	Use well-structured, easily maintained, standards-compliant CSS code to represent HTML pages.
	CO3	Use JavaScript to add dynamic content to pages.
	CO4	Explain server side scripting and make use of PHP
	CO5	Demonstrate web based application using HTML, CSS, Java Script, AJAX, PHP or any other front-end tool
T. Y. B. Tech (COMPUTER ENGINEERING) SEM- V		
BTCOC501 Database Systems	CO1	Explain the features of database management systems and relational database.
	CO2	Design conceptual models of a database using ER modelling for real life applications.
	CO3	Build queries in relational algebra.
	CO4	Apply concepts of normalization to design an optimal database.
	CO5	Describe mechanisms for efficient retrieval of information from a database.
BTCOC502 Theory of Computations	CO1	Solve basic properties of formal languages and formal

	CO2	Solve basic properties of deterministic and nondeterministic finite automata.
	CO3	Analyze the relation between types of languages and types of finite automata grammars
	CO4	Design finite automata's for different regular expressions and languages.
	CO5	Design the context free languages and normalise context free grammar
BTCOC503 Machine	CO1	Interpret basic concepts and techniques of machine learning.
	CO2	Recognize the need of dimension reduction techniques.
	CO3	Elaborate supervised learning techniques like regression analysis and SVM.
	CO4	Apply the concepts of neural networks for learning non-linear functions.
	CO5	Describe various clustering techniques.
BTCOE504B Cyber Laws	CO1	Evaluate ongoing developments in law relating to information technologies.
	CO2	Incorporate approaches for incident analysis and response.
	CO3	Identify organizations, laws and regulations related to computer ethics, law and policy.
	CO4	Evaluate rules and theories in terms of internal coherence and practical outcomes.

	CO5	Evaluate contents in primary and secondary sources.
BTCOE505B Business Communication	CO1	Demonstrate professional and ethical attitude at the workplace.
	CO2	Apply effective communication and interpersonal skills.
	CO3	Build multidisciplinary approach towards all life tasks.
	CO4	Apply analytical and logical skills for problem solving.
BTCOC506Competitive Programming -I	CO1	Explain the algorithm design and coding skills.
	CO2	Solve the problems using different algorithms.
	CO3	Participate for online programming contests and hackathons.
BTCOL507 Database System Laboratory	CO1	Explain concepts of basic Structure Query Language (SQL).
	CO2	Demonstrate the principles of normalization.
	CO3	Apply advance SQL concepts like embedded SQL, procedures connectivity through JDBC.
	CO4	Create triggers, procedures and views.
	CO5	Develop physical design of a database system using database indexing techniques and storage techniques.

BTCOL508 Machine Learning Laboratory	CO1	Analyze linear regression.
	CO2	Develop R Script for logistic regression.
	CO3	Build R Script to implement random forest algorithm.
	CO4	Analyze working of clustering algorithms using R Script.
	CO5	Develop machine learning application using python.

T. Y. B. Tech (COMPUTER ENGINEERING) SEM- VI

BTCOC601: Compiler Design	CO1	Describe the fundamentals of compiler.
	CO2	Explain the major phases of compilers.
	CO3	Paraphrase the role and necessity of runtime environment.
	CO4	Implement the programs for various phases.
	CO5	Design the system software using engineering tools.

BTCOC602: Computer Networks	CO1	Describe the functions of OSI and TCP/IP model in computer networks.
	CO2	Simulate network administration commands and use in network scenarios.
	CO3	Classify the routing protocols and assign the IP addresses for the network.

	CO4	Demonstrate the installation and configuration of network simulator.
BTCOE603 (C) Object Oriented Analysis Design	CO1	Describe object oriented concepts and its use.
	CO2	Explain Unified Modelling Language (UML).
	CO3	Implement object oriented models using UML.
	CO4	Describe object oriented methodology of software development.
	CO5	Explain the issues for implementing object oriented designs or models.
BTCOE604 (C) Internet of Things	CO1	Apply the concepts of Internet of Things (IOT).
	CO2	Apply Internet of Things (IOT) to different applications.
	CO3	Analyze protocols used in IOT.
	CO4	Design smart objects in IOT.
	CO5	Model basic IOT applications on embedded platform.
BTCOE605 Consumer Behaviour	CO1	Apply knowledge of consumer behaviour for marketing.
	CO2	Explain factors influencing consumer behaviour.

	CO3	Demonstrate internal dynamics such as personality, perception, learning motivation and attitude to the consumer's choice.
	CO4	Use various research approaches for specific marketing situations.
	CO5	Prepare a research report on consumer behaviour issues within a specific context in a team.
BTCOC606 Competitive Programming -II	CO1	Explain the algorithm design and coding skills.
	CO2	Solve problems using different algorithms.
	CO3	Participate for online programming contests and hackathons.
BTCOL607 (A) Internet of Things Laboratory	CO1	Identify the requirements for the real world problems.
	CO2	Demonstrate software and hardware skills.
	CO3	Build the project using hardware and sensor requirements, coding, emulating and testing.
BTCOL608 Computer Networks Laboratory	CO1	Demonstrate network administration commands and their use in different network scenarios.
	CO2	Demonstrate the installation and configuration of network simulator.
	CO3	Classify the routing protocols and assign the IP addresses for the network.
	CO4	Analyze the contents the packet contents of different protocols.

	CO5	Develop an organization network using packet tracer.
Final Year B. Tech (COMPUTER ENGINEERING) SEM- VII		
BTCOC701 Software Engineering	CO1	Classify software engineering methods, practices and applications.
	CO2	Apply software models and techniques for innovative solutions.
	CO3	Demonstrate professional, ethical and social responsibilities in designing software products.
	CO4	Describe process models and role of modelling in software development.
	CO5	Demonstrate leadership skills for quality software products.
BTCOE702 (A) Big Data Analytics	CO1	Explain the core concepts of big data.
	CO2	Identify common frameworks of big data Apache Spark, Hadoop, MapReduce.
	CO3	Explain large scale data storage technologies, in-memory key/value storage systems, NoSQL distributed databases, Apache Cassandra, HBase.
	CO4	Analyze the use of Big Data Streaming Platforms such as Apache Spark streaming and Apache Kafka streams.
	CO5	Apply Big Data Analytics in machine learning, deep learning and graph processing.
BTCOE703 Cloud Computing	CO1	Explain the core concepts of the cloud computing paradigm.
	CO2	Apply the fundamental concepts in datacentres to calculate tradeoffs in power, efficiency and cost.

	CO3	Analyze various cloud programming models and apply them to solve problems.
	CO4	Identify resource management fundamentals.
	CO5	Analyze the components of open stack & Google cloud platform.
BTCOE704 Block chain technology	CO1	1. Describe the basic concepts and technology used for blockchain.
	CO2	Develop familiarity of current technologies, tools, and implementation strategies
	CO3	Introduce application areas, current practices, and research activity
	CO4	Apply security features in blockchain technologies
	CO5	Understand the modern currencies and its market usage
BTCOL705 Full Stack Development (LAMP/MEAN)	CO1	Develop web based application using client side and server side web technologies.
	CO2	Develop web based application using Scripting Languages.
	CO3	Apply solution to problems using method, techniques and frameworks.
BTCOL706 System Administration	CO1	Demonstrate principles, practices and goals of system administration.
	CO2	Perform network services installation and management.

	CO3	Solve the systems problems using troubleshooting.
	CO4	Demonstrate an understanding of the configuration and management of data storage.
BTCOL707 (A) Big Data Analytics Lab	CO1	Install Hadoop in Pseudo distributed and Fully distributed operating modes.
	CO2	Perform file management tasks in Hadoop and use Map Reduce API.
	CO3	Apply the Map Reduce paradigm.
	CO4	Install and run Hbase and Apache cluster.
	CO5	Install, configure and deploy Apache Spark cluster.
BTCOL708 (A) Laboratory Cloud Computing Laboratory	CO1	Define cloud computing, cloud services and deployment models
	CO2	Examine importance of virtualization along with their technologies.
	CO3	Describe the key components of Amazon web Service.
	CO4	Develop backup strategies for cloud data.
BTCOP709 Project Phase -I	CO1	Map the technical knowledge acquired in the previous semesters for solving real world problems.
	CO2	Apply new technologies & design techniques (like platform, different database, etc.) concerned for finding a solution for a given problem statement.

	CO3	Apply project management skills (scheduling work, procuring parts and documenting Expenditures and working within prescribed deadline).
	CO4	Work with team members, sharing due and fair credits and collectively apply effort for making project successful.
	CO5	Communicate technical information by means of written and oral reports

Final Year B. Tech (COMPUTER ENGINEERING) SEM- VIII

BTCOE801 Social Networks	CO1	Formalize different types of entities and relationships as nodes and edges and represent this information as relational data.
	CO2	Plan and execute network analytical computations.
	CO3	Use advanced network analysis software to generate visualizations and perform empirical investigations of network data.
	CO4	Interpret and synthesize the meaning of the results with respect to a question, goal, or task.
	CO5	Collect network data in different ways and from different sources while adhering to legal standards and ethics standards.
BTCOE802 (A): Introduction to Industry 4.0 and Industrial Internet of Things	CO1	Define Industrial Internet of Things (IIOT) Layers and cyber security in IIOT.
	CO2	Discuss IIOT sensing and communications methods.
	CO3	Apply security and fog computing in IIOT.
	CO4	Describe the importance of big data analytics in IIOT.
	CO5	Develop the applications using Industrial IOT.

BTCOE803 Project Phase -II	CO1	Map the technical knowledge acquired in the previous semesters for solving real world problems.
	CO2	Apply new technologies & design techniques (like platform, different database, etc.) concerned for finding a solution for a given problem statement.
	CO3	Apply project management skills (scheduling work, procuring parts and documenting Expenditures and working within prescribed deadline).
	CO4	Work with team members, sharing due and fair credits and collectively apply effort for making project successful.
	CO5	Communicate technical information by means of written and oral reports

Academic Dean

Principal