



<b>Course Outcomes (2023-2024)</b>	
<b>Course Code</b>	<b>Course Outcomes</b>
<b>Third Semester</b>	
<b>BECSE301T Applied Mathematics-III</b>	
CO301.1	To understand numerical methods, matrices for the solution of linear and nonlinear equations, and the solution of differential equations, among other mathematical processes and activities.
CO301.2	To analyze real world scenarios to recognize when matrices and probability are appropriate, formulate problems about the scenarios, creatively model these scenarios(using technology, if appropriate) in order to solve the problems using multiple approaches.
CO301.3	To organize, manage and present data in a clear and concise manner.
CO301.4	To develop an ability to identify, formulate and / or solve real world problems.
CO301.5	To understand the impact of scientific and engineering solutions in a global and societal context.
<b>BECSE302T Object Oriented Programming with Java</b>	
CO302.1	To identify classes, objects, members of a class and relationships among them for a specific problem.
CO302.2	To understand and demonstrate the concepts of garbage collection, polymorphism, inheritance etc.
CO302.3	To do numeric(algebraic) and string-based computation.
CO302.4	To understand and implement modularity as well as basic error handling techniques.
CO302.5	To develop, design and implement small multithreaded programs using Java language.
<b>BECSE303T Operating System</b>	
CO303.1	To describe the important computer system resources and the role of operating system in their management policies and algorithms.
CO303.2	To understand the process management policies and scheduling of processes by CPU.
CO303.3	To describe and analyze the memory management and its allocation policies.
CO303.4	To evaluate the requirement for process synchronization and coordination handled by operating system.
CO303.5	To identify use and evaluate the storage management policies with respect to different storage management technologies and also understand the concept of Deadlock Prevention, Avoidance, Detection and Recovery.
<b>BECSE304T Computer Architecture &amp; Digital System</b>	
CO304.1	To memorize and understand the basic concept of digital system which will be used to design the computer system.
CO304.2	To study and understand various instruction format used in computer design.
CO304.3	To study and understand the details working principle of basic processing unit.
CO304.4	To perform the arithmetic operation which is being used in the operation of computer system.
CO304.5	Analyze and utilize OP-AMPs To understand variety of memory design system and different ways of communicating with I/O devices.
<b>BECSE305T Ethics in IT</b>	
CO305.1	To acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.
CO305.2	Identify and analyses the process of power generation through solar

CO305.3	To identify the multiple ethical interests at stake in a real-world situation or Practice.
CO305.4	To understand and apply Intellectual Property and related law in reality.
CO305.5	To understand the core values that shape the ethical behavior of an engineer / IT Professional.
<b>BECSE306T</b>	<b>Universal Human Values</b>
CO306.1	To become more aware of themselves, and their surroundings (family, society, nature)
CO306.2	To become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
CO306.3	They would have better critical ability.
CO306.4	To become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
<b>BECSE307T</b>	<b>Environmental Engineering (Audit Course)</b>
CO307.1	Identify different types of air pollutions as well as explain their causes, detrimental effects on environment and effective control measures.
CO307.2	Recognize various sources of water pollutants and interpret their causes.
CO307.3	Illustrate various types of pollutant waste management
CO307.4	Analyze various environmental social issues and challenges in implementation of environmental laws.
<b>BECSE308P</b>	<b>Object Oriented Programming with Java</b>
CO308.1	Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods.
CO308.2	Be able to use the Java SDK environment to create, debug and run simple Java programs.
CO308.3	To analyze the object-oriented paradigm using java programming language.
CO308.4	To implement small/medium scale java programs to resolve small business problems.
<b>BECSE309P</b>	<b>Operating System</b>
CO309.1	Practical implementation of Process concept, scheduling algorithms.
CO309.2	To implement demand paging using FIFO method, strings using LRU method.
CO309.3	Implementation of virtual memory management, producer and consumer processes using semaphore.
CO309.4	Apply knowledge for implementation of MVT (Multiprogramming with a Variable number of Tasks) and MFT (Multiprogramming with a fixed number of Tasks) memory management techniques.
<b>BECSE310P</b>	<b>Computer Workshop-1</b>
CO310.1	Get a fundamental understanding of Hyper Text Markup Language and apply the concepts of basic H.T.M.L code structure.
CO310.2	Implementation of list tag, marquee tag, href tag, frame tag, form tag and designing of small website using tags.
CO310.3	Designing the concepts for creation of H.T.M.L Table using Rows and Columns.
CO310.4	Describing Variables, Arrays, Operators and Conditional Statement using Java script.
<b>FOURTH SEMESTER B. Tech.</b>	
<b>BECSE401T</b>	<b>Discrete Mathematics &amp; Graph Theory</b>
CO401.1	Apply graph theory models of data structures and state machines to solve problems of connectivity and constraint satisfaction.
CO401.2	Gain an introduction into how mathematical models for engineering are designed, analyzed and implemented in industry and organizations.

CO401.3	Reason mathematically about basic data types and structures (such as numbers, sets, graphs, and trees) used in computer algorithms and systems; distinguish rigorous definitions and conclusions from merely plausible ones.
CO401.4	Analyze real world scenarios to recognize when Logic, sets, functions are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches.
CO401.5	Apply knowledge of mathematics, physics and modern computing tools to scientific and engineering problems.
<b>BECSE402T</b>	<b>Data Structures &amp; Program Design</b>
CO402.1	Analyze the complexity of algorithms and sorting techniques.
CO402.2	Apply the concept of stack and queues to solve real world problem.
CO402.3	Describe and implement linked list operation.
CO402.4	Demonstrate different methods for traversing trees.
CO402.5	Utilize the concepts of graphs to build solution. Design and implement searching techniques and hashing function
<b>BECSE403T</b>	<b>Database Management System</b>
CO403.1	Understand basic database concepts and data modeling techniques used in database design.
CO403.2	Study the concept of functional dependency and perform the calculus with Design database by using different normalization technique.
CO403.3	Study query processing and Perform optimization on query processing.
CO403.4	Understand the concept of transaction processing and different recovery technique used in RDBMS.
CO403.5	Study and implement advanced databases which are used real time system.
<b>BECSE404T</b>	<b>Computer Networks</b>
CO404.1	Describe the functions of each layer in OSI model along with basic networking concepts.
CO404.2	Explain physical layer functionality and it's working along with transmission media with real time applications.
CO404.3	Describe the functions of data link layer and explain the protocols used in data link layer.
CO404.4	Classify the routing protocols and analyze how to map IP addresses. Identify the issues related to transport layer, congestion control.
CO404.5	Describe Quality of Service, DNS, Application layer protocols & Network security issues.
<b>BECSE405T</b>	<b>Theory of Computation</b>
CO405.1	Design finite automata and its minimization along with Moore and Mealy machines.
CO405.2	Apply regular expression and create grammar for the same.
CO405.3	Deal with context free grammar and various normal forms of CFGs.
CO405.4	Create Push Down Automata for the given CFG and inter-conversion of the same.
CO405.5	Create Turning Machine for the grammar and Deal with Recursive and Recursively numerable Languages.
<b>BECSE406T</b>	<b>System Programming</b>
CO406.1	Identify the relevance of different system programs.
CO406.2	Describe the various data structures and passes of assembler design.
CO406.3	Identify the need for different features and designing of macros.
CO406.4	Distinguish different loaders and linkers and their contribution in developing efficient user applications.
CO406.5	Grab the concepts of phases of compiler, LEX and YACC.
<b>BECSE407P</b>	<b>Computer Workshop-II</b>
CO407.1	Declare python operators, numeric data types and string operations.

CO407.2	Implement conditional blocks, loops in python and functions.
CO407.3	Implement modules, packages using python, exception Handling and sorting algorithms.
CO407.4	Implement various file operations using python and implement concept of object oriented programming and python database connectivity.
<b>FIFTH SEMESTER BTECH</b>	
<b>BTECH_CSE-501T</b>	<b>Artificial Intelligence</b>
CO501.1	Demonstrate knowledge of the building blocks of AT as presented in terms of agents intelligent
CO501.2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game- based techniques to solve them
CO501.3	To create an understanding of the basic issues of knowledge representation
CO501.4	Formulate and solve problems with uncertain information using Bayesian approaches.
CO501.5	Attain the capability to represent various real life problem domains using logic based techniques and BenQ
<b>BTECH_CSE-501P</b>	<b>Artificial Intelligence</b>
CO501.1	To demonstrate the knowledge of building blocks of AI as presented in terms of Intelligent Agents.
CO501.2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game - based techniques to solve them.
CO501.3	To create an understanding of basic issues of knowledge representation.
CO501.4	To formulate and solve the problem with uncertain information using Bayesian approaches.
CO501.5	Attain the capability to represent various real life problem domain using logic based techniques.
<b>BTECH_CSE-502T</b>	<b>Design Analysis &amp; Algorithms</b>
CO502.1	Illustrate different approaches for analysis and design of efficient algorithms and Analyze performance of various algorithms using asymptotic notations
CO502.2	Determine and Apply various divide & conquer strategies and greedy approaches for solving a given computational problem
CO502.3	Demonstrate and Solve various real time problems using the concepts of dynamic programming
CO502.4	Make use of backtracking and graph traversal techniques for solving real-world problems
CO502.5	Recall and Classify the NP-hard and NP-complete problems
<b>BTECH_CSE-502P</b>	<b>Design Analysis &amp; Algorithms Lab</b>
CO502.1	Calculate the time complexity of algorithm.
CO502.2	Sort the given numbers using various sorting algorithms.
CO502.3	Develop programs for the problems using Divide and Conquer and greedy methods.
CO502.4	Develop programs for the problems using Dynamic programming.
CO502.5	Students will be able to write programs for the problems using Backtracking.
<b>BTECH_CSE-503T</b>	<b>Software Engineering &amp; Project Management</b>
CO503.1	Understand software engineering methods, practices, process models and application
CO503.2	Analyze various software engineering life cycle models and apply methods for design and development of software projects
CO503.3	Analyze and extract requirements for product and translate these into documented design using different modelling techniques
CO503.4	Understand and apply software testing methods and types, also to understand debugging concept with various testing methods

CO503.5	Identify and apply the principles, processes and main knowledge areas for software project management.
<b>BTECH_CSE-504.3T</b>	<b>Elective-1: Data Warehousing &amp; Mining</b>
CO504.3.1	To understand the basic concepts of Data Warehouse and data Mining techniques.
CO504.3.2	Capable to create a data warehouse and to process raw data.
CO504.3.3	Able to apply basic classification, clustering on a set of data
CO504.3.4	Able to identify frequent data items and to apply association rule on a set of data.
CO504.3.5	To learn recent trends of data mining such as web mining
<b>BTECH_CSE-505P</b>	<b>Professional Skills Lab-I</b>
CO505.1	List various tags in HTML, DHTML and use these, apply Cascaded style sheet to create web page.
CO505.2	Understand and evaluate web application architecture, technologies and Frameworks.
CO505.3	Apply the knowledge of web technology in developing web applications.
CO505.4	Develop an interactive web applications using ASP.NET.
CO505.5	Evaluate different solutions in field of web application development.
<b>BTECH_CSE-506T</b>	<b>Effective Technical Communication</b>
CO506.1	Students have better reading comprehension, pronunciation, and functional English grammar.
CO506.2	Students are able to write letters and resumes
CO506.3	Students are able to organize their thoughts for Effective presentation and writing.
CO506.4	Students are able to learn skills to present the themselves well in an interview, and handle a Group Discussion.
CO506.5	Students have better reading comprehension, pronunciation, and functional English grammar.
<b>BTECH_CSE-507T</b>	<b>Yoga &amp; Meditation (Audit Course)</b>
CO507.1	Learn the rules, fundamentals, skills & strategies of Yoga
CO507.2	Teach various asanas(postures)using hatha yoga & the Iyengar method
CO507.3	Learn breathing techniques
CO507.4	Improve strength, flexibility and the sense of well- being
CO507.5	Increase relaxation of body and soul
<b>SIXTH SEMESTER BTECH</b>	
<b>BTECH_CSE-601T</b>	<b>Compiler Design</b>
CO601.1	Define the Compiler along with phases and basic programs in LEX.
CO601.2	Develop programs for various kinds of the Purser
CO601.3	Write Simple programs related to Type Checking Parameter Passing and Overloading
CO601.4	Implement the concepts of code Optimizations and Code Generations.
CO601.5	Provide the Case Studies of Object-Oriented Compilers
<b>BTECH_CSE-601P</b>	<b>Compiler Design Lab</b>
CO601.1	Generate scanner and parser from formal specification.
CO601.2	Generate top down and bottomup parsing tables using Predictive parsing, SLR and LR Parsing Techniques
CO601.3	Apply the knowledge of Y ACC to syntax directed translations for generating intermediate code-address code
CO601.4	Build a code generator using different intermediate codes and optimize the target code.
CO601.5	Generate scanner and parser from formal specification.
<b>BTECH_CSE-602.3</b>	<b>Elective-II: Clustering &amp; Cloud Computing</b>

CO602.3.1	Understand the different Cloud Computing environment.
CO602.3.2	Analyze virtualization technology and install virtualization software
CO602.3.3	Use appropriate data storage technique on Cloud, based on Cloud application
CO602.3.4	Apply security in cloud applications
CO602.3.5	Use advance techniques in Cloud Computing
<b>BTECH_CSE-603.2</b>	<b>Elective-III: Distributed Operating Systems</b>
CO603.2.1	Learn the principles, architecture, algorithms and programming models used in distributed system.
CO603.2.2	Understand the core concepts of Distributed systems.
CO603.2.3	Design and implementation of sample distributed system, using different algorithm.
CO603.2.4	Understand the Distributed file system, Architecture and Mechanism.
CO603.2.5	Analyze the distributed scheduling, Issues in load distributing, Components of Load Distributing Algorithm.
<b>BTECH_CSE-604.3</b>	<b>Open Elective 1: Block-Chain Technologies</b>
CO604.3.1	Understand the emerging abstract models for block chain technology.
CO604.3.2	Analyze the concept of crypto currency and mathematical background behind it.
CO604.3.3	Apply the tools for understanding the background of bit coins.
CO604.3.4	Identify major research challenges and technical gaps existing between theory and practice in crypto currency domain.
CO604.3.5	Understanding of latest advances and its application in Block chain technology.
<b>BTECH_CSE-605P</b>	<b>Professional Skills Lab-II</b>
CO605.1	Understand the basic concepts of Python through small exercises.
CO605.2	Develop the fundamentals of ML knowledge representation, inference.
CO605.3	Apply the fundamentals of Supervised Learning in ML.
CO605.4	Apply the fundamentals of Un-Supervised Learning in ML.
CO605.5	Understand the basic concepts of Python through small exercises.
<b>BTECH_CSE-606P</b>	<b>Hardware Lab</b>
CO606.1	Identify various components of a system.
CO606.2	Assemble the computer
CO606.3	Use various Microsoft tools
CO606.4	To enhance the research activities in different application areas.
<b>BTECH_CSE-607P</b>	<b>Mini Project</b>
CO607.1	Acquire practical knowledge within the chosen area of technology. Analyze the area and find the requirement with systematic approach.
CO607.2	Contribute as an individual in a team to development technical projects.
CO607.3	Understand the paper writing skill in IEEE paper format and develop effective communication skills for presentation of project work.
CO607.4	Prepare a report on developed project.
<b>BTECH_CSE-608T</b>	<b>Economics of IT Industry</b>
CO608.1	To learn the different types of economics models with the concept of elasticity of demand and various factors of recession
CO608.2	To learn the concept of various intensive and digital economy with business cycles impact on economics.
CO608.3	To understand the Merger and Acquisition concept with the challenges of E-Waste

	management.
CO608.4	To adapt various funding source in economy with 5 level maturity model of IT industry.
<b>BTECH_CSE-609T</b>	<b>Intellectual Property Rights (Audit Course)</b>
CO609.1	Understand fundamental aspects of Intellectual property Rights
CO609.2	Apply knowledge on patents, patent regime in India and abroad and registration aspects
CO609.3	Be capable of getting copyrights and its related rights and registration aspects
CO609.4	Be capable of getting trademarks and registration aspects
CO609.5	Apply knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design
<b>Seventh Semester B.E</b>	
<b>BTECH_CSE-701T</b>	<b>Cryptography and Network Security</b>
CO701.1	Acquire knowledge about security goals, background of cryptographic mathematics and identification of its application
CO701.2	Understand, analyze and implement – the symmetric key algorithm
CO701.3	Acquire knowledge about the background of mathematics of asymmetric key cryptography and understand and analyze – asymmetric key encryption algorithms, digital signatures
CO701.4	Analyze the concept of message integrity and the algorithms for checking the integrity of data.
CO701.5	To understand and analyze the existing cryptosystem used in networking.
<b>BTECH_CSE-701P</b>	<b>Cryptography and Network Security</b>
CO701.1	Acquire knowledge about security goals, background of cryptographic mathematics and identification of its application
CO701.2	Understand, analyze and implement – the symmetric key algorithm
CO701.3	Acquire knowledge about the background of mathematics of asymmetric key cryptography and understand and analyze – asymmetric key encryption algorithms, digital signatures
CO701.4	Analyze the concept of message integrity and the algorithms for checking the integrity of data.
<b>BTECH_CSE-702T</b>	<b>Elective-IV: Deep Learning</b>
CO702.1	Understand basic of deep learning algorithms.
CO702.2	Represent feedforward Neural Network
CO702.3	Evaluate the performance of different deep learning models with respect to the optimization, bias variance trade-off, overfitting and underfitting.
CO702.4	Apply the convolution networks in context with real world problem solving.
CO702.5	Apply recurrent neural networks in context with real world problem solving.
<b>BTECH_CSE-703T</b>	<b>Elective-V: Mobile Computing</b>
CO703.1	To Understand the basic concepts of Wireless Communication with Cellular system.
CO703.2	To learn about GSM System with Cell layout, Radio, Network Switching and Operation subsystem, HLR & VLR.
CO703.3	To learn Wireless LAN with its Architecture and MAC Layer.
CO703.4	To learn Mobile IP, Dynamic Host Configuration Protocol, Mobile Ad hoc Networks.
CO703.5	To learn about TCP over Wireless Networks. with Wireless Application protocol.
<b>BTECH_CSE-704T</b>	<b>Open Elective II: Java Programming</b>
CO704.1	Understand the fundamentals of Java programming language and its application in software development.
CO704.2	Implement Java programming constructs such as variables, operators, control statements, loops, and arrays.
CO704.3	Design and implement object-oriented programs using inheritance, polymorphism, encapsulation, and abstraction concepts in Java.

CO704.4	Create and use classes, objects, and methods in Java programs.
CO704.5	Handle exceptions and use input/output techniques in Java programs.
<b>BTECH_CSE-705T</b>	<b>Project &amp; Seminar</b>
CO705.1	Get a fundamental understanding of Cyber and Information Security and applying the concept of Information Security
CO705.2	Designing the concepts of conventional Encryption.
CO705.3	Analysis of various Algorithms and its efficiency.
CO705.4	Implementation of protection and security mechanisms using security tools.
<b>BTECH_CSE-706T</b>	<b>Research Methodology (Audit Course)</b>
CO706.1	Demonstrate the ability to choose methods appropriate to research aims and objectives.
CO706.2	Understand the limitations of particular research methods.
CO706.3	Develop skills in qualitative and quantitative data analysis and presentation.
CO706.4	Develop advanced critical thinking skills.
CO706.5	Demonstrate enhanced writing skills.
<b>Eighth Semester B.E</b>	
<b>BTECH_CSE-801T</b>	<b>Industry Project/Project</b>
CO801.1	Identify skills and capabilities that intersect effectively with the needs of industry.
CO801.2	Apply and practice good communication skills in the workplace setting.
CO801.3	Reflect and evaluate on experiences that might lead to future employment.
CO801.4	Report research findings in written and verbal forms.
CO801.5	Demonstrate and apply research skills to complete a project.
<b>BTECH_CSE-802T</b>	<b>GPU Architectures and Programming</b>
CO802.1	Understand conventional CPU architectures, their extensions for single instruction multiple data processing
CO802.2	Program in CUDA about data space & synchronization.
CO802.3	Apply optimization on kernals, ththreads etc.
CO802.4	Learn basics of OpenCL.
CO802.5	Design an application using neural networks.
<b>BTECH_CSE-803T</b>	<b>Blockchain and its Applications</b>
CO803.1	Understand basic crypto primitives.
CO803.2	Understand elements and evolution of blockchain.
CO803.3	Understand consensus in permissionless and permissioned models.
CO803.4	Hands on ethereum smart contracts and hyperledgers
CO803.5	Perform decentralized identity management, interoperability.



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HOD-CSE