B.TECH

SEMESTER II	
BE 101-05 INTRODUCTION TO COMPUTING AND PROBLEM SOLVING	
CO 1	Ability to design algorithmic solution to problems.
CO 2	Ability to convert algorithmis to python problems.
CO 3	Ability to design modular python programs using functions.
CO4	Ability to develop recursive solutions
CO5	Ability to design programs using file input and output
CS 110 COMPUTER SCIENCE WORKSHOP	
CO 1	Students are able to identify common hardware components and their purpose
CO 2	Students gain sufficient awareness about latest software tools
CO 3	students are able to develop programs in python for common problems of reasonable complexity
SEMESTER III	
CS201 DISCRETE COMPUTATIONAL STRUCTURES	
CO 1	Students will be able to Learn the fundamentals of enumeration or counting techniques
CO 2	Students will be able to Learn the fundamentals of propositional logic and predicate calculus
CO 3	Students will be able to Learn the ideas of relations, functions equivalence relation and posets and it's applications
CO4	Students will Understand recurrence relation and apply the method of solving different type of recurrence relations using generating functions
CO5	Students will be able to Understand Fundamentals of Algebraic structures its properties such as monoids and groups
CS203 SWITCHING THEORY AND LOGIC DESIGN	
CO 1	apply the basic concepts of Boolean algebra for the simplification and implementation of logic functions using suitable gates namely NAND, NOR etc
CO 2	design simple Combinational Circuits such as Adders, Subtractors, Code Convertors, Decoders,Multiplexers, Magnitude Comparators etc.
CO 3	design Sequential Circuits such as different types of Counters, Shift Registers, Serial Adders,Sequence Generators
CO4	use Hardware Description Language for describing simple logic circuits.
CO5	apply algorithms for addition/subtraction operations on Binary, BCD and Floating Point Numbers.
CS205 DATA STRUCTURES	
CO 1	Design an algorithm for a computational task and calculate the time/space complexities of that algorithm
CO 2	Identify the suitable data structure (array or linked list) to represent a data item required to be processed to solve a given computational problem
CO 3	Write an algorithm to find the solution of a computational problem by selecting an appropriate data structure
CO4	Store a given dataset using an appropriate Hash Function to enable efficient access of data in the given set
CO5	Select appropriate sorting algorithms to be used in specific circumstances
CO 6	Design and implement Data Structures for solving real world problems efficiently
CS231 DATA STRUCTURES LAB	
CO 1	analyze and differentiate different algorithms based on their time complexity.
CO 2	implement linear and non-linear data structures using linked lists.
CO 3	implement various kinds of searching and sorting techniques, and decide when to choose which technique.
CO 4	identify and use a suitable data structure and algorithm to solve a real world problem.
SEMESTER IV	
CS202 COMPUTER ORGANIZATION AND ARCHITECTURE	
CO 1	Students will be able to identify the basic structure and functional units of a digital computer.
CO 2	Analyze the effect of addressing modes on the execution time of a program.
CO 3	Design processing unit using the concepts of ALU and control logic design
CO4	Identify the pros and cons of different types of control logic design in processors.
CO5	Select appropriate interfacing standards for I/O devices
CO6	Identify the roles of various functional units of a computer in instruction executio
CS204 OPERATING SYSTEMS	
CO 1	identify the significance of operating system in computing devices
CO 2	exemplify the communication between application programs and hardware devices through system calls
CO 3	compare and illustrate various process scheduling algorithms.
CO4	apply appropriate memory and file management schemes
CO5	illustrate various disk scheduling algorithms.

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CS206 OBJECT ORIENTED DESIGN AND PROGRAMMING	
CO 1	Apply object oriented principles in software design process.
CO 2	Develop Java programs for real applications using java constructs and libraries
CO 3	Understand and apply various object oriented features like inheritance, data abstraction, encapsulation and polymorphism to solve various computing problems using Java language.
CO4	Implement Exception Handling in java.
CO5	Use graphical user interface and Event Handling in java
CO6	Develop and deploy Applet in java.
CS208PRINCIPLES OF DATABASE DESIGN	
CO 1	The students will be able to define, explain and illustrate the fundamental concepts of databases.
CO 2	The students will be able to construct an Entity-Relationship (E-R) model from specifications and to perform the transformation of the conceptual model int logical data structures
CO 3	The students will be able to model and design a relational database following the design principles
CO4	The students will be able to develop queries for relational database in the context of practical applications
CO5	The students will be able to define, explain and illustrate fundamental principles of data organization, query optimization and concurrent transaction processing.
CS232 FOSS LAB	
CO 1	Identify and apply various Linux commands
CO 2	Develop shell scripts and GUI for specific need
SEMESTER V	
CS301 THEORY OF COMPUTATION	
CO 1	Classify a given formal language into Regular, Context-Free, Context Sensitive, Recursive or Recursively Enumerable
CO 2	Explain a formal representation of a given regular language as a finite state automaton, regular grammar, regular expression and Myhill-Nerode relation.
CO 3	Design a Pushdown Automaton and a Context-Free Grammar for a given context-free language
CO4	Design Turing machines as language acceptors or transducers.
CO5	Explain the notion of decidability
CS 303 SYSTEM SOFTWARE	
CO 1	Students will be able to distinguish different software into different categories.
CO 2	Students will be able to design, analyze and implement one pass, two pass or multi pass assembler.
CO 3	Students will be able to design, analyze and implement loader and linker.
CO4	Students will be able to design, analyze and implement macro processors.
CS 307 DATA COMMUNICATION	
CO 1	Students will be able to Identify and list the various issues present in the design of a data communication system.
CO 2	Students will be able to Apply the time domain and frequency domain concepts of signals in data communication.
CO 3	Students will be able to Compare and select transmission media based on transmission impairments and channelcapacity.
CO4	Students will be able to Select and use appropriate signal encoding techniques and multiplexing techniques for a givenscenario.
CO5	Students will be able to Design suitable error detection and error correction algorithms to achieve error free data communication and explain different switching techniques.
CS309 GRAPH THEORY AND COMBINATORICS	
CO 1	The Students will be able to Demonstrate the knowledge of fundamental concepts in graph theory, including properties and characterization of graphs and trees.
CO 2	The Students will be able to Use graphs for solving real life problems.
CO 3	The Students will be able to Distinguish between planar and non-planar graphs and solve problems.
CO4	The Students will be able to Develop efficient algorithms for graph related problems in different domains ofengineering and science.
CS 361 SOFT COMPUTING (Elective)	
CO 1	Learn soft computing techniques and their applications.
CO 2	Analyze various neural network architectures.
CO 3	Understand the genetic algorithm concepts and their applications.
CO 3	Define the fuzzy systems.

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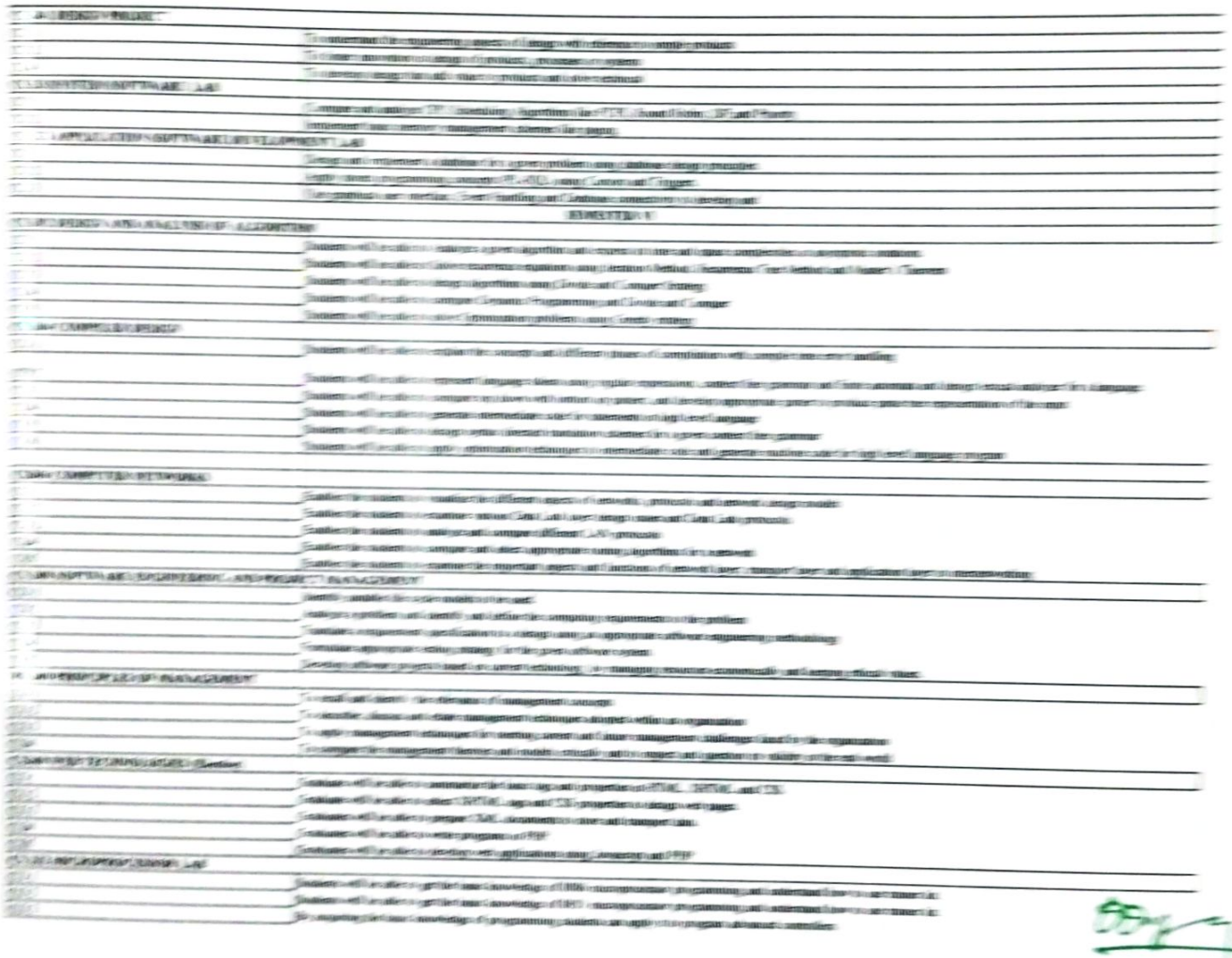

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CS334 NETWORK PROGRAMMING LAB	
CO 1	Use network related commands and configuration files in Linux Operating System
CO 2	Develop operating system and network application programs.
CS 352 COMPREHENSIVE EXAM	
CO 1	To access the comprehensive knowledge gained in basic courses relevant to the branch of study
CO 2	To comprehend the questions asked and answer them with confidence
	SEMESTER VII
CS401 COMPUTER GRAPHICS	
CO 1	The Students will be able to compare various graphics devices
CO 2	The Students will be able to analyze and implement algorithms for line drawing, circle drawing and polygon filling
CO 3	The Students will be able to apply geometrical transformation on 2D and 3D objects
CO 4	The Students will be able to analyze and implement algorithms for clipping
CO 5	The Students will be able to apply various projection techniques on 3D objects
CS403 PROGRAMMING PARADIGMS	
CO 1	Students will be able to compare scope and binding of names in different programming languages.
CO 2	Students will be able to analyze control flow structures in different programming languages.
CO 3	Students will be able to appraise data types in different programming languages.
CO 4	Students will be able to analyze different control abstraction mechanisms.
CO 5	Students will be able to appraise constructs in functional, logic and scripting languages.
CS405 COMPUTER SYSTEM ARCHITECTURE	
CO 1	Summarize different parallel computer models
CO 2	Analyze the advanced processor technologies
CO 3	Interpret memory hierarchy
CO 4	Compare different multiprocessor system interconnecting mechanisms
CO 5	Interpret the mechanisms for enforcing cache coherence
CS407 DISTRIBUTED COMPUTING	
CO 1	distinguish distributed computing paradigm from other computing paradigms
CO 2	identify the core concepts of distributed systems
CO 3	Illustrate the mechanisms of inter process communication in distributed system
CO4	apply appropriate distributed system principles in ensuring transparency ,consistency and fault-tolerance in distributed file system
CO5	compare the concurrency control mechanisms in distributed transactional environment
CS409 CRYPTOGRAPHY AND NETWORK SECURITY	
CO 1	summarize different classical encryption techniques
CO 2	identify mathematical concepts for different cryptographic algorithms.
CO 3	demonstrate cryptographic algorithms for encryption/key exchange(
CO 4	summarize different authentication and digital signature schemes.
CO 5	identify security issues in network, transport and application layers and outline appropriate security protocols

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CS463 DIGITAL IMAGE PROCESSING (elective)	
CO 1	Students will be able to compare different methods for image acquisition, storage and representation in digital devices and computers
CO 2	Students will be able to appreciate role of image transforms in representing, highlighting,and modifying image features
CO 3	Students will be able to interpret the mathematical principles in digital image enhancement and apply them in spatial domain and frequency domain
CO4	Students will be able to apply various methods for segmenting image and identifying image components
CO5	Students will be able to summarise different reshaping operations on the image and their practical applications
CS467 MACHINE LEARNING(elective)	
CO 1	Differentiate various learning approaches, and to interpret the concepts of supervised learning.
CO 2	Compare the different dimensionality reduction techniques.
CO 3	Apply theoretical foundations of decision trees to identify best split and Bayesian classifier to label data points.
CO4	Illustrate the working of classifier models like SVM, Neural Networks and identify classifier model for typical machine learning applications.
CO5	Identify the state sequence and evaluate a sequence emission probability from agiven HMM
CO6	Illustrate and apply clustering algorithms and identify its applicability in real life problems.
CS451 SEMINAR AND PROJECT PRELIMINARY	
CO 1	Analyze a current topic of professional interest and present it before an audience
CO 2	dentify an engineering problem, analyze it and propose a work plan to solve it.
CS431 COMPILER DESIGN LAB	
CO 1	Students will able to implement the techniques of Lexical Analysis and Syntax Analysis
CO 2	Students will able to apply the knowledge of Lex & Yacc tools to develop programs.
CO 3	Students will be able to generate intermediate code
CO 4	Students will be able to implement Optimization techniques and generate machine level code
SEMESTER VIII	
CS402 DATA MINING AND WAREHOUSING	
CO 1	Identify the key process of Data mining and Warehousing
CO 2	Apply appropriate techniques to convert raw data into suitable format for practical data mining tasks
CO 3	Analyze and compare various classification algorithms and apply in appropriate domain
CO 4	Evaluate the performance of various classification methods using performance metrics
CO 5	Make use of the concept of association rule mining in real world scenario
CS404 EMBEDDED SYSTEMS	
CO 1	demonstrate the role of individual components involved in a typical embedded system
CO 2	analyze the characteristics of different computing elements and select the most appropriate one for an embedded system
CO 3	analyze the characteristics of different computing elements and select the
CO 4	most appropriate one for an embedded system
CO 5	substantiate the role of different software modules in the development of an embedded system
CS472 PRINCIPLES OF INFORMATION SECURITY (elective)	
CO 1	appreciate the common threats faced today
CO 2	interpret the foundational theory behind information security
CO 3	design a secure system
CO 4	identify the potential vulnerabilities in software
CO 5	appreciate the relevance of security in various domains
CS492 PROJECT	
CO 1	The students will be able to think innovatively on the development of components, products,processes or technologies in the engineering field
CO 2	The students will be able to apply knowledge gained in solving real life engineering problems

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