R-20 Regulations

Program	B. Tech in Computer Science and Engineering
	I B.TECH I SEM Course Outcomes
COURSE OUTCOME	**COMMUNICATIVE ENGLISH**
CO1	Understand social or transactional dialogues spoken by native speakers of English and identify the context, topic, and pieces of specific information
CO2	Ask and answer general questions on familiar topics and introduce oneself/others
CO3	Employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
CO4	Recognize paragraph structure and be able to match beginnings/endings/headings with paragraphs
CO5	Form sentences using proper grammatical structures and correct word forms
COURSE OUTCOME	**Mathematics-1**
CO1	Utilize mean value theorems to real life problems
CO2	Solve the differential equations related to various engineering fields
CO3	Familiarize with functions ofseveral variables which is useful in optimization
CO4	Apply double integration techniques in evaluating areas bounded by region
CO5	Students will also learn important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional and 3-dimensional coordinate systems
COUSE OUTCOMES	**APPLIED PHYSICS**
CO1	Explain the need of coherent sources and the conditions for sustained interference (L2). Identify the applications of interference in engineering (L3). Analyze the differences between interference and diffraction with applications (L4). Illustrate the concept of polarization of light and its applications (L2). Classify ordinary refracted light and extraordinary
CO2	Explain various types of emission of radiation (L2). Identify the role of laser in engineering applications (L3). Describe the construction and working principles of various types of lasers (L1). Explain the working principle of optical fibers (L2). Classify optical fibers based on refractive index profile and mode of propagation (L2). Identify the applications of optical fibers in medical, communication and other fields (L2). Apply the
CO3	. Describe the dual nature of matter (L1). Explain the significance of wave function (L2). Identify the role of Schrodinger's time independent wave equation in studying particle in onedimensional infinite potential well (L3). Identify the role of classical and quantum free electron theory in the study of electrical conductivity (L3). Classify the energy
CO4	Explain the concept of dielectric constant and polarization in dielectric materials (L2). Summarize various types of polarization of dielectrics (L2). Interpret Lorentz field and Claussius-Mosotti relation in dielectrics (L2). Classify the magnetic materials based on susceptibility and their temperature dependence (L2). Explain the applications of dielectric and magnetic materials (L2). Apply the concept of magnetism to magnetic

CO5	Outline the properties of charge carriers in semiconductors (L2). Identify the type of semiconductor using Hall effect (L2). Identify applications of semiconductors in electronic devices (L2). Classify superconductors based on Meissner's effect (L2). Explain Meissner's effect, BCS theory & Josephson effect in superconductors (L2)
COURSE OUTCOME	**PROGRAMMING FOR PROBLEM SOLVING USING C**
CO1	Write algorithms and to draw flowcharts for solving problems
CO2	Convert flowcharts/algorithms to C Programs, compile and debug program
CO3	use different operators, data types and write programs that use two-way/ multi-way selection
CO4	Select the best loop construct for a given problem
CO5	To design and implement programs to analyze the different pointer applications
CO6	To decompose a problem into functions and to develop modular reusable code
CO7	To apply File I/O operations
COURSE OUTCOME	**COMPUTER ENGINEERING WORKSHOP**
CO1	Assemble and disassemble components of a PC
CO2	Construct a fully functional virtual machine, Summarize various Linux operating system commands,
CO3	Recognize characters & extract text from scanned images, Create audio files and podcasts
COURSE OUTCOME	**PROGRAMMING FOR PROBLEM SOLVING USING C LAB**
CO1	Gains Knowledge on various concepts of a C language.
CO2	Able to draw flowcharts and write algorithms
CO3	Able design and development of C problem solving skills.
CO4	Able to design and develop modular programming skills.
CO5	Able to trace and debug a program
	I BTECH -2 SEM Course Outcomes
COURSE OUTCOMES	**MATHEMATICS-II**
CO1	Develop the use of matrix algebra techniques that is needed by engineers for practical applications
CO2	Solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel (L3)
CO3	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms (L5)
CO4	apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
CO5	apply numerical integral techniques to different Engineering problems (L3)
CO6	apply different algorithms for approximating the solutions of ordinary differential equations with initial conditions to its analytical computations (L3)
COURSE OUTCOMES	**APPLIED CHEMISTRY**
CO1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers.

CO2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new engineering products and categorize the reasons for corrosion and study methods to control corrosion.
CO3	Synthesize nanomaterials for modern advances of engineering technology. Summarize the preparation of semiconductors; analyze the applications of liquid crystals and superconductors.
CO4	Analyze the principles of different analytical instruments and their applications. Design models for energy by different naturalsources
CO5	Obtain the knowledge of computational chemistry and molecular machines
COURSE OUTCOMES	**COMPUTER ORGANIZATION**
CO1	Demonstrate and understanding of the design of the functional units of a digital computer system
CO2	Relate Postulates of Boolean algebra and minimize combinational functions
CO3	Recognize and manipulate representations of numbers stored in digital computers
CO4	Build the logic families and realization of logic gates
CO5	Design and analyze combinational and sequential circuits
CO6	Recall the internal organization of computers, CPU, memory unit and Input/Outputs and the relations between its main components
CO7	Solve elementary problems by assembly language programming
COURSE OUTCOMES	**PYTHON PROGRAMMING**
CO1	Develop essential programming skills in computer programming concepts like data types, containers
CO2	Apply the basics of programming in the Python language
CO3	Solve coding tasks related conditional execution, loops
CO4	Solve coding tasks related to the fundamental notions and techniques used in objectoriented programming
COURSE OUTCOMES	**DATA STRUCTURES**
CO1	Summarize the properties, interfaces, and behaviors of basic abstract data types
CO2	Discuss the computational efficiency of the principal algorithms for sorting & searching
CO3	Use arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
CO4	Demonstrate different methods for traversing trees
COURSE OUTCOMES	**PYTHON PROGRAMMING LAB**
CO1	Develop essential programming skills in computer programming concepts like data types, containers
CO2	Apply the basics of programming in the Python language
CO3	Solve coding tasks related conditional execution, loops
CO4	Solve coding tasks related to the fundamental notions and techniques used in objectoriented programming
COURSE OUTCOMES	**DATA STRUCTURES LAB**
CO1	Use basic data structures such as arrays and linked list.

CO2	Programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
CO3	Use various searching and sorting algorithms.
COURSE OUTCOMES	**ENVIRONMENT SCIENCE**
CO1	Overall understanding of the natural resources
CO2	Basic understanding of the ecosystem and its diversity
CO3	Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
CO4	An understanding of the environmental impact of developmental activities
CO5	Awareness on the social issues, environmental legislation and global treaties.
	II-YEAR I- SEM Course Outcomes
COURSE OUTCOMES	**MATHEMATICS - III**
CO1	Interpret the physical meaning of different operators such as gradient, curl and divergence
CO2	Estimate the work done against a field, circulation and flux using vector calculus
CO3	Apply the Laplace transform for solving differential equations
CO4	Find or compute the Fourier series of periodic signals
CO5	Find or compute the Fourier series of periodic signals
CO6	Identify solution methods for partial differential equations that model physical processes
COURSE OUTCOMES	**OBJECT ORIENTED PROGRAMMING THROUGH C++**
CO1	Classify object oriented programming and procedural programming
CO2	Apply C++ features such as composition of objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling
CO3	Build C++ classes using appropriate encapsulation and design principles
CO4	Apply object oriented or non-object oriented techniques to solve bigger computing problems
COURSE OUTCOMES	**OPERATING SYSTEMS**
CO1	Describe various generations of Operating System and functions of Operating System
CO2	Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
CO3	Solve Inter Process Communication problems using Mathematical Equations by various methods
CO4	Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
CO5	Outline File Systems in Operating System like UNIX/Linux and Windows
COURSE OUTCOMES	**SOFTWARE ENGINEERING**
CO1	Ability to transform an Object-Oriented Design into high quality, executable code

CO2	Skills to design, implement, and execute test cases at the Unit and Integration level
CO3	Compare conventional and agile software methods
COURSE OUTCOMES	**MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE**
CO1	Demonstrate skills in solving mathematical problems
CO2	Comprehend mathematical principles and logic
CO3	Demonstrate knowledge of mathematical modeling and proficiency in using mathematical software
CO4	Manipulate and analyze data numerically and/or graphically using appropriate Software
CO5	Communicate effectively mathematical ideas/results verbally or in
COURSE OUTCOMES	**OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB**
CO1	Apply the various OOPs concepts with the help of programs.
COURSE OUTCOMES	**OPERATING SYSTEM LAB**
CO1	To use Unix utilities and perform basic shell control of the utilities
CO2	To use the Unix file system and file access control
CO3	To use of an operating system to develop software
CO4	Students will be able to use Linux environment efficiently
CO5	Solve problems using bash for shell scripting
COURSE OUTCOMES	**SOFTWARE ENGINEERING LAB**
CO1	By the end of this lab the student is able to elicit, analyze and specify software requirements through a productive working relationship with various stakeholders of the project
CO2	Prepare SRS document, design document, test cases and software configuration management and risk management related documen
CO3	Develop function oriented and object oriented software design using tools like rational rose.
CO4	Use modern engineering tools necessary for software project management, estimations, time management and software reuse
CO5	Generate test cases for software testing
COURSE OUTCOMES	**APPLICATIONS OF PYTHON-NumP**
CO1	Explain how data is collected, managed and stored for processing
CO2	Understand the workings of various numerical techniques, different descriptive measures of Statistics, correlation and regression to solve the engineering problems
CO3	Understand how to apply some linear algebra operations to n-dimensional arrays
CO4	Use NumPy perform common data wrangling and computational tasks in Python
COURSE OUTCOMES	**WEB APPLICATION DEVELOPMENT USING FULL STACK Frontend Development – Module -I**
CO1	Analyze a web page and identify its elements and attributes
CO2	Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style sheet
CO3	Implement MVC and responsive design to scale well across PC, tablet and Mobile Phone

CO4	Create web pages using HTML and Cascading Style Sheets.
COURSE OUTCOMES	**CONSTITUTION OF INDIA**
CO1	Understand historical background of the constitution making and its importance for building a democratic India.
CO2	Understand the functioning of three wings of the government ie., executive, legislative and judiciary.
CO3	Understand the value of the fundamental rights and duties for becoming good citizen of India.
CO4	Analyze the decentralization of power between central, state and local selfgovernment.
CO5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy. 1. Know the sources, features and principles of Indian Constitution. 2. Learn about Union Government, State government and its administration. 3. Get acquainted with Local administration and Pachayati Raj. 4. Be aware of basic concepts and developments of
	II-YEAR II-SEM Course Outcomes
COURSE OUTCOMES	**PROBABILITY AND STATISTICS**
CO1	Classify the concepts of data science and its importance
CO2	Interpret the association of characteristics and through correlation and regression tools
CO3	Make use of the concepts of probability and their applications
CO4	Apply discrete and continuous probability distributions
CO5	Design the components of a classical hypothesis test
CO6	Infer the statistical inferential methods based on small and large sampling tests
COURSE OUTCOMES	**DATABASE MANAGEMENT SYSTEMS**
CO1	Describe a relational database and object-oriented database
CO2	Create, maintain and manipulate a relational database using SQL
CO3	Describe ER model and normalization for database design
CO4	Examine issues in data storage and query processing and can formulate appropriate solutions
CO5	Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
COURSE OUTCOMES	**FORMAL LANGUAGES AND AUTOMATA THEORY**
CO1	Classify machines by their power to recognize languages.
CO2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy
CO3	Employ finite state machines to solve problems in computing
CO4	Illustrate deterministic and non-deterministic machines
CO5	Quote the hierarchy of problems arising in the computer science
COURSE OUTCOMES	**JAVA PROGRAMMING**
CO1	Able to realize the concept of Object Oriented Programming & Java Programming Constructs
CO2	Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords

CO3	Apply the concept of exception handling and Input/ Output operations
CO4	Apply the concept of exception handling and Input/ Output operations
CO5	Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit
COURSE OUTCOMES	**MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY**
CO1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product
CO2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
CO3	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units
CO4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
CO5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making
COURSE OUTCOMES	**DATABASE MANAGEMENT SYSTEMS LAB**
CO1	Utilize SQL to execute queries for creating database and performing data manipulation operations
CO2	Examine integrity constraints to build efficient databases
CO3	Apply Queries using Advanced Concepts of SQL
CO4	Build PL/SQL programs including stored procedures, functions, cursors and triggers
COURSE OUTCOMES	**R PROGRAMMING LAB**
CO1	Access online resources for R and import new function packages into the R workspace
CO2	Import, review, manipulate and summarize data-sets in R
CO3	Explore data-setsto create testable hypotheses and identify appropriate statistical tests
CO4	Perform appropriate statistical tests using R
CO5	Create and edit visualizations with R
COURSE OUTCOMES	**JAVA PROGRAMMING LAB**
CO1	Evaluate default value of all primitive data type, Operations, Expressions, Controlflow, Strings
CO2	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism
CO3	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
CO4	Construct Threads, Event Handling, implement packages, developing applets
COURSE OUTCOMES	**APPLICATIONS OF PYTHON-Pandas**
CO1	Use Pandas to create and manipulate data structures like Series and DataFrames.
CO2	Work with arrays, queries, and dataframes
CO3	Query DataFrame structures for cleaning and processing and manipulating files
CO4	Understand best practices for creating basic charts

COURSE OUTCOMES	WEB APPLICATION DEVELOPMENT USING FULL STACK Frontend Development – Module -II
CO1	Develop of the major Web application tier- Client side development
CO2	Participate in the active development of cross-browser applications through JavaScript
CO3	Develop JavaScript applications that transition between states
	III-YEAR I-SEMESTER
COURSE OUTCOMES	**COMPUTER NETWORKS**
CO1	Demonstrate different network models for networking links OSI, TCP/IP, B-ISDN, N-BISDN and get knowledge about various communication techniques, methods and protocol standards
CO2	Discuss different transmission media and different switching networks
CO3	Analyze data link layer services, functions and protocols like HDLC and PPP
CO4	Compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
CO5	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.
COURSE OUTCOMES	**DESIGN AND ANALYSIS OF ALGORITHMS**
CO1	Analyze the performance of a given algorithm, denote its time complexity using the asymptotic notation for recursive and non-
CO2	List and describe various algorithmic approaches and Solve problems using divide and conquer &greedy Method
CO3	Synthesize efficient algorithms dynamic programming approaches to solve in common engineering design situations.
CO4	Organize important algorithmic design paradigms and methods of analysis: backtracking, branch and bound algorithmic approaches
CO5	Demonstrate NP- Completeness theory ,lower bound theory and String Matching
COURSE OUTCOMES	**DATA WAREHOUSING AND DATA MINING**
CO1	Illustrate the importance of Data Warehousing, Data Mining and its functionalities and Design schema for real time data warehousing applications.
CO2	Demonstrate on various Data Preprocessing Techniques viz. data cleaning, data integration, data transformation and data reduction and Process raw data to make it suitable for various data mining algorithms.
CO3	Choose appropriate classification technique to perform classification, model building and evaluation
CO4	Make use of association rule mining techniques viz. Apriori and FP Growth algorithms and analyze on frequent itemsets generation.
CO5	Identify and apply various clustering algorithm (with open source tools), interpret, evaluate and report the result.
COURSE OUTCOMES	**OPTIMIZATION IN OPERATIONS RESEARCH**
CO1	State and formulate the optimization problem, without and with constraints, by using design variables from an engineering design problem.

CO2	Apply classical optimization techniques to minimize or maximize a multi-variable objective function, without or with constraints, and arrive at an optimal solution.
CO3	Apply and Solve transportation and assignment problem by using Linear programming Simplex method
CO4	Apply gradient and non-gradient methods to nonlinear optimization problems and use interior or exterior penalty functions for the constraints to derive the optimal solutions
CO5	Formulate and apply Dynamic programming technique to inventory control, production planning, engineering design problems etc. to reach a final optimal solution from the current optimal solution.
COURSE OUTCOMES	**ARTIFICIAL INTELLIGENCE**
CO1	Understand the fundamental concepts in Artificial Intelligence
CO2	Analyze the applications of search strategies and problem reductions
CO3	Apply the mathematical logic concepts.
CO4	Develop the Knowledge representations in Artificial Intelligence
CO5	Explain the Fuzzy logic systems
COURSE OUTCOMES	**SOFTWARE PROJECT MANAGEMENT**
CO1	Apply the process to be followed in the software development life-cycle models
CO2	Apply the concepts of project management & planning
CO3	Implement the project plans through managing people, communications and change
CO4	Conduct activities necessary to successfully complete and close the Software projects
CO5	Implement communication, modeling, and construction & deployment practices in software development
COURSE OUTCOMES	**DISTRIBUTED SYSTEMS**
CO1	Elucidate the foundations and issues of distributed systems
CO2	Illustrate the various synchronization issues and globalstate for distributed systems
CO3	Illustrate the Mutual Exclusion and Deadlock detection algorithms in distributed systems
CO4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems
CO5	Describe the features of peer-to-peer and distributed shared memory systems
COURSE OUTCOMES	**ADVANCED UNIX PROGRAMMING**
CO1	Gain good knowledge on Unix commands and awareness of shell programming
CO2	Know about different system calls for files and directories
CO3	Ability to know the working of processes and signals
CO4	Application of client server program for IPC
CO5	Knowledge about socket programming
COURSE OUTCOMES	**DATA WAREHOUSING AND DATA MINING LAB**
CO1	Design a data mart or data warehouse for any organization
CO2	Extract knowledge using data mining techniques and enlist various algorithms used in information analysis of Data Mining Techniques

CO3	Demonstrate the working of algorithms for data mining tasks such as association rule mining, classification for realistic data
CO4	Implement and Analyze on knowledge flow application on data sets and Apply the suitable visualization techniques to output analytical results
COURSE OUTCOMES	**COMPUTER NETWORKS LAB**
CO1	Know how reliable data communication is achieved through data link layer.
CO2	Suggest appropriate routing algorithm for the network.
CO3	Provide internet connection to the system and its installation.
CO4	Work on various network management tools
COURSE OUTCOMES	**ANIMATION COURSE: ANIMATION DESIGN**
CO1	learn various tools of digital 2-D animation
CO2	understand production pipeline to create 2-D animation
CO3	apply the tools to create 2D animation for films and videos
CO4	understand different styles and treatment of content in 3D model
CO5	apply tools to create effective 3D modelling texturing and lighting
COURSE OUTCOMES	**CONTINUOUS INTEGRATION AND CONTINUOUS DELIVERY USING DevOps**
CO1	Understand the why, what and how of DevOps adoption
CO2	Attain literacy on Devops
CO3	Align capabilities required in the team
CO4	Create an automated CICD pipeline using a stack of tools
COURSE OUTCOMES	**EMPLOYABILITY SKILLS-I**
CO1	Understand the corporate etiquette.
CO2	Make presentations effectively with appropriate body language
CO3	Be composed with positive attitude
CO4	Understand the core competencies to succeed in professional and personal life
	III-BTECH II-SEMISTER
COURSE OUTCOMES	**MACHINE LEARNING**
CO1	Explain the fundamental usage of the concept Machine Learning system
CO2	Demonstrate on various regression Technique
CO3	Analyze the Ensemble Learning Methods
CO4	Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.
CO5	Discuss the Neural Network Models and Fundamentals concepts of Deep Learning
COURSE OUTCOMES	**COMPILER DESIGN**
C01	Demonstrate phases in the design of compiler
C02	Organize Syntax Analysis, Top Down and LL(1) grammars
C03	Design Bottom Up Parsing and Construction of LR parsers
C04	Analyze synthesized, inherited attributes and syntax directed translation schemes
C05	Determine algorithms to generate code for a target machine

COURSE OUTCOMES	CRYPTOGRAPHY AND NETWORK SECURITY
CO1	Explain different security threats and countermeasures and foundation course of cryptography mathematics
CO2	Classify the basic principles of symmetric key algorithms and operations of some symmetric key algorithms and asymmetric key cryptography
CO3	Revise the basic principles of Public key algorithms and Working operations of some Asymmetric key algorithms such as RSA, ECC and some more
CO4	Design applications of hash algorithms, digital signatures and key management techniques
CO5	Determine the knowledge of Application layer, Transport layer and Network layer security Protocols such as PGP, S/MIME, SSL,TSL, and IPsec
COURSE OUTCOMES	**MOBILE COMPUTING**
CO1	Develop a strong grounding in the fundamentals of mobile Networks
CO2	Apply knowledge in MAC, Network, and Transport Layer protocols of Wireless Network
CO3	Comprehend, design, and develop a lightweight network stack
CO4	Analyze the Mobile Network Layer system working
CO5	Explain about the WAP Model
COURSE OUTCOMES	**MACHINE LEARNING USING PYTHON LAB**
CO1	Implement procedures for the machine learning algorithms
CO2	Design and Develop Python programs for various Learning algorithms
CO3	Apply appropriate data sets to the Machine Learning algorithms
CO4	Develop Machine Learning algorithms to solve real world problems
COURSE OUTCOMES	**COMPILER DESIGN LAB**
C01	Design simple lexical analyzers
C02	Determine predictive parsing table for a CFG
C03	Apply Lex and Yacc tools
C04	Examine LR parser and generating SLR Parsing table
C05	Relate Intermediate code generation for subset C language
COURSE OUTCOMES	**CRYPTOGRAPHY NETWORK SECURITY LAB**
CO1	Apply the knowledge of symmetric cryptography to implement encryption and decryption using Ceaser Cipher, Substitution Cipher, Hill
CO2	Demonstrate the different algorithms like DES, BlowFish, and Rijndael, encrypt the text “Hello world” using Blowfish Algorithm
CO3	Analyze and implement public key algorithms like RSA, Diffie-Hellman Key Exchange mechanism, the message digest of a text using the SHA-1 algorithm
COURSE OUTCOMES	**BIG DATA: SPARK**
CO1	Develop MapReduce Programs to analyze large dataset Using Hadoop and Spark
CO2	Write Hive queries to analyze large dataset Outline the Spark Ecosystem and its components

CO3	Perform the filter, count, distinct, map, flatMap RDD Operations in Spark
CO4	Build Queries using Spark SQL
CO5	Apply Spark joins on Sample Data Sets
CO6	Make use of sqoop to import and export data from hadoop to database and vice-versa
COURSE OUTCOMES	**EMPLOYABILITY SKILLS-II**
CO1	Solve various Basic Mathematics problems by following different methods
CO2	Follow strategies in minimizing time consumption in problem solving Apply shortcut methods to solve problems
CO3	Confidently solve any mathematical problems and utilize these mathematical skills both in their professional as well as personal life
CO4	Analyze, summarize and present information in quantitative forms including table, graphs and formulas
	IV-YEAR I-SEM Outcomes
COURSE OUTCOMES	**CLOUD COMPUTING**
CO1	Illustrate the key dimensions of the challenge of Cloud Computing
CO2	Classify the Levels of Virtualization and mechanism of tools
CO3	Analyze Cloud infrastructure including Google Cloud and Amazon Cloud
CO4	Create Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud
CO5	Assess control storage systems and cloud security, the risks involved its impact and develop cloud application
COURSE OUTCOMES	**NEURAL NETWORKS AND SOFT COMPUTING**
CO1	Understand the concepts of Artificial intelligence and soft computing techniques
CO2	Analyze the concepts of Neural Networks and select the Learning Networks in modeling real world systems.
CO3	Implement the concepts of Fuzzy reasoning and concepts of Genetic algorithm and its applications to soft computing
CO4	Classify Biologically inspired algorithm such as neural networks, genetic algorithms, ant colony optimization, and bee colony optimization.
CO5	Design hybrid system incorporating neural network, genetic algorithms, fuzzy systems
COURSE OUTCOMES	**DEEP LEARNING TECHNIQUES**
CO1	Demonstrate the fundamental concepts learning techniques of Artificial Intelligence, Machine Learning and Deep Learning.
CO2	Discuss the Neural Network training, various random models
CO3	Explain the Techniques of Keras, TensorFlow, Theano and CNTK
CO4	Classify the Concepts of CNN and RNN
CO5	Implement Interactive Applications of Deep Learning.
COURSE OUTCOMES	**BLOCK-CHAIN TECHNOLOGIES**
CO1	Demonstrate the block chain basics, Crypto currency
CO2	To compare and contrast the use of different private vs. public block chain and use cases

CO3	Design an innovative Bit coin Block chain and scripts, Block chain Science on varies coins
CO4	Classify Permission Block chain and use cases – Hyper ledger, Corda
CO5	Make Use of Block-chain in E-Governance, Land Registration, Medical Information Systems and others
COURSE OUTCOMES	**SECURE CODING TECHNIQUES**
CO1	Differentiate the objectives of information security
CO2	Understand the trend, reasons and impact of the recent Cyber attacks
CO3	Understand OWASP design principles while designing a web application
CO4	Understand Threat modelling
CO5	Importance of security in all phases of SDLC
CO6	Write secure coding using some of the practices in C/C++/Java and Python programming languages
COURSE OUTCOMES	**PYTHON: DEEP LEARNING**
CO1	Demonstrate the basic concepts fundamental learning techniques and layers
CO2	Discuss the Neural Network training, various random models.
CO3	Apply various optimization algorithms to comprehend different
CO4	functions to understand hyper parameter tuning
CO5	Build a convolutional neural network, and understand its application to build a
CO6	recurrent neural network, and understand its usage to comprehend auto encoders to briefly explain transfer learning