



# Nimra College of Engineering & Technology

Estd. By Nimra Educational Society (A Muslim Minority Society)  
 Affiliated to JNTUK, Approved by AICTE, New Delhi, Permitted by Govt. of A.P.  
 Nimra Nagar, Ibrahimpatnam, Vijayawada - 521 456, Krishna Dt., A.P., India.  
 Ph : +91-866-2882010, Fax : +91-866-2881852  
 e-mail : principal\_nimra@yahoo.co.in website : http://www.nimra.in

## B.TECH –(CSE-DATA SCIENCE)

### COURSE OUTCOMES FOR FIRST YEAR FIRST SEMESTER

COURSE TITLE WITH CODE	CO	STATEMENT
COMMUNICATIVE ENGLISH	CO-1	To understand social or transactional dialogues spoken by native speakers of English and
	CO-2	identify the context, topic, and pieces of specific information.
	CO-3	To ask and answer general questions on familiar topics and introduce oneself / others
	CO-4	To employ suitable strategies for skimming and scanning to get the general idea of a text and locate specific information
	CO-5	To apply double integration techniques in evaluating areas bounded by region (L3)
MATHEMATIC S-I (Calculus And Differential Equations)	CO-1	To utilize mean value theorems to real life problems (L3)
	CO-2	To solve the differential equations related to various engineering fields (L3)
	CO-3	To familiarize with functions of several variables which is useful in optimization (L3)
	CO-4	To apply double integration techniques in evaluating areas bounded by region (L3)
	CO-5	To will also learn important tools of calculus in higher dimensions. Students will become
APPLIED CHEMISTRY	CO-1	Analyze the different types of composite plastic materials and interpret the mechanism of conduction in conducting polymers
	CO-2	Utilize the theory of construction of electrodes, batteries and fuel cells in redesigning new
	CO-3	Summarize the preparation of semiconductors; analyze the applications of liquid crystals
	CO-4	Design models for energy by different natural sources
	CO-5	Obtain the knowledge of computational chemistry and molecular machines
PROGRAMMING FOR PROBLEM SOLVING USING C	CO-1	Student will learn to write algorithms and to draw flowcharts for solving problems
	CO-2	To select the best loop construct for a given problem
	CO-3	To design and implement programs to analyze the different pointer applications
	CO-4	To decompose a problem into functions and to develop modular reusable code
	CO-5	To apply File I/O operations
COMPUTER ENGINEERING WORKSHOP	CO-1	Student will be able to Assemble and disassemble components of a PC
	CO-2	various Linux operating system commands.
	CO-3	Recognize characters & extract text from scanned images, Create audio files and podcasts.
	CO-4	Student will have knowledge on Networking commands, Productivity tools like developing
	CO-5	Demonstration and practice on LaTeX and produce professional pdf documents.
ENGLISH COMMUNICATION SKILLS LABORATORY	CO-1	Student shall have the ability understand the Vowels, Consonants, Pronunciation, Phonetic Transcription, Common Errors in Pronunciation
	CO-2	Word stress- di-syllabic words, poly-syllabic words, weak and strong forms, contrastive stress (Homographs)
	CO-3	Stress in compound words ,rhythm, intonation ,accent neutralization
	CO-4	Listening to short audio texts and identifying the context and specific pieces of information to answer a series of questions in speaking.
	CO-5	Newspapers reading; Understanding and identifying key terms and structures useful for
APPLIED CHEMISTRY LAB	CO-1	The students entering into the professional course have practically very little exposure to lab classes
	CO-2	The experiments introduce volumetric analysis; redox titrations with different indicators
	CO-3	EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis
	CO-4	Thus at the end of the lab course, the student is exposed to different methods of chemical
PROGRAMMING FOR PROBLEM SOLVING USING 'C' LAB	CO-1	By the end of the Lab, the student
	CO-2	Gains Knowledge on various concepts of a C language.
	CO-3	Able to draw flowcharts and write algorithms.
	CO-4	Able design and development of C problem solving skills.
	CO-5	Able to design and develop modular programming skills.
ENVIRONMENTAL SCIENCE	CO-1	Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance –Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global explosion, effects
	CO-2	Natural Resources: Natural resources and associated problems Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity
	CO-3	classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels
	CO-4	Environmental Pollution: Definition, Cause, effects and control measures of Air pollution,
	CO-5	Water pollution, Soil pollution, Noise pollution, Nuclear hazards Social Issues and the Environment: Urban problems related to energy -Water conservation,
	CO-1	To develop the use of matrix algebra techniques that is needed by engineers for practical applications (L6)

<b>Mathematics-II</b>	CO-2	To solve system of linear algebraic equations using Gauss elimination, Gauss Jordan, Gauss Seidel (L3)
	CO-3	To evaluate the approximate roots of polynomial and transcendental equations by different algorithms (L5)
	CO-4	To apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (L3)
	CO-5	To apply numerical integral techniques to different Engineering problems (L3)
<b>Identify the applications of interference in engineering</b>	CO-1	To Explain the need of coherent sources and the conditions for sustained interference (L2).
	CO-2	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).
	CO-3	To Explain various types of emission of radiation (L2). Identify the role of laser in engineering Explain the working principle of optical fibers (L2).
	CO-4	To Describe the dual nature of matter (L1). Explain the significance of wave function (L2).
	CO-5	To Identify the role of Schrodinger's time independent wave equation in studying particle in one-dimensional infinite potential well (L3). Identify the role of classical and quantum free electron theory in the study of electrical conductivity (L3). Classify the energy bands of solids (L2).
<b>Semester-2Courses (1 Year 2 semester)</b>		
<b>COURSE TITLE WITH CODE</b>	<b>CO</b>	<b>STATEMENT</b>
	CO-1	To An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation.
	CO-2	To An ability to understand the different switching algebra theorems and apply them for logic functions.
	CO-3	To An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
	CO-4	To Students will be able to design various logic gates starting from simple ordinary gates to complex programmable logic devices & arrays.
	CO-5	To Students will be able to design various sequential circuits starting from flip-flop to registers and counters.
<b>PYTHON PROGRAMMING</b>	CO-1	TO Develop essential programming skills in computer programming concepts like data types, containers
	CO-2	To Apply the basics of programming in the Python language
	CO-3	To Solve coding tasks related conditional execution, loops
	CO-4	ToSolve coding tasks related to the fundamental notions and techniques used in object- oriented programming
	CO-5	To solve a graphics-based operating system interface that uses icons.
<b>DATA STRUCTURES</b>	CO-1	TO Summarize the properties, interfaces, and behaviors of basic abstract data types
	CO-2	To Discuss the computational efficiency of the principal algorithms for sorting & searching
	CO-3	To Discuss the computational efficiency of the principal algorithms for sorting & searching
	CO-4	To Demonstrate different methods for traversing trees
	CO-5	To Discuss about graphical theory
<b>PYTHON PROGRAMMING LAB</b>	CO-1	TO Write, Test and Debug Python Programs
	CO-2	TO Use Conditionals and Loops for Python Programs
	CO-3	TO Use Conditionals and Loops for Python Programs
	CO-4	TO Use Conditionals and Loops for Python Programs
	CO-5	TO USE THE GRAPHICAL THEORY OF PROGRAMMING
<b>APPLIED PHYSICS LAB</b>	CO-1	To find the wavelengths of different spectral lines in mercury spectrum using diffraction grating in normal incidence configuration. Student will be able to determine the radius of curvature of a given plano convex lens by Newton's rings.
	CO-2	To Measure the resistance of a semiconductor with varying temperature.
	CO-3	To find the wavelength of Laser light using diffraction grating.
	CO-4	To find the Resistivity of a Superconductor using four probe method & Meissner effect.
	CO-5	To Determine of Hall voltage and Hall coefficient of a given semiconductor using Hall Effect .
<b>DATA STRUCTURES LAB</b>	CO-1	TO Write C program that use both recursive and non recursive functions to perform Linear search for a Key value in a given list
	CO-2	TO Write C program that implement Quick sort, to sort a given list of integers in ascending order
	CO-3	TO Write a C program that uses functions to perform deletion operation on a singly linked list
	CO-4	TO Write C program that implement stack (its operations) using Linked list
	CO-5	TO Write a C program to insert a node into a BST.
<b>CONSTITUTION OF INDIA (T)</b>	CO-1	To Understand historical background of the constitution making and its importance for building a democratic India
	CO-2	TO Understand the functioning of three wings of the government i.e., executive, legislative and judiciary.
	CO-3	TO Understand the value of the fundamental rights and duties for becoming good citizen of India.
	CO-4	TO Analyze the decentralization of power between central, state and local self-government
	CO-5	ToApply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

### Semester-3 Courses (2 Year 1 semester)

COURSE TITLE WITH CODE	CO	STATEMENT
	CO-1	To Interpret the physical meaning of different operators such as gradient, curl and divergence
	CO-2	To Estimate the work done by against a field, circulation and flux using vector calculus Apply the Laplace transform for solving differential equations
	CO-3	To Find or compute the Fourier series of periodic signals (L3)
	CO-4	To Know and be able to apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms
	CO-5	To Identify solution methods for partial differential equations that model physical processes
<b>MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCES</b>	CO-1	To Demonstrate skills in solving mathematical problems
	CO-2	To solve set theory Principle of Inclusion-Exclusion, Relations
	CO-3	To Demonstrate knowledge of mathematical modeling and proficiency in using mathematical solution
	CO-4	To solve the recurrence relation and function of sequence
	CO-5	To Manipulate and analyze data numerically and/or graphically using appropriate Software
<b>FUNDAMENTALS OF DATA SCIENCE</b>	CO-1	To Apply principles of NumPy and Pandas to the analysis of data
	CO-2	To Apply principles of NumPy and Pandas to the analysis of data
	CO-3	To Make use of various file formats in loading and storage of data.
	CO-4	To Study data wrangling, Combining and Merging Data Sets
	CO-5	To Show the results and present them in a pictorial format.
<b>OBJECT ORIENTED PROGRAMMING WITH JAVA</b>	CO-1	To Able to realize the concept of Object Oriented Programming & Java Programming Constructs
	CO-2	To Able to describe the basic concepts of Java such as operators, classes, objects, inheritance, packages, Enumeration and various keywords
	CO-3	To Apply the concept of exception handling and Input/ Output operations
	CO-4	To Able to design the applications of Java & Java applet
	CO-5	To Able to Analyze & Design the concept of Event Handling and Abstract Window Toolkit
<b>DATABASE MANAGEMENT SYSTEMS</b>	CO-1	To Introduction of the database management system Describe a relational database and object-oriented database
	CO-2	To Create, maintain and manipulate a relational database using SQL Describe ER model and normalization for database design
	CO-3	To Apply the concept of exception handling and Input/ Output operations
	CO-4	To Outline the role and issues in management of data such as efficiency, privacy, security, ethical responsibility, and strategic advantage
	CO-5	Apply Queries using Advanced Concepts of SQL
<b>FUNDAMENTAL OF DATA SCIENCE LAB</b>	CO-1	Perform various operations on numpy arrays
	CO-2	Importing data from different file formats using pandas
	CO-3	Draw different types of charts using matplotlib
	CO-1	Evaluate default value of all primitive data type, Operations, Expressions, Control-flow, Strings.
<b>OBJECT ORIENTED PROGRAMMING WITH JAVA LAB</b>	CO-1	Determine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism
	CO-2	Illustrating simple inheritance, multi-level inheritance, Exception handling mechanism
	CO-3	Construct Threads, Event Handling, implement packages, developing applets
	CO-4	Construct Threads, Event Handling, implement packages, developing applets
<b>DATABASE MANAGEMENT SYSTEMS LAB</b>	CO-1	TO Utilize SQL to execute queries for creating database and performing data manipulation operations
	CO-2	Examine integrity constraints to build efficient databases
	CO-3	Apply Queries using Advanced Concepts of SQL
	CO-4	Build PL/SQL programs including stored procedures, functions, cursors and triggers.
<b>MOBILE APP DEVELOPMENT</b>	CO-1	To Identify various concepts of mobile programming that make it unique from programming for other platforms
	CO-2	To Critique mobile applications on their design pros and cons
	CO-3	To Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
	CO-4	To Program mobile applications for the Android operating system that use basic and advanced phone
<b>ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE</b>	CO-1	Understand the significance of Indian Traditional Knowledge
	CO-2	Classify the Indian Traditional Knowledge
	CO-3	Compare Modern Science with Indian Traditional Knowledge system
	CO-4	Analyze the role of Government in protecting the Traditional Knowledge.

### Semester-4 Courses (2 Year 2 semester)

COURSE TITLE WITH CODE	CO	STATEMENT
<b>Probability and Statistics</b>	CO-1	Classify the concepts of data science and its importance Interpret the association of characteristics and through correlation and regression tools
	CO-2	Make use of the concepts of probability and their applications. Apply discrete and continuous probability distributions Infer the statistical inferential methods based on small and large sampling tests
	CO-3	Design the components of a classical hypothesis test
	CO-4	Design the components of a classical hypothesis test

<b>Computer Organization</b>	CO-1	Develop a detailed understanding of computer systems. Cite different number systems, binary addition and subtraction, standard, floating-point, and micro operations
	CO-2	Cite different number systems, binary addition and subtraction, standard, floating-point, and micro operations
	CO-3	Develop a detailed understanding of architecture and functionality of central processing unit
	CO-4	Exemplify in a better way the I/O and memory organization
	CO-5	Illustrate concepts of parallel processing, pipelining and inter processor communication
<b>Data warehousing and Mining</b>	CO-1	Summarize the architecture of data warehouse
	CO-2	Apply different preprocessing methods, Similarity, Dissimilarity measures for any given raw data
	CO-3	Construct a decision tree and resolve the problem of model over fitting
	CO-4	Compare Apriori and FP-growth association rule mining algorithms for frequent item set
	CO-5	Apply suitable clustering algorithm for the given data set generation
<b>Formal Languages and Automata Theory</b>	CO-1	Classify machines by their power to recognize languages.
	CO-2	Summarize language classes & grammars relationship among them with the help of Chomsky hierarchy.
	CO-3	Employ finite state machines to solve problems in computing
	CO-4	Illustrate deterministic and non-deterministic machines
	CO-5	Quote the hierarchy of problems arising in the computer science
<b>Demand and demand elasticities for a product.</b>	CO-1	The Learner is equipped with the knowledge of estimating the Demand and demand elasticities for a product.
	CO-2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.
	CO-3	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
	CO-4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis
	CO-5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making
<b>R Programming Lab</b>	CO-1	Implement basic concepts of R programming, and its different module that includes conditional, looping, lists, Strings, Functions, Frames, Arrays, and File programming.
	CO-2	Implement the concepts of R Script to extract the data from data frames and file operations
	CO-3	Implement the various statistical techniques using R.
	CO-4	Extend the functionality of R by using add-on packages
	CO-5	Use R Graphics and Tables to visualize results of various statistical operations on data
<b>Data Mining using Python Lab</b>	CO-1	Apply preprocessing techniques on real world datasets
	CO-2	Apply apriori algorithm to generate frequent itemsets.
	CO-3	Apply Classification and clustering algorithms on different datasets
<b>Web Application Development Lab</b>	CO-1	Develop Single Page Applications.
	CO-2	Develop NodeJS & ReactJS Reusable Service
	CO-3	Store the data in MySQL
	CO-4	Get acquainted with the latest web application development trends in the IT industry
<b>Mongo DB</b>	CO-1	Installing and configuring mongoDB in windows.
	CO-2	Perform all database operations using mongoDB
	CO-3	Develop applications by integrating mongoDBwith java/PHP.

### Semester-5Courses (3 Year 1 semester)

<b>COURSE TITLE WITH CODE</b>	<b>CO</b>	<b>STATEMENT</b>
<b>COMPILER DESIGN</b>	CO-1	Language processor like compilers involves lexical analysis, where input is scanned,tokenized and recognized using tools like LEX generators
	CO-2	The parser analyses the syntax of a language using context-free grammars,deriving parse trees through derivations while addressing issues like ambiguity ,left recursion,and left factoring. Parsing involes pre processing steps back tracking and error
	CO-3	A comprehensive overview of parsing techniques including LR and LL parsers shift reduce parsing , SLR parsers,construction of parsing tables, LR parser variants ,error recovery and ambiguity handling
	CO-4	Optimizing code through various techniques including storage management,procedure calls and flow analysis for efficient execution
	CO-5	Challenges in code generator design encompass object code forms algorithms and register allocation
	CO-1	TODescribe various generations of Operating System and functions of Operating System
	CO-2	To Describe the concept of program, process and thread and analyze various CPU Scheduling Algorithms and compare their performance
	CO-3	To Solve Inter Process Communication problems using Mathematical Equations by various methods
	CO-4	To Compare various Memory Management Schemes especially paging and Segmentation in Operating System and apply various Page Replacement Techniques
	CO-5	To Outline File Systems in Operating System like UNIX/Linux and Windows
<b>MACHINE LEARNING</b>	CO-1	To Explain the fundamental usage of the concept Machine Learning system •
	CO-2	To Demonstrate on various regression Technique
	CO-3	To Analyze the Ensemble Learning Methods

	CO-4	To Illustrate the Clustering Techniques and Dimensionality Reduction Models in Machine Learning.
	CO-5	To Discuss the Neural Network Models and Fundamentals concepts of Deep Learning
<b>OPEN ELECTIVE-1</b>	CO-1	State and formulate the optimization problem, without and with constraints, by using design variables from an engineering design problem. .
	CO-2	To Apply classical optimization techniques to minimize or maximize a multi-variable objective function, without or with constraints, and arrive at an optimal solution
	CO-3	To Apply and Solve transportation and assignment problem by using Linear programming Simplex method.
	CO-4	To 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
	CO-5	To 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.
<b>PROFESSIONAL ELECTIVE-1</b>	CO-1	To Ability to transform an Object-Oriented Design into high quality, executable code
	CO-2	To Skills to design, implement, and execute test cases at the Unit and Integration level
	CO-3	To Compare conventional and agile software methods Component-based development is a software engineering approach where system are built by assembling pre built reusable components facilitating efficient design,development,and maintenance processes
	CO-4	Basic path testing is a white box testing technique that focuses on testing the independent path through the control flow graph of a program.
<b>OPERATING SYSTEM &amp; COMPILER DESIGN LAB</b>	CO-1	To Implement various scheduling, page replacement algorithms and algorithms related to deadlocks
	CO-2	To Design programs for shared memory management and semaphores
	CO-3	To Determine predictive parsing table for a CFG
	CO-4	To Apply Lex and Yacc tools
	CO-5	To Examine LR parser and generating SLR Parsing table
<b>Machine learning lab</b>	CO-1	To Implement procedures for the machine learning algorithms
	CO-2	To Design and Develop Python programs for various Learning algorithms
	CO-3	To Apply appropriate data sets to the Machine Learning algorithms
	CO-4	To Develop Machine Learning algorithms to solve real world problems
	CO-5	Write a program to Implement Support Vector Machines and Principle Component Analysis
<b>SKILL ORIENTED COURSE-III</b>	CO-1	To Understand the why, what and how of DevOps adoption
	CO-2	To Attain literacy on Devops
	CO-3	To Align capabilities required in the team
	CO-4	To Create an automated CICD pipeline using a stack of tools
	CO-5	To Implementation of CICD with Java and open source stack
<b>EMPLOYABILITY SKILLS-1</b>	CO-1	To Understand the corporate etiquette.
	CO-2	To Make presentations effectively with appropriate body language
	CO-3	To Be composed with positive attitude
	CO-4	To Understand the core competencies to succeed in professional and personal life
	CO-5	To Self – Analysis, Developing Positive Attitude, Perception.
<b>Data warehouse and minning</b>	CO-1	Design a data mart or data warehouse for any organization
	CO-2	Extract knowledge using data mining techniques and enlist various algorithms used in information analysis of Data Mining Techniques
	CO-3	Demonstrate the working of algorithms for data mining tasks such as association rule mining,classification for realistic data
	CO-4	Implement and Analyze on knowledge flow application on data sets and Apply the suitable visualization techniques to output analytical results
	CO-5	Overview, Basics and Importance of Cluster Analysis, Clustering techniques
<b>Semester-6Courses (3 Year 2 semester)</b>		
<b>COURSE TITLE WITH CODE</b>	<b>CO</b>	<b>STATEMENT</b>
<b>Methods and protocol standards.</b>	CO-1	Toknow how to 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.
	CO-2	Analyze data link layer services, functions and protocols like HDLC and PPP.
	CO-3	To compare and Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
	CO-4	Discuss different transmission media and different switching networks
	CO-5	To determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc.
<b>Big Data Analytics</b>	CO-1	To Illustrate big data challenges in different domains including social media,transportation, finance and medicine
	CO-2	To Use various techniques for mining data stream To Design and develop Hadoop
	CO-3	To Identify the characteristics of datasets and compare the trivial data and big data for various applications
	CO-4	To Explore the various search methods and visualization techniques
<b>Design and</b>	CO-1	To Analyze the performance of a given algorithm, denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms
	CO-2	To List and describe various algorithmic approaches and Solve problems using divide and conquer &greedy Method

<b>Analysis of Algorithms</b>	CO-3	To Synthesize efficient algorithms dynamic programming approaches to solve in common engineering design situations.
	CO-4	To Organize important algorithmic design paradigms and methods of analysis: backtracking, branch and bound algorithmic approaches
	CO-5	To demonstrate NP- Completeness theory ,lower bound theory and String Matching
<b>Professional Elective-II (Software Project Management)</b>	CO-1	To Apply the concepts of project management & planning
	CO-2	To Apply the process to be followed in the software development life-cycle models
	CO-3	To Implement the project plans through managing people, communications and change
	CO-4	To Conduct activities necessary to successfully complete and close the Software projects
	CO-5	To Implement communication, modeling, and construction & deployment practices in software development
<b>Mean Stack Development</b>	CO-1	To Build static web pages using HTML 5 elements.
	CO-2	To Apply JavaScript to embed programming interface for web pages and also to perform Client side validations.
	CO-3	To Build a basic web server using Node.js, work with Node Package Manager (NPM) and recognize the need for Express.js.
	CO-4	To Develop JavaScript applications using typescript and work with document database using MongoDB
	CO-5	To Utilize Angular JS to design dynamic and responsive web pages
<b>Computer Networks Lab</b>	CO-1	To Know how reliable data communication is achieved through data link layer
	CO-2	To learn,Suggest appropriate routing algorithm for the network
	CO-3	To Provide internet connection to the system and its installation
	CO-4	Work on various network management tools
	CO-5	To implement Broadcast tree by taking subnet of hosts, Operating System Detection using Nmap
<b>Big Data Analytics Lab</b>	CO-1	To learn how to implement data structures in java
	CO-2	To know how to run a basic Word Count MapReduce program to understand MapReduce Paradigm
	CO-3	To Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.
	CO-4	To Install and Run Hive then use Hive to create, alter, and drop databases, tables, views,functions, and indexes
	CO-5	To Implement the following file management tasks in Hadoop
<b>Deep Learning with Tensorflow</b>	CO-1	To Implement deep neural networks to solve real world problems
	CO-2	Learn to choose appropriate pre-trained model to solve real time problem
	CO-3	To Interpret the results of two different deep learning models
	CO-4	To Implement word embeddings for IMDB dataset.
	CO-5	To learn how to Build a Convolution Neural Network for simple image
<b>Mean Stack Technology</b>	CO-1	Develop professional web pages of an application using HTML elements like lists,navigations, tables, various form elements, embedded media which includes images, audio,video and CSS Styles.
	CO-2	Utilize JavaScript for developing interactive HTML web pages and validate form data.
	CO-3	Build a basic web server using Node.js and also working with Node Package Manager (NPM).
	CO-4	Build a web server using Express.js
	CO-5	Make use of Typescript to optimize JavaScript code by using the concept of strict type checking.
<b>Employability Skills-II</b>	CO-1	Problem solving
	CO-2	Communication
	CO-3	Leadership
	CO-4	Teamwork
	CO-5	Management