

Department Of Information Technology

Course Outcomes (COs)-R19

Course Outcomes for First Year First Semester Course		
COURSE	COURSE OUTCOMES	
ENGLISH B19HS1101	CO1	Identify the context, topic and pieces of specific information by understanding and responding to the social or transactional dialogues spoken by native speakers of English.
	CO2	Apply suitable strategies for skimming and scanning to get the main idea of a text and locate specific information.
	CO3	Build confidence and adapt themselves to the social and public discourses, discussions and presentations.
	CO4	Understand and apply the principles of writing to paragraphs, arguments, essays and formal/informal communication.
	CO5	Construct sentences using proper grammatical structures and correct word forms.
MATHEMATICS-I B19BS1101	CO1	Solve a given system of linear algebraic equations
	CO2	Determine Eigen values and Eigen vectors of a system represented by a matrix.
	CO3	Solve linear ordinary differential equations of first order and first degree.
	CO4	Apply the knowledge in simple applications such as Newton's law of cooling, orthogonal trajectories and simple electrical circuits.
	CO5	Solve linear ordinary differential equations of second order and higher order.
	CO6	Determine Laplace transform and inverse Laplace transform and solve linear ODE
MATHEMATICS-II B19BS1102	CO1	Fit an interpolation formula and perform interpolation for an equally spaced data as well as unequally spaced data.
	CO2	Find a real root of algebraic and transcendental equations, evaluate numerically certain definite integrals & solve a first order ordinary differential equation by Euler and RK methods.
	CO3	Compute partial derivatives, total derivative and Jacobian
	CO4	Find maxima/minima of functions of two variables and evaluate some real definite integrals.
	CO5	Form partial differential equations and solve Lagrange linear equation. Solve linear higher order homogeneous and non-homogeneous PDEs.
	CO6	Find theoretical solution of one-dimensional wave equation and one-dimensional heat equation
APPLIED CHEMISTRY B19BS1105	CO1	At the end of the course the students learn the advantages and limitations of plastics materials and their use in design.
	CO2	Fuels which are used commonly and their economics, advantages and limitations are discussed.
	CO3	Students gained knowledge reasons for corrosion and some methods of corrosion control.
	CO4	Students understands the impurities present in raw water, problems associated with them and how to avoid them.
	CO5	Similarly, students understand liquid crystals and semi conductors. Students can gain the building materials, solar materials, lubricants and

		energy storage devices.
--	--	-------------------------

COMPUTER FUNDAMENTALS & PROBLEM SOLVING USING C B19CS1101	CO1	The student will be able to develop Flow charts and write algorithms.
	CO2	The student will be able to develop efficient algorithms for solving a problem using the constructs of a programming language like conditional, iteration and recursion.
	CO3	The student will be able to write programs using functions and arrays
	CO4	The student will be able to write programs using Pointers and Structures
	CO5	The student will be able to write programs for Files
APPLIED CHEMISTRY LAB B19BS1108	CO1	An understanding of Professional and develop confidence on recent trends.
	CO2	Able to gain technical knowledge of measuring, operating and testing of chemical instruments and equipments.
	CO3	Acquire ability to apply real time knowledge of chemistry
	CO4	Exposed to the real time working environment.
	CO5	Demonstrate the ability to learn Principles, design and conduct experiments.
	CO6	Ability to work on laboratory and multidisciplinary tasks.
ENGLISH LAB B19HS1102	CO1	Remember and understand the different aspects of English language proficiency with emphasis on LSRW skills.
	CO2	Apply communication skills through various language learning activities.
	CO3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening comprehension.
	CO4	Exhibit an acceptable etiquette essential in social settings
	CO5	Get awareness on mother tongue influence and neutralize it in order to improve fluency and clarity in spoken English.
COMPUTER FUNDAMENTALS & PROBLEM SOLVING USING C LAB B19CS1104	CO1	Gains Knowledge on various concepts of a C language.
	CO2	Able to draw flowcharts and write algorithms.
	CO3	Able to design and develop of C problem solving skills.
	CO4	Able to design and develop modular programming skills.
	CO5	Able to trace and debug a program
	CO6	Able to Identify various computer components, Installation of software
Course Outcomes for First Year Second Semester Course		
MATHEMATICS-III B19BS1202	CO1	Determine Fourier series and half range series of functions.
	CO2	Find different Fourier transforms of non-periodic functions and also use them to evaluate integrals.
	CO3	Use the knowledge of Beta and Gamma functions in evaluating improper integrals
	CO4	Evaluate double integrals, simple triple integrals & find areas and volume.
	CO5	Find the gradient of a scalar function, divergence and curl of a vector function. Determine scalar potential.
	CO6	Apply Green's, Stokes' and Gauss divergence theorems to solve problems.
APPLIED PHYSICS B19BS1203	CO1	Interpret the behavior of light radiation in interference and diffraction Phenomena and their applications.
	CO2	Explain the properties of dielectric and magnetic materials suitable for engineering applications.

	CO3	Explain the important aspects of semiconductors and electrical conductivity in them.
	CO4	Understand the basics of modern technologies lasers, optical fibers and ultrasonics and their utility in various fields.
	CO5	Demonstrate the synthesis methods and applications of nano materials

DIGITAL LOGIC DESIGN B19CS1202	CO1	An ability to define different number systems, binary addition and subtraction, 2's complement representation and operations with this representation. The different Boolean algebra theorems and apply them for logic functions.
	CO2	An ability to define the Karnaugh map for a few variables and perform an algorithmic reduction of logic functions.
	CO3	An ability to define the following combinational circuits: multiplexer, demultiplexers encoders/decoders, comparators, arithmetic-logic units and to be able to build simple circuits.
	CO4	An ability to understand asynchronous and synchronous sequential circuits, like counters and shift registers.
	CO5	An ability to understand memories like RAM and ROM, Programmable Logic Array and Programmable Array Logic.
BASIC DATA STRUCTURE AND PYTHON PROGRAMMING B19CS1203	CO1	Ability to implement various searching and sorting techniques.
	CO2	Student will be able to write programs to implement stack and queues
	CO3	Proficiency in creating based applications using the Python Programming Language.
	CO4	To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
	CO5	To be able to draw various kinds of plots using PyLab and Event driven Programming.
ENGINEERING DRAWING B19ME1201	CO1	Apply principles of drawing to Construct polygons and engineering curves.
	CO2	Apply principles of drawing to draw the projections of points and lines.
	CO3	Apply principles of drawing to draw the projections of planes.
	CO4	Apply principles of drawing to draw the projections of solids.
	CO5	Apply principles of drawing to represent the object in 3D view through isometric views.
APPLIED PHYSICS LAB B19BS1206	CO1	Students get hands on experience in setting up experiments and using the instruments / equipment individually.
	CO2	Get introduced to using new / advanced technologies and understand their significance.
BASIC DATA STRUCTURE S AND PYTHON PROGRAMMING LAB B19CS1205	CO1	Student will be able to write programs to implement stack and queues
	CO2	Ability to implement various searching and sorting techniques.
	CO3	To develop proficiency in creating based applications using the Python Programming Language.
	CO4	To be able to understand the various data structures available in Python programming language and apply them in solving computational problems.
	CO5	To be able to do testing and debugging of code written in Python.
	CO6	To be able to draw various kinds of plots using PyLab.
	CO7	To be able to do text filtering with regular expressions in Python
COMMUNIC	CO1	Learn different aspects of English language proficiency in LSRW skills

ATION SKILLS LAB B19HS1203	CO2	Apply communication skills through various language learning activities.
	CO3	Draft job application letters.
	CO4	Adopt a professional etiquette in formal settings.
	CO5	Improve fluency and clarity in both spoken and written English.
CONSTITUTION OF INDIA B19MC1202	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 i.e., 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 self-government.
	CO5	Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
	CO6	Know the sources, features and principles of Indian Constitution. Learn about Union Government, State government and its administration. Get acquainted with Local administration and Panchayati Raj. Be aware of basic concepts and developments of Human Rights. Gain knowledge on roles and functioning of Election Commission
Course Outcomes for Second Year First Semester Course		
DISCRETE MATHEMATICAL STRUCTURE SB19 IT 2101	CO1	Write and verify the arguments for their validity using propositional and predicate logic.
	CO2	Observe different counting methods and apply in their fields of study.
	CO3	Identify various types of relations and utilize their properties.
	CO4	Understand different Algebraic structures and their properties
	CO5	Formulate and solve the recurrence relations.
	CO6	Utilize the concepts in graphs and trees to understand different data structures
PRINCIPLES OF SOFTWARE ENGINEERING B19 IT 2102	CO1	Apply software engineering concepts to define a problem and perform requirements engineering.
	CO2	Design UML diagrams for the requirements gathered
	CO3	Implement the designed problem in object oriented programming language.
	CO4	Test whether all the requirements specified have been achieved or not.
MICRO PROCESSOR B19 IT 2103	CO1	Student will be able to apply the knowledge of 8085 architecture and instruction set.
	CO2	Student will be able to apply the knowledge of microprocessor for counter designing and interrupts signaling.
	CO3	Students will be able to design interfacing circuits between 8085 with different peripheral and memory components.
	CO4	Student will be able to apply the knowledge of 8086 architecture and instruction set
ADVANCED DATA STRUCTURE SB19 IT 2104	CO1	Student will be able to Implement data structures like linked lists for given problems.
	CO2	Student will be able to Construct various types of tree structures and apply graph algorithms for the given data
	CO3	Student will be able to Implement advanced data structures into the applications such as balanced search trees, AVL Trees, and Red-Black Trees.
	CO4	Student will be able Describe the hash function and concepts of collision

		and its resolution methods
COMPUTER ORGANIZATION B19 IT 2105	CO1	Illustrate the concepts of data representation, Arithmetic procedures and various micro operations
	CO2	Develop a detailed understanding of architectures and functionalities of control unit and central processing unit
	CO3	Describe and analysis of input output system, different types of Memories and evaluate memory requirement in basic computer
	CO4	Illustrate the concepts of multiprocessing and pipelining systems
OBJECT ORIENTED PROGRAMMING THROUGH C++ B19 IT2106	CO1	Analyze the procedural and object oriented paradigm.
	CO2	Apply object oriented concepts to applications using dynamic memory management techniques and overloading concepts.
	CO3	Apply inheritance, pointer, polymorphism and virtual functions concepts.
	CO4	Understand generic programming, Exception handling.
ADVANCED DATA STRUCTURES LAB B19 IT2107	CO1	Student will be able to Implement data structures like linked lists for given problems.
	CO2	Student will be able to Construct various types of tree structures and apply graph algorithms for the given data
	CO3	Student will be able to Implement advanced data structures into the applications such as balanced search trees, AVL Trees, and Red-Black Trees
	CO4	Student will be able Describe the hash function and concepts of collision and its resolution methods
OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB B19 IT2108	CO1	Apply the basic concepts in C++ like Class and objects
	CO2	Analyze memory management techniques like constructor, destructor and overloading mechanisms
	CO3	Apply reusability of code and usage of exception handling and generic programming
PROFESSIONAL ETHICS AND HUMAN VALUES B19MC2101	CO1	Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field. Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships and field work.
	CO2	Identify the multiple ethical interests at stake in a real-world situation or practice and Articulate what makes a particular course of action ethically defensible.
	CO3	Assess their own ethical values and the social context of problems
	CO4	Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects.
	CO5	Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.
Course Outcomes for Second Year Second Semester Course		
PROBABILITY AND STATISTICS B19 BS 2202	CO1	Understand the concepts of data science and fit a best suitable curve for the given data
	CO2	Identify the random variable as discrete/continuous and analyse it.
	CO3	Predict the discrete distribution suitable for the given data from its moments.
	CO4	Predict the continuous distribution suitable for the given data from its moments
	CO5	Decide the test applicable for giving inference about Population

		Parameter based on Sample statistic.
	CO6	Make business decisions about the resources needed to provide a service in day-to-day life applications including telecommunication, traffic engineering, computing and the design of factories, shops, offices and hospitals.
JAVA PROGRAMMING B19 IT 2201	CO1	Develop applications using basic java concepts
	CO2	Develop applications using object oriented programming concepts
	CO3	Develop error free applications using exception handling mechanisms and multi tasking applications using multithreading concepts
	CO4	Develop interactive Jdbc applications with database connectivity
OPERATING SYSTEMS B19 IT2202	CO1	Describe basic concepts, Generations, Functions, Services and Structures of different Operating Systems.
	CO2	Describe the concept of Process, Thread and also Utilize different algorithms for Scheduling multiple Processes & Threads.
	CO3	Apply different Mechanisms to implement Inter Process Communication without occurring dead lock
	CO4	Classify Memory Management Schemes and Apply and Compare various Page Replacement Techniques for better allocation.
DATABASE MANAGEMENT SYSTEMS B19 IT2203	CO1	Analyze requirements of an organization and develop a database schema in terms of E R model and Relational model.
	CO2	Analyze a query and formulate solution using the knowledge of query languages like SQL.
	CO3	Design well structured relations by applying normalization to remove anomalies in relations.
	CO4	Examine issues in transaction execution, data storage and query processing and can formulate appropriate solutions.
THEORY OF COMPUTATION B19 IT2204	CO1	Analyze and construct Finite Automata from a regular expression, regular grammar or regular language
	CO2	Analyze and construct a PDA from CFG or CFL
	CO3	Analyze and construct a TM from REL or Unrestricted Language.
JAVA PROGRAMMING LAB B19IT2205	CO1	Apply primitive data types, Operations, Expressions, Control-flow, Strings in java programming
	CO2	Examine Class, Objects, Methods, Inheritance, Exception, Runtime Polymorphism, User defined Exception handling mechanism
	CO3	Analyzing simple inheritance, multi-level inheritance, Exception handling mechanism
	CO4	Analyze and Construct Threads, Event Handling, implement packages, developing applets
UNIX OPERATING SYSTEM LAB B19IT2206	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
DATABASE MANAGEMENT SYSTEMS LAB B19IT2207	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.
SOCIALY RELEVANT PROJECT	CO1	Use scientific reasoning to gather, evaluate, and interpret ideas
	CO2	Analyze and design solutions to solve the ideas
	CO3	Use one or more creative tools to complete the projects

B19 IT2208	CO4	Acquire knowledge on time complexities of different methods
	CO5	Acquire Programming skill on Java libraries and Collections
-- ESSENCE OF INDIAN TRADITIONAL KNOWLEDG EB19MC2201	CO1	Understand the concept of Traditional knowledge and its importance
	CO2	Know the need and importance of protecting traditional knowledge Know the various enactments related to the protection of traditional knowledge
	CO4	Understand the concepts of Intellectual property to protect the traditional knowledge
Course Outcomes for Third Year First Semester Course		
MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY B19HS3101	CO1	Equip oneself with the knowledge of estimating the Demand and demand elasticities for a product.
	CO2	Have knowledge of Cost and its types and ability to calculate BEP.
	CO3	Understand the nature of different markets.
	CO4	Understand Pricing Practices prevailing in today's business world.
	CO5	Prepare Financial Statements and know how to calculate Profit & Loss for a firm.
	CO6	Know Types of capital and their sources and know how to calculate Depreciation.
COMPUTER NETWORKS B19IT3101	CO1	Understand components, Data flow in data communication and differentiate layered protocol suits.
	CO2	Differentiate among transmission media, switching networks and their thrust applications.
	CO3	Analyse problems related to error detection, flow control, link control with respect to data link layer.
	CO4	Understand MAC layer protocols and LAN technologies.
COMPILER DESIGN B19IT3102	CO1	Use LEX and YACC tools for developing a scanner and a parser.
	CO2	Design and implement LL and LR parsers.
	CO3	Design algorithms to perform code optimization in order to improve the performance of a program in terms of space and time complexity.
	CO4	Apply algorithms to generate machine code.

ARTIFICIAL INTELLIGENCE B17BS1104	CO1	Student would able to understand the basic applications of AI and problems that can be solved by AI.
	CO2	Student would apply the problem solving strategies to generate best AI solutions using state space search.
	CO3	Student would apply AI languages to represent knowledge base.
	CO4	Student would apply AI tools to represent knowledge base.
	CO5	Student would apply uncertainty techniques to solve AI real time problems.
DESIGN AND ANALYSIS OF ALGORITHMS B17CS1101	CO1	Apply the mathematical principle to analyze the efficiency of algorithms by measuring time complexity & space complexity.
	CO2	Apply the Divide-and-Conquer strategy and Greedy Method for solving the complex problems & analyze the performance of solutions.
	CO3	Apply the optimistic strategies Dynamic Programming for computational problems in computer field.
	CO4	Apply the Backtracking and Branch-and-bound strategies for solving complex problems.

	CO5	Understand the basic concepts of NP-Hard and NP- Complete and Solve string matching using various algorithms.
FUNDAMEN TAS OF IMAGE PROCESSING B19IT3105	CO1	Discuss digital image fundamentals.
	CO2	Analyze and apply image enhancement and restoration techniques.
	CO3	Analyze and apply image compression techniques.
	CO4	Distinguish between different features of color images.
	CO5	Apply image segmentation techniques.
NoSQL DATABASES B19IT3106	CO1	Identify what type of NoSQL database to implement based on business requirements (key-value, document, full text, graph, etc.).
	CO2	Apply NoSQL data modelling from application specific queries.
	CO3	Use Atomic Aggregates and denormalization as data modelling techniques to optimize query processing.
SCRIPTING LANGUAGES B19IT3107	CO1	Ability to understand the PERL scripting languages
	CO2	Understand the fundamentals of PHP to develop secured web application.
	CO3	Explain syntax and variables in TCL.
	CO4	Master an understanding of python especially the object-oriented concepts.
COMPUTER GRAPHICS B19IT3108	CO1	Illustrate and apply the basics of computer graphics, different graphics systems and applications of computer graphics with various algorithms for line, circle and ellipse drawing objects.
	CO2	Apply and analyze 2D transformations and perform clipping.
	CO3	Apply and analyze projections and perform 3D transformations.
	CO4	Illustrate different graphic color models and Basic programming in OPENGL.
	CO5	Illustrate different shading models, rendering objects and understand basics of ray tracing.
R- PROGRAMM ING B19IT3109	CO1	Identify the basic data types and advanced data structures in R.
	CO2	Develop user defined functions and implement control statements.
	CO3	Analyze probability, linear algebra operations ,statistical distributions and graphs.
	CO4	Determine distribution techniques and linear models using regression.
	CO5	Illustrate different shading models, rendering objects and understand basics of ray tracing.
COMPUTER NETWORKS & COMPILER DESIGN LAB B19IT3110	CO1	Able to use various protocols commands for network establishment.
	CO2	Able to Implement error correction codes for correct data transmission in data link layer.
	CO3	Able to Implement scanners ,parsers, for lexical & syntax analysis.
	CO4	Able to implement code optimizers & code generators in compilers.
AI TOOLS & TECHNIQUE S LAB B19IT3111	CO1	Student would analyze problems that are amenable to solution by AI method.
	CO2	Student would Identify appropriate AI methods to solve a given problem.
	CO3	Student would Use language/framework of different AI methods for solving problems.
	CO4	Student would Implement basic AI algorithms Design and carry out an empirical evaluation of different algorithms on problem formalization, and state the conclusions that the evaluation supports.
EMPLOYABI LITY SKILLS - I Part-A: Verbal and Soft	CO1	Detect grammatical errors in the text/sentences and rectify them while answering their competitive/ company specific tests and frame grammatically correct sentences while writing.

Skills-I B19MC3101	CO2	Answer questions on synonyms, antonyms and other vocabulary based exercises while attempting CAT, GRE, GATE and other related tests.
	CO3	Use their logical thinking ability and solve questions related to analogy, syllogisms and other reasoning based exercises.
	CO4	Choose the appropriate word/s/phrases suitable to the given context in order to make the sentence/paragraph coherent.
	CO5	Apply soft skills in the work place and build better personal and professional relationships making informed decisions.
EMPLOYABILITY SKILLS - I Part-B: Quantitative Aptitude-I B19MC3101	CO1	The students will be able to perform well in calculating on number problems and various units of ratio concepts
	CO2	Accurate solving problems on time and distance and units related solutions
	CO3	The students will become adept in solving problems related to profit and loss, in specific, quantitative ability
	CO4	e students will present themselves well in the recruitment process using analytical and logical skills which he or she developed during the course as they are very important for any person to be placed in the industry
	CO5	e students will learn to apply Logical thinking to the problems of syllogisms and be able to effectively attempt competitive examinations like CAT, GRE, GATE for further studies
ADVANCED CODING B19MC3103	CO1	Able to solve problems using java collection framework and I/o classes.
	CO2	Able to develop multithreaded applications with synchronization.
	CO3	Able to develop applets for web applications
	CO4	Able to design GUI based applications
Course Outcomes for Third Year Second Semester Course		
DATA WAREHOUSING AND DATA MINING B19 IT 3201	CO1	Design a Data warehouse system and perform business analysis with OLAP tools
	CO2	Apply suitable pre-processing and visualization techniques for data analysis
	CO3	Apply frequent pattern and association rule mining techniques for data analysis
	CO4	Apply appropriate classification techniques for data analysis
	CO5	Apply appropriate clustering techniques for data analysis
WEB TECHNOLOGIES B19IT3202	CO1	Illustrate the basic concepts of HTML and CSS & apply those concepts to design static web page
	CO2	Identify and understand various concepts related to dynamic web pages and validate them using JavaScript
	CO3	Outline the concepts of Extensible markup language &AJAX
	CO4	Create web Applications using Scripting Languages &Frameworks
	CO5	Create and deploy secure, usable database driven web applications using PHP and RUBY
ADVANCED COMPUTER NETWORKS B19IT3203	CO1	Illustrate reference models with layers, protocols, and interfaces
	CO2	Analyze and apply the routing algorithms, Sub netting and Addressing of IP V4andIPV6
	CO3	Describe and Analysis of basic protocols of computer networks, and how they can be used to assist in network design and implementation
	CO4	Illustrate the concepts of WWW and different application layer protocols
WEB TECHNOLOGIES LAB	CO1	Students will be able to develop static web sites using CSS and Java Scripts
	CO2	To implement XML and XSLT for web applications

B19IT3205	CO3	Develop Dynamic web content using PHP
	CO4	To Implement database connections with Mysql and PHP to develop dynamic WebPages
DATA MINING LAB B19IT3206	CO1	Extend the functionality of R by using add-on packages
	CO2	Examine data from files and other sources and perform various data manipulation tasks on them
	CO3	Code statistical functions in R
	CO4	Use R Graphics and Tables to visualize results of various statistical operations on data
	CO5	Apply the knowledge of R gained to data Analytics for real life applications
EMPLOYABILITY SKILLS II Part-A: Verbal and Soft Skills-II B19MC3201	CO1	Construct coherent, cohesive and unambiguous verbal expressions in both oral and written discourses.
	CO2	Analyze the given data/text and find out the correct responses to the questions asked based on the reading exercises; identify relationships or patterns within groups of words or sentences
	CO3	Write paragraphs on a particular topic, essays (issues and arguments), e mails, summaries of group discussions, reports, make notes, statement of purpose(for admission into foreign universities), letters of recommendation(for professional and educational purposes).
	CO4	Converse with ease during interactive sessions/seminars in their classrooms, compete in literary activities like elocution, debates etc., raise doubts in class, participate in JAM sessions/versant tests with confidence and convey oral information in a professional manner.
	CO5	Participate in group discussions/group activities, exhibit team spirit, use language effectively according to the situation, respond to their interviewer/employer with a positive mind, tailor make answers to the questions asked during their technical/personal interviews, exhibit skills required for the different kinds of interviews (stress, technical, HR) that they would face during the course of their recruitment process.
EMPLOYABILITY SKILLS II Part-B: Quantitative Aptitude-II B19MC3201	CO1	The students will be able to perform well in calculating different types of data interpretation problems
	CO2	The students will perform efficaciously on analytical and logical problems using various methods.
	CO3	Students will find the angle measurements of clock problems with the knowledge of calendars and clock.
	CO4	The students will skillfully solve the puzzle problems like arrangement of different positions.
	CO5	The students will become good at solving the problems of lines, triangulars, volume of cone, cylinder and so on.
COMPETITIVE CODING B19MC3204	CO1	Use Mathematical functions to solve coding tasks.
	CO2	Apply STL functions to solve recursive algorithms.
	CO3	Solve coding tasks related to selection based problems.
	CO4	Apply Pattern matching and Graph algorithms to solve various problems.
	CO5	Use Mathematical functions to solve coding tasks.
Course Outcomes for Fourth Year First Semester Course		
Cryptography and Network Security B19IT4101	CO1	Understand, apply and analyze the algorithms on security problems
	CO2	Understand, apply and analyze symmetric and asymmetric approaches.
	CO3	Understand, apply and analyze security measurements
	CO4	Understand, apply and analyze various malicious software.
Machine	CO1	Recognize the characteristics of machine learning that make it useful to real world Problems.

Learning B19IT4102	CO2	Implement various machine learning algorithms as supervised, semi supervised and Unsupervised.
	CO3	Implement various machine learning toolboxes to use support vector machines, regularized regression algorithms, Naivy Bayes algorithms.
	CO4	Understand the concept behind neural networks for implementing non-linear functions.
Cloud Computing B19 IT 4103	CO1	Interpret the key dimensions of the challenge of Cloud Computing
	CO2	Examine the economics, financial, and technological implications for selecting cloud computing for own organization
	CO3	Assessing the financial, technological, and organizational capacity of employer's for actively initiating and installing cloud-based applications
	CO4	Evaluate own organizations' needs for capacity building and training in cloud computing-related IT areas
	CO5	Illustrate Virtualization for Data-Center Automation
BIGDATA ANALYTICS B19 IT 4104	CO1	Identify the characteristics of datasets and compare the trivial data and big data for various applications. Illustrate big data challenges in different domains.
	CO2	Explore various techniques for mining data streams in real time analytics
	CO3	Explore the features of Distributed File System in Hadoop framework.
	CO4	Illustrate the features of Map-Reduce programming model to analyze the big data in Hadoop environment.
	CO5	Explore the tools in Hadoop Eco system and Data Visualization techniques.
SOCIAL NETWORKING B19 IT 4105	CO1	Know basic notation and terminology used in network science
	CO2	Be able to visualize, summarize and compare networks
	CO3	Illustrate basic principles behind network analysis algorithms
	CO4	Develop practical skills of network analysis in R programming language
	CO5	Be capable of analyzing real work networks
AD-HOC AND SENSOR NETWORKS B17 IT 4106	CO1	Evaluate the principles and characteristics of mobile ad hoc networks (MANETs) and what distinguishes them from infrastructure-based networks
	CO2	Determine the principles and characteristics of wireless sensor networks
	CO3	Discuss the challenges in designing MAC, routing and transport protocols for wireless ad-hoc sensor networks
	CO4	Illustrate the various sensor network Platforms, tools and applications
	CO5	Demonstrate the issues and challenges in security provisioning and also familiar with the mechanisms for implementing security and trust mechanisms in MANETs and WSNs
AGILE SOFTWARE PROCESS B179IT 4107	CO1	Summarize the agile methodologies: extreme programming, scrum, and feature driven programming.
	CO2	Apply The Twelve XP Practices and Illustrate pair programming and its characteristics
	CO3	Apply XP to a small project
	CO4	Examine Feature-Driven Development and Regaining Control
	CO5	Relate Agile Modeling and RUP and Choose Tools to help with Agile Development
DESIGN PATTERNS B19IT 4108	CO1	Construct a design consisting of a collection of modules
	CO2	Examine well-known design patterns (such as Iterator, Observer, Factory and Visitor)

	CO3	Distinguish between different categories of design patterns
	CO4	Ability to understand and apply common design patterns to incremental/iterative development
	CO5	Identify appropriate patterns for design of given problem
	CO6	Design the software using Pattern Oriented Architectures
DISTRIBUTED SYSTEMS B19IT 4109	CO1	Enumerate the foundations and issues of distributed systems
	CO2	Illustrate the various synchronization issues and global state for distributed systems.
	CO3	Demonstrate the Mutual Exclusion and Deadlock detection algorithms in distributed systems
	CO4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems implementing non-linear functions
	CO5	Describe the features of peer-to-peer and distributed shared memory systems
DevOps B19IT 4110	CO1	Enumerate the principles of continuous development and deployment, automation of configuration management, inter-team collaboration, and IT service agility
	CO2	Describe DevOps & Dev Sec Ops methodologies and their key concepts
	CO3	Illustrate the types of version control systems, continuous integration tools, continuous monitoring tools, and cloud models
	CO4	Set up complete private infrastructure using version control systems and CI/CD tools
INTERNET OF THINGS B19IT 4111	CO1	Evaluate the concept of Internet of Things in different contexts
	CO2	Understand about design principles IoT devices.
	CO3	Analyze various protocols of IoT.
	CO4	Identify the need of data link layer in IoT.
	CO5	Apply data analytics and cloud offerings related to IoT.
DATA SCIENCE B19IT 4112	CO1	Describe what Data Science is and the skill sets needed to be a data scientist
	CO2	Explain in basic terms what Statistical Inference means. Identify probability distributions commonly used as foundations for statistical modeling. Fit a model to data
	CO3	Use R to carry out basic statistical modeling and analysis process
	CO4	Apply basic tools (plots, graphs, summary statistics) to carry out EDA
	CO5	Describe the Data Science Process and how its components interact.
	CO6	Use APIs and other tools to scrap the Web and collect data
	CO7	Apply EDA and the Data Science process in a case study
BIOMETRICS B19IT 4113	CO1	Demonstrate knowledge of the basic physical and biological science and engineering principles underlying biometric systems
	CO2	Analyze biometric systems at the component level and be able to analyze and design basic biometric system applications
	CO3	Illustrate to work effectively in teams and express their work and ideas orally and in writing.
	CO4	Identify the sociological and acceptance issues associated with the design and implementation of biometric systems
	CO5	Elaborate various Biometric security issues in real world applications
UNIFIED MODELING	CO1	Know the syntax of different UML diagrams
	CO2	Create use case documents that capture requirements for a software

LANGUAGE (UML) LAB B19IT 4114		system
	CO3	Create class diagrams that model both the domain model and design model of a software system
	CO4	Create interaction diagrams that model the dynamic aspects of a software system
	CO5	Write code that builds a software system
	CO6	Develop simple applications
PROJECT WORK - I: B19IT 4115	CO1	Students will be able to Analyze Real world Problem by using Domain Knowledge.
	CO2	Students will be able to Define a Real-World Problem and Design and Analysis the System Architecture
	CO3	Students will be able to Develop Technical Report as a Project Proposal by following professional Ethics.
IPR & Patents B19MC4101	CO1	Id Demonstrate IPR Laws and patents pave the way for innovative ideas which are instrumental for inventions to seek Patents
	CO2	Infer an insight on Copyrights, Patents and Software patents which are instrumental for further advancements
Course Outcomes for Fourth Year Second Semester Course		
MANAGEMENT AND ORGANISATIONAL BEHAVIOUR B19HS4201	CO1	I Explain management functions and principles
	CO2	Describe the concepts of functional management that is HRM and Marketing functions
	CO3	Discuss about vision, mission, goal, objective and a strategy based on which the corporate planning depends
	CO4	Recognise strategically contemporary management practices and describe corporate planning process
	CO5	Discuss about individual behaviour and motivational theories
	CO6	Explain about ways in managing conflicts and stress
DEEP LEARNING B19IT4201	CO1	I Demonstrate the mathematical foundation of neural network
	CO2	Describe the machine learning basics
	CO3	Compare the different architectures of deep neural network
	CO4	Build a convolutional neural network
	CO5	Build and train RNN and LSTMs
QUANTUM COMPUTING B19IT4202	CO1	I Analyze the behaviour of basic quantum algorithms
	CO2	Implement simple quantum algorithms and information channels in the quantum circuit model
	CO3	Simulate a simple quantum error-correcting code
	CO4	Prove basic facts about quantum information channels
BLOCKCHAIN TECHNOLOGIES B19IT4203	CO1	I Demonstrate the foundation of the Block chain technology and understand the processes in payment and funding
	CO2	Identify the risks involved in building Block chain applications
	CO3	Review of legal implications using smart contract
	CO4	Choose the present landscape of Blockchain implementations and Understand Crypto currency markets
	CO5	Examine how to profit from trading crypto currencies
E COMMERCE B19IT4204	CO1	I Ability to Analyze the impact of E-Commerce on business model and strategy
	CO2	Ability to Distinguish security issues and procedure, Protocols used to protect against security threats.
	CO3	Ability to Assess Electronic payment systems and Payment schemes
	CO4	Ability to Identify Internet trading relationships including business to consumer, Business to Business, Intra Organizational.
NETWORK PROGRAMM	CO1	Id Demonstrate functional layering of network software architectures
	CO2	Write your own socket-based network application programs

ING B19IT4205	CO3	Apply software tools for network troubleshooting
PROJECT WORK – II B19IT4206	CO1	Students will be able to Design and Analysis the System Architecture for the Proposed Proble
	CO2	Students will be able to Implement System Architecture and Evaluate Outcomes using Modern Engineering Tools
	CO3	Students will be able to Develop Technical Report as a Project Thesis by following professional Ethics.