VIGNAN'S NIRULA INSTITUTE OF TECHNOLOGY AND SCIENCE FOR WOMEN

Department of Computer Science & Engineering

R 19 - Course Outcomes

I YEAR - I SEM

C101	ENGLISH	C101.1	Show good understanding of academic lectures and English spoken by native speakers
		C101.2	Develop speaking skills through participation in role plays and discussions
		C101.3	Outline summaries based on global comprehension of reading / listening texts
		C101.4	Demonstrate effective writing strategies for organized essays record and report useful information
		C101.5	Choose grammatically correct sentences in speech and in writing
		C101.6	Apply technical vocabulary in professional correspondence
C102	MATHEMATIC-1	C102.1	Solve sequences and series problems.
		C102.2	Verify mean value theorems for a given function.
		C102.3	Apply first order and first-degree ODE techniques in engineering problems.
		C102.4	Solve higher order differential equations.
		C102.5	Examine given function of two variables for its extreme values.
		C102.6	Evaluate double and triple integrals.
C103	APPLIED CHEMISTRY	C103.1	Utilize knowledge of different polymer types to choose suitable materials for engineering applications based on their properties.
		C103.2	Identify the various types of electrochemical cells, corrosion and its control methods.
		C103.3	Summarize the preparation, types and application of semiconductors
		C103.4	Utilize various materials for modern advances of engineering technology
		C103.5	Identify different computational chemistry methods and molecular machines.
		C103.6	Apply analytical instruments to identify various organic compounds and develop diverse renewable energy sources
C104	FUNDAMENTALS OF COMPUTER SCIENCE	C104.1	Outline the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
		C104.2	Demonstrate the techniques of writing algorithms pseudo codes & schematic flow of logic in software development process
		C104.3	Summarize the Computer networks, types of networks and topologies, Operating Systems and its concepts.
		C104.4	Illustrate the concepts of Database management and computer system development.
		C104.5	Generalize Advanced Computer Technologies like Distributed Computing & Wireless Networks

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C105	ENGINEERING DRAWING	C105.1	Construct the various types of polygons, engineering curves and scales
		C105.2	Apply the orthographic principle and construct the orthographic projections of points and lines in any position
		C105.3	Construct orthographic projections of simple planes perpendicular/parallel and inclined to one reference plane
		C105.4	Construct orthographic projections of simple planes inclined to both the reference planes
		C105.5	Construct orthographic projections of regular solids in any position
		C105.6	Interpret their ideas in conversion of orthographic views from isometric view and vice versa.
C106	ENGLISH LAB	C106.1	Explain the theoretical concepts of English sounds and word stress
		C106.2	Classify Rhythm, Intonation and Contrastive word stress
		C106.3	Utilise the knowledge of weak and strong forms
C107	APPLIED CHEMISTRY LAB	C107.1	Utilize the concept for quantitative analysis in volumetric titrations to determine the concentration/amount of analytes
		C107.2	Apply various analytical techniques, and interpret the results for quantitative analysis.
		C107.3	Determine water quality parameters, such as hardness and alkalinity
C108	IT WORKSHOP LAB	C108.1	Outline components of a PC
		C108.2	Construct a fully functional virtual machine, Summarize various Linux operating system commands
		C108.3	List programming skill in Github,Hackerrank, Codechef, HackerEarth etc.
		C108.4	Create video tutorials and publishing, Use office tools for documentation, Build interactive presentations, Build websites, Create quizzes & analyze responses.

I YEAR - II SEM

C111	MATHEMATICS II	C111.1	Identify the rank of a matrix and solve linear of equations.
		C111.2	Examine the eigen values and eigen vectors.
		C111.3	Obtain the canonical form to quadratic form.
		C111.4	Identify the approximate roots of algebraic and transcendental equations
		C111.5	Summarise the concept of interpolation using various methods
		C111.6	Solve ordinary differential equationsby using various numerical methods
C112	MATHEMATICS III	C112.1	Examine gradient of a scalar function, divergence and curl of a vector function.
		C112.2	Apply Green's, Gauss's and Stoke's theorems for calculating line, surface and volume integrals
		C112.3	Determine Laplace transform and inverse Laplace transform of a function.
		C112.4	Examine the Fourier series of a given function
		C112.5	Solve problems related to Fourier integral theorem and summarize Fourier transform and inverse Fourier transform of a function
		C112.6	Solve linear and non-linear Partial Differential equations

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C113	APPLIED PHYSICS	C113.1	Analyze the intensity variation due to interference, diffraction, polarization and identify relevant engineering applications.
		C113.2	Explain fundamentals of quantum mechanics and apply it to one dimensional motion of particles
		C113.3	Identify the role of classical and quantum free electron theory in the study of electrical conductivity.
		C113.4	Classify crystalline solids based on band theory of solids
		C113.5	Outline the properties of charge carriers in semiconductors and identify the type of semiconductor using Hall Effect
		C113.6	Summarize various types of polarization of dielectrics and classify the magnetic materials
C114	PPS USING C	C114.1	Demonstrate algorithms and to draw flowcharts for solving problems and to convert flowcharts/algorithms to C Programs, compile and debug programs
		C114.2	Explain different operators, data types and deveolp programs that use two-way/ multi-way selection and to select the best looping structure for a given problem
		C114.3	Make use of arrays and to design programs to perform operations on arrays
		C114.4	Build programs to know different pointer applications that use dynamic memory allocation
		C114.5	Develop programs on functions and to develop modular reusable code
		C114.6	Apply File I/O operations and apply file handling functions to access contents of files
C115	**DIGITAL LOGIC DESIGN**	C115.1	Classify different number systems and apply to generate various codes
		C115.2	Use the concept of Boolean algebra in minimization of switching functions.
		C115.3	Design different types of combinational logic circuits
		C115.4	Apply knowledge of flip-flops in designing registers and counters.
		C115.5	The operation and design methodology for synchronous sequential circuits and algorithmic state machines.
		C115.6	Produce innovative designs by modifying the traditional design techniques.
C116	**PHYSICS LAB**	C116.1	Apply the principle of interference in thin film to determine the thickness of given spacer, radius of curvature of lens with the use of optical instruments travelling microscope
		C116.2	Examine the spectra formed by polychromatic light to determine the wavelength of light with the use of spectrometer.
		C116.3	Evaluate the energy band gap of a semiconductor and study temperature resistance characteristics of a given thermistor
C117	ENGLISH LAB	C117.1	Explain English speech sounds and word stress
		C117.2	Apply knowledge of English pronunciation with intonation, and rhythm in speaking
		C117.3	Interpret newspapers to understand key terminology and structures for effective report writing
C118	**PPSC LAB**	C118.1	Build flowcharts for solving problems and to convert flowcharts to C Programs, compile and debug programs
		C118.2	Apply different operators, data types and write programs that use two-way/ multi-way selection and to select the best looping structure for a given problem
		C118.3	Build programs on arrays and to perform operations on arrays
		C118.4	Develop programs that use dynamic memory allocation, structures, unions and apply file handling functions to access contents of files

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C119	ENGINEERING EXPLORATION LAB	C119.1	Understand the Engineering attributes and Ethics
		C119.2	Identify the community problem and its stakeholder
		C119.3	Examine required specifications and gap in existing and required product.
		C119.4	Build sustaining interactions among people that create social value by transforming ideas into tangible products, services, or initiatives.
		C119.5	Develop skills to work collaboratively, reports and progress updates throughout the lifecycle of the project

II YEAR – I SEM

C201	MFCS	C201.1	Develop skills in solving mathematical problems
		C201.2	Illustrate the basic application of set theory and relations
		C201.3	Apply algebraic and number theoretic techniques in group theory and congruence's related problems.
		C201.4	Analyze the concepts of Combinatorics
		C201.5	Solve the recurrence relations
		C201.6	Apply Graph theory Concepts.
C202	SOFTWARE ENGINEERING	C202.1	Apply software engineering principles involved in building large software programs and process of requirements specification and requirements validation.
		C202.2	Identify the concepts of object orientation and development of class models
		C202.3	Analyze system models for designing patterns.
		C202.4	Analyze the importance of software maintenance and complexities involved in software evolution.
		C202.5	Apply estimation techniques, schedule project activities and compute pricing.
		C202.6	Apply different software engineering models, such as Waterfall, Agile, and Spiral models, to real-world software development projects.
C203	PYTHON PROGRAMMING	C203.1	Classify the concepts of data types, expressions and decision structures of Python Programming.
		C203.2	Apply the basics of python programming in implementing control statements, strings and text files
		C203.3	Build Applications using the concepts of Lists, Dictionaries.
		C203.4	Make use of functions, modules and packages of python programming.
		C203.5	Analyze coding tasks related to File operations, OOP principles
		C203.6	Design and develop exceptions and GUI based applications.
C204	DATA STRUCTURES	C204.1	Identify the properties, interfaces, and behaviors of basic Abstract Data Types
		C204.2	Analyze the computational efficiency of the principal algorithms for sorting & searching
		C204.3	Make use of arrays, records, linked structures, stacks, queues, trees, and Graphs in writing programs
		C204.4	Build linear and nonlinear data structures using linked list.
		C204.5	Analyze different methods for traversing trees and Graphs.
		C204.6	Apply suitable data structures to solve different problems.

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C205	**OOPS CPP**	C205.1	Classify object oriented programming and conventional programming
		C205.2	Apply C++ features such as composition of classes and objects and constructors and destructors
		C205.3	Build C++ classes using operator overloading and inheritance
		C205.4	Build C++ classes using pointers ,binding polymorphism and virtual functions
		C205.5	Apply object oriented techniques using Generic Programming with templates and exception handling to solve bigger computing problems
		C205.6	Solve real-world problems using object-oriented techniques
C206	**COMPUTER ORGANIZATION**	C206.1	Explain the architecture of modern computers and performance measurement
		C206.2	Illustrate different instruction types
		C206.3	Extend the knowledge of instructions ,addressing modes of a computer
		C206.4	Compare and contrast different methods for computer I/O
		C206.5	Compare the types of memories and their mapping functions
		C206.6	summarize processing unit and Micro programmed control unit
C207	**PP LAB**	C207.1	Develop python programs using control flow statements.
		C207.2	Examine the proficiency in handling of strings and Lists
		C207.3	Develop programs using data structures like dictionaries, tuples and sets using built-in functions, modules and packages
		C207.4	Analyze the operation and characteristics of Rectifiers
C208	**DS CPP LAB**	C208.1	Apply basic data structures such as Arrays, stack, queues to solve the problems
		C208.2	Build programs to demonstrate fundamental algorithmic problems including Tree Traversals, Graph traversals, and shortest paths
		C208.3	Implement various searching and sorting algorithms
		C208.4	Implement linear and nonlinear data structures using linked list

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II YEAR – II SEM

C211	**PROBABILITY & STATISTICS**	C211.1	Identify the measures of central tendencies for grouped and ungrouped data
		C211.2	Construct required curve for the given data and to analyze the relation between variables
		C211.3	Solve the problems related to discrete and continuous probability distributions.
		C211.4	Find the mean, standard deviations of sampling distributions and estimate errors of sampling.
		C211.5	Test for the hypothesis of large samples using appropriate tests
		C211.6	Test for the hypothesis of small samples using appropriate tests.
C212	**JAVA PROGRAMMING**	C212.1	Identify the concepts of Object-Oriented Programming and the Java Programming Constructs
		C212.2	Analyze the concepts of Object Orientation like Objects, Classes, Methods, Constructors alongside the usage of various keywords
		C212.3	Apply the concepts of Array operations
		C212.4	Apply the concepts of Inheritance and Interfaces to solve the real-world problem
		C212.5	Examine the usage of Packages and Exception handling to build the Java Applications
		C212.6	Analyze the methods of String handling, Survey the techniques of Multithreading and the front-end , back end through Java Database Connectivity.
C213	**OPERATING SYSTEM**	C213.1	Utilize the basic components of an operating system and their role in implementation for different computer architectures.
		C213.2	Make use of the concept of process, threads and CPU Scheduling algorithms for multitasking.
		C213.3	Identify mutual exclusion principles and their use in cooperating environment using semaphores and monitors
		C213.4	Analyze various memory management techniques and the concept of virtual memory
		C213.5	Analyze various methods for handling deadlocks.
		C213.6	Analyze various file system implementations, and Disk scheduling algorithms.
C214	**DBMS**	C214.1	Apply the knowledge of fundamental concepts and basic principles of database management systems to identify the real world database applications
		C214.2	Design conceptual schema using relational data model and the basic SQL commands
		C214.3	Create the databases using SQL from conceptual schema designed using ER model
		C214.4	Evaluate the design of the given database application scenario and apply normalization techniques to improve the database design
		C214.5	Analyze transaction processing, concurrency control and recovery protocols in DBMS
		C214.6	Analyze the physical design of a database system by examining database indexing techniques and evaluating storage techniques(

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C215	**FLAT**	C215.1	Apply theoretical knowledge of automata to real-world scenarios to construct a minimal finite state machine
		C215.2	Demonstrate the proficiency in applying theoretical representations of properties of regular expressions and grammars into equivalent practical automaton models
		C215.3	Distinguish Regular languages, context-free languages, and context free grammars
		C215.4	Develop context-free grammars (CFGs) and context-free languages (CFLs) for the given language

		C215.5	Design and develop minimal pushdown automata (PDA) and Turing machines to accurately model specified languages
		C215.6	Apply theoretical principles of automata to classify problems in formal languages as decidable or undecidable
C216	**JP LAB**	C216.1	Develop Java applications using command line arguments, arrays and control structures and solve real word problems using OOP's Concepts
		C216.2	Build Java applications by handling exceptions.
		C216.3	Construct concurrent applications by applying Multithreading, AWT concepts in java
		C216.4	Construct Threads, Event Handling, implement packages, developing applets
C217	**UNIX & OS LAB**	C217.1	Apply Unix utilities and perform basic shell control of the utilities.
		C217.2	Make use of Unix file system and file access control.
		C217.3	Construct shell scripts to automate various tasks.
		C217.4	Master the basics of Unix Administration.
C218	**DBMS LAB**	C218.1	Apply the database concepts, technology and create the relations and, implement basic SQL commands
		C218.2	Apply Queries using Advanced Concepts of SQL
		C218.3	Apply constraints and joins to implement advanced SQL features
		C218.4	Develop and execute PL/SQL programs
C219	**SRP**	C219.1	Analyze and identify the problems faced in the respective domain.
		C219.2	Decide the blueprint/architecture for the proposed system
		C219.3	Make use of different python IDE's with necessary code.
		C219.4	Determine various solutions using different Machine Learning algorithms.
		C219.5	Evaluating the models based on the performance & accuracy and using effective communication skills, professional behavior and teamwork during the project development.

III YEAR – I SEM

C301	**DWDM**	C301.1	Identify the stages involved in building a data warehouse, including design, implementation, and maintenance.
		C301.2	Identify the techniques of data preprocessing to ensure data quality and prepare data for analysis
		C301.3	Apply similarity and dissimilarity measures to compare and classify data points effectively.

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		C301.4	Analyze and assess the performance of algorithms used for generating and evaluating association rules in data mining
		C301.5	Evaluate and compare various classification algorithms to understand their strengths, weaknesses, and suitability for different types of data.
		C301.6	Evaluate and compare clustering algorithms to understand their effectiveness in grouping data points and uncovering patterns
C302	**COMPUTER NETWORKS**	C302.1	Illustrate the OSI and TCP/IP reference model
		C302.2	Analyze data link layer services, functions and protocols like HDLC and PPP.
		C302.3	Classify medium access control protocols like ALOHA, CSMA, CSMA/CD, CSMA/CA, Polling, Token passing, FDMA, TDMA, CDMA protocols
		C302.4	Compare Ethernet protocols for data transmissions
		C302.5	Identify a suitable roting model with congestion control mechanism
		C302.6	Determine application layer services and client server protocols working with the client server paradigms like WWW, HTTP, FTP, e-mail and SNMP etc. (k5)
C303	**COMPILER DESIGN**	C303.1	Analyze knowledge of the various phases of a compiler, including lexical analysis, syntax analysis, semantic analysis, optimization, and code generation.
		C303.2	Compare and differentiate between top-down and bottom-up parsing techniques, and their associated parsing strategies.
		C303.3	Build syntax-directed translation schemes, including the use of synthesized and inherited attributes in the translation process
		C303.4	Design LR parsers to manage bottom-up parsing strategies
		C303.5	Develop algorithms for code optimization to improve both space and time efficiency of the compiled program
		C303.6	Apply algorithms to generate optimized machine code from the intermediate representation
C304	**ARTIFICIAL INTELLIGENCE**	C304.1	Inspect the fundamental concepts in Artificial Intelligence
		C304.2	Analyze the applications of search strategies and problem reductions
		C304.3	Compare the natural deduction system and axiomatic system for propositional logic
		C304.4	Apply propositional calculus to analyze and solve problems in various domains
		C304.5	Identify the strengths and limitations of different knowledge representation paradigms
		C304.6	Analyze expert systems and traditional software systems.

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C305	**STM**	C305.1	Identify the fundamentals of software testing.
		C305.2	Classify the limitation of testing process.
		C305.3	Analyze the design of test cases for different testing techniques.
		C305.4	Create test strategies and plans, deign test case, prioritize and execute them.
		C305.5	Apply various testing activities in effective manner.
		C305.6	Analyze the significance of software testing in web and object-oriented techniques.
C306	**CN LAB**	C306.1	Identify different network interfaces and routing protocols.
		C306.2	Choose various services offered by transport layer such as TCP and UDP
		C306.3	Analyse the application layer protocol and network security issues.
		C306.4	Apply the basics of networking protocols for solving real life networking problems
C307	**AI TOOLS LAB**	C307.1	Solve basic AI based problems using Prolog
		C307.2	Categorize real-world problems as state space problems, optimization problems or constraint satisfaction problems. And develop AI Algorithms
		C307.3	Apply AI techniques to real-world problems to develop intelligent systems
		C307.4	Use LISP Programming to implement AI Algorithms and demonstrate AI Tools
C308	**DWDM LAB**	C308.1	Design a data mart or data warehouse for any organization
		C308.2	Identify knowledge using data mining techniques and enlist various algorithms used in information analysis of Data Mining Techniques
		C308.3	Analyze the working of algorithms for data mining tasks such as association rule mining, classification for realistic data
		C308.4	Apply and analyze on knowledge flow application on data sets and apply the suitable visualization techniques to output analytical results.

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III YEAR – II SEM

C311	**WEB TECHNOLOGIES**	C311.1	Choose the basic concepts of HTML and CSS & apply those concepts to design static web pages
		C311.2	Identify and understand various concepts related to dynamic web pages and validate them using JavaScript
		C311.3	Utilize the concepts of Extensible markup language & AJAX
		C311.4	Develop programming applications using PHP Script
		C311.5	Create and deploy secure, usable database driven web applications using Servlets, JSP and PHP
		C311.6	Create applications using MongoDB and Ruby on Riles.
C312	**DISTRIBUTED SYSTEMS**	C312.1	Explain what a distributed system is, why one would design a system as a distributed system, and what the desired properties of such systems.
		C312.2	Identify important characteristics of distributed systems and the salient architectural features of such systems.
		C312.3	Analyze inter-process communication in a distributed environment
		C312.4	Apply the features and applications of important standard protocols which are used in distributed systems.
		C312.5	Make use of the architectures for multi-threaded servers.
		C312.6	Explain the typical algorithms used in distributed system
C313	**DAA**	C313.1	Analyze the performance of a given algorithm and denote its time complexity using the asymptotic notation for recursive and non-recursive algorithms
		C313.2	Identify and describe various algorithmic approaches
		C313.3	Synthesize efficient algorithms using dynamic programming approaches to solve in common engineering design situations
		C313.4	Solve problems using divide and conquer, greedy, dynamic programming, backtracking and branch and bound algorithmic approaches.
		C313.5	Apply graph search algorithms to real world problems.
		C313.6	Demonstrate an understanding of NP-Completeness theory and lower bound theory
C314	**NPTEL**	C314.1	Gain a foundational understanding of key concepts in the subject area
		C314.2	Apply theoretical knowledge to solve practical problems
		C314.3	Develop skills to analyze and evaluate systems, models, or frameworks in the domain
		C314.4	Implement design approaches for specific applications.

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C315	**POC**	C315.1	Analyse the performance of analog modulation schemes in time and frequency domains
		C315.2	Analyse the performance of angle modulated signals
		C315.3	Categorizing analog signals in time domain as random processes and noise
		C315.4	Classify the influence of channel on analog modulated signals
		C315.5	Determine the performance of analog communication systems in terms of SNR
		C315.6	Analyse pulse amplitude modulation, pulse position modulation, pulse code modulation and TDM systems
C316	**MEFA**	C316.1	Define about Managerial Economics & different types of demand
		C316.2	Explain different types of Production functions &Cost Concepts
		C316.3	Recall the nature of Markets and different Pricing methods
		C316.4	Define different forms of Business phases & Cycles
		C316.5	Summarize the concepts of Accounting
C317	**WT LAB**	C317.1	Analyze and apply the role of languages like HTML, CSS, XML
		C317.2	Apply JavaScript, PHP and protocols in the workings of the web and web applications
		C317.3	Apply Web Application Terminologies, Internet Tools, E – Commerce and other web services
		C317.4	Develop and Analyze dynamic Web Applications using PHP & MySql
		C317.5	Install & Use Frameworks
C318	**SDP**	C318.1	Discover the applications during the internship to develop various projects.
		C318.2	Use advanced tools and techniques encountered during industrial training.
		C318.3	Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.
		C318.4	Develop awareness about general workplace behaviour and build interpersonal and team skills.

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IV YEAR – I SEM

C401	**CNS**	C401.1	Identify different security threats and countermeasures and foundation course of cryptography mathematics.
		C401.2	Classify the basic principles of symmetric key algorithms and operations of some symmetric key algorithms and asymmetric key cryptography
		C401.3	Revise the basic principles of Public key algorithms and Working operations of some Asymmetric key algorithms such as RSA, ECC and some more
		C401.4	Apply number theory and applies knowledge in public key cryptographic algorithms
		C401.5	Select key management model with digital signature schemes to maintain data integrity
		C401.6	Determine the knowledge of Application layer, Transport layer and Network layer security Protocols such as PGP, S/MIME, SSL,TSL, and IPsec .
C402	**UML & DESIGN PATTERNS**	C402.1	Classify software engineering principles involved in building large software programs and process of requirements specification and requirements validation
		C402.2	Identify the concepts of object orientation and development of class models.
		C402.3	Analyze system models for designing patterns
		C402.4	Analyze the importance of software maintenance and complexities involved in software evolution
		C402.5	Apply estimation techniques, schedule project activities and compute pricing
		C402.6	Evaluate the use of specific design patterns in different software contexts, assessing their impact on software maintainability and scalability
C403	**MACHINE LEARNING**	C403.1	Choose the concepts of computational intelligence like machine learning
		C403.2	Choose machine learning techniques suitable for a given problem
		C403.3	Analyze the Ensemble Learning Methods and classification models
		C403.4	Develop support vector machines.
		C403.5	Analyze the Clustering Techniques and Dimensionality Reduction Models in Machine Learning
		C403.6	Apply the Neural Network Models and Fundamentals concepts of Deep Learning
C404	**EMBEDDED SYSTEMS**	C404.1	Choose the basic concepts of an embedded system
		C404.2	Apply embedded system design approach to perform a specific function
		C404.3	Identify the hardware components required for an embedded system
		C404.4	Analyze The design approach of embedded hardware
		C404.5	Make use of various embedded firmware design approaches on embedded environments.
		C404.6	Explain how to integrate hardware and firmware of an embedded system using a real time operating system

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C405	**SPM**	C405.1	Apply the concepts of Object Oriented Programming and the Java Programming Constructs
		C405.2	Utilize the concepts of Object Orientation like Objects, Classes, Methods, Constructors alongside the usage of various keywords
		C405.3	Apply the concepts of Array operations, Inheritance and Interfaces to solve the real-world problems
		C405.4	Examine the usage of Packages and Exception handling to build the Java Applications
		C405.5	Analyze the methods of String handling, Survey the techniques of Multithreading.
		C405.6	Analyze the front-end with the back-end through Java Database Connectivity
C406	**CLOUD COMPUTING**	C406.1	Analyze the key dimensions of the challenges of Cloud Computing
		C406.2	Classify the Levels of Virtualization and mechanism of tools
		C406.3	Analyze inter cloud resource management in Google Cloud and Amazon Cloud
		C406.4	Identify the needs for capacity building and training in cloud computing-related IT areas
		C406.5	Make Use of Combinatorial Auctions for cloud resource and design scheduling algorithms for computing cloud.
		C406.6	Analyse control storage systems and cloud security, the risks involved its impact and develop cloud application
C407	**UML LAB**	C407.1	Identify interrelationships, principles and guidelines governing architecture and evolution over time
		C407.2	Analyse the architecture and build the system from the components
		C407.3	Create creational patterns that deal with object creation mechanisms
		C407.4	Construct structural patterns that ease the design by identifying a simple way to realize relationships among entities.
		C407.5	Evaluate behavioral patterns that identify common communication patterns between objects and realize
		C407.6	Classify various case studies
C408	**PROJECT - I**	C408.1	Identify, select and analyse an engineering problem to find an appropriate problem solving methodology by following engineering standards.
		C408.2	Make use of modern IT tools to implement the identified problem with ethics and Develop communication skills to present ideas clearly and coherently to specific audience in both the written and oral forms
		C408.3	Summarize final report using different visualization tools with good coordination among project members.
		C408.4	Propose future work to enhance the research in the selected domain and engage in life-long learning
		C408.5	Perceive effective communication skills, professional behavior and teamwork

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R 19 - Course Outcomes

IV YEAR – II SEM

C411	**MOB**	C411.1	Identify management functions and principles.
		C411.2	Apply the concepts of HRM and utilize Marketing functions
		C411.3	Analyze strategic management process in current organizations
		C411.4	Make use of individual behavior theories and motivational theories
		C411.5	Utilize different ways in managing stress.
		C411.6	Solve personal conflicts and group conflicts
C412	**ENTREPRENEURSHIP**	C412.1	Analyze the concept of entrepreneurship.
		C412.2	Identify various policies existing in India.
		C412.3	List Sources of Product for Business and Prefeasibility Study for selection of a product
		C412.4	Analyze feasibility report and evaluation criteria for an entrepreneurship
		C412.5	Develop a comprehensive model for identifying the kind of small business to be launched
		C412.6	Evaluating the sickness in small scale businesses and identifying strategies to prevent the same.
C413	**BIG DATA ANALYTICS**	C413.1	Illustrate big data challenges in different domains including social media, transportation, finance and medicine
		C413.2	Use various techniques for mining data stream
		C413.3	Design and develop Hadoop
		C413.4	Apply the Programming Aspects of Map Reduce
		C413.5	Applying Structure to Hadoop data with Hive And Pig
		C413.6	Analyze the various search methods and visualization techniques
C414	**PROJECT - II**	C414.1	Analyze various algorithms to identify the most appropriate problem-solving methodologies, ensuring adherence to engineering standards.
		C414.2	Evaluate and formulate different techniques specific to a given domain, applying critical analysis to determine the most effective approaches.
		C414.3	Identify and select suitable open-source tools for implementing the chosen methodologies, ensuring compatibility and efficiency in project development
		C414.4	Predict and recommend optimal solutions for processing various project features, using advanced problem-solving techniques to enhance project outcomes.
		C414.5	Demonstrate effective communication skills, professional behavior, and teamwork, contributing positively to collaborative engineering environments.