Academic Year : 2023-24

SEMESTER – III
C – SCHEME (R'19)

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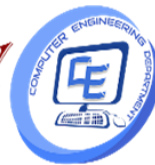
COMPUTER ENGINEERING DEPARTMENT

Course Name : Applied Mathematics-III (CSC301)

Faculty Name : Prof. Shiksha Singh

Course Code	Course Outcome Statement
CSC301.1	Understand the concept of Laplace transform and its application to solve the real integrals
CSC301.2	Understand the concept of inverse Laplace transform of various functions and its applications in engineering problems.
CSC301.3	Expand the periodic function by using the Fourier series for real-life problems and complex engineering problems.
CSC301.4	Understand complex variable theory, application of harmonic conjugate to get orthogonal trajectories and analytic functions.
CSC301.5	Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning, and AI.
CSC301.6	Understand the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.

Course Name : Discrete Structures and Graph Theory (CSC302)
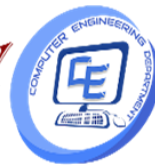
Faculty Name : Prof. Divya S.

Course Code	Course Outcome Statement
CSC302.1	Understand the notion of mathematical thinking, mathematical proofs and to apply them in problem solving.
CSC302.2	Ability to reason logically.
CSC302.3	Ability to understand relations, functions, Diagraph and Lattice.
CSC302.4	Ability to understand and apply concepts of graph theory in solving real world problems.
CSC302.5	Understand use of groups and codes in Encoding-Decoding
CSC302.6	Analyze a complex computing problem and apply principles of discrete mathematics to identify solutions

Course Name : Data Structure (CSC303)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSC303.1	Students will be able to implement Linear and Non-Linear data structures.
CSC303.2	Students will be able to handle various operations like searching, insertion, deletion and traversals on various data structures.
CSC303.3	Students will be able to explain various data structures, related terminologies and its types.
CSC303.4	Students will be able to choose appropriate data structure and apply it to solve problems in various domains.
CSC303.5	Students will be able to analyze and Implement appropriate searching techniques for a given problem.
CSC303.6	Students will be able to demonstrate the ability to analyze, design, apply and use data structures to solve engineering problems and evaluate their solutions.

Course Name : Digital Logic & Computer Organization and Architecture (CSC304)

Faculty Name: Prof. Akshata Raut

Course Code	Course Outcome Statement
CSC304.1	To learn different number systems and basic structure of computer system.
CSC304.2	To demonstrate the arithmetic algorithms.
CSC304.3	To understand the basic concepts of digital components and processor organization.
CSC304.4	To understand the generation of control signals of computer.
CSC304.5	To demonstrate the memory organization.
CSC304.6	To describe the concepts of parallel processing and different Buses.

Course Name : Computer Graphics (CSC305)

Faculty Name : Prof. Reshma Chaudhari

Course Code	Course Outcome Statement
CSC305.1	Describe the basic concepts of Computer Graphics.
CSC305.2	Demonstrate various algorithms for basic graphics primitives.
CSC305.3	Apply 2-D geometric transformations on graphical objects.
CSC305.4	Use various Clipping algorithms on graphical objects
CSC305.5	Explore 3-D geometric transformations, curve representation techniques and projections methods.
CSC305.6	Explain visible surface detection techniques and Animation.

Course Name : Data Structure Lab (CSL301)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSL301.1	Implement linear data structures & be able to handle operations like insertion, deletion, searching and traversing on them.
CSL301.2	Implement nonlinear data structures & be able to handle operations like insertion, deletion, searching and traversing on them.
CSL301.3	Choose appropriate data structure and apply it in various problems
CSL301.4	Select appropriate searching techniques for given problems.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Digital Logic & Computer Organization and Architecture Lab (CSL302)

Faculty Name : Prof. Akshata Raut

Course Code	Course Outcome Statement
CSL302.1	To understand the basics of digital components
CSL302.2	Design the basic building blocks of a computer: ALU, registers, CPU and memory
CSL302.3	To recognize the importance of digital systems in computer architecture
CSL302.4	To implement various algorithms for arithmetic operations.

Course Name : Computer Graphics Lab (CSL303)

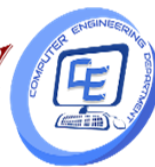**Faculty Name : Prof. Reshma Chaudhari**

Course Code	Course Outcome Statement
CSL303.1	Implement various output and filled area primitive algorithms
CSL303.2	Apply transformation, projection and clipping algorithms on graphical objects.
CSL303.3	Perform curve and fractal generation methods.
CSL303.4	Develop a Graphical application/Animation based on learned concept

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Skill base Lab course : Object Oriented Programming with Java (CSL304)

Faculty Name : Prof. Hima Kantharia

Course Code	Course Outcome Statement
CSL304.1	To apply fundamental programming constructs.
CSL304.2	To illustrate the concept of packages, classes and objects.
CSL304.3	To elaborate the concept of strings, arrays and vectors.
CSL304.4	To implement the concept of inheritance and interfaces.
CSL304.5	To implement the concept of exception handling and multithreading.
CSL304.6	To develop GUI based application.

Course Name : Mini Project –1 A (CSM301)

Faculty Name : Prof. Akshata Raut / Prof. Divya S. / Prof. Hima Kantharia

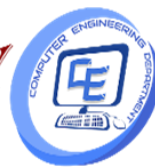| Course Code	Course Outcome Statement
CSM301.1	Identify problems based on societal /research needs.
CSM301.2	Apply Knowledge and skill to solve societal problems in a group.
CSM301.3	Develop interpersonal skills to work as member of a group or leader.
CSM301.4	Draw the proper inferences from available results through theoretical/ experimental/simulations. development.
CSM301.5	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSM301.6	Use standard norms of engineering practices
CSM301.7	Excel in written and oral communication.
CSM301.8	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.
CSM301.9	Demonstrate project management principles during project work.

SEMESTER – IV
C – SCHEME (R'19)

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Applied Mathematics -IV (CSC401)

Faculty Name : Prof. Jayesh Jain

Course Code	Course Outcome Statement
CSC401.1	Apply the concepts of eigenvalues and eigenvectors in engineering problems.
CSC401.2	Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
CSC401.3	Apply the concept of Z- transformation and inverse in engineering problems.
CSC401.4	Use the concept of probability distribution and sampling theory to engineering problems.
CSC401.5	Apply the concept of Linear Programming Problems to optimization.
CSC401.6	Solve Non-Linear Programming Problems for optimization of engineering problems.

Course Name : Analysis of Algorithm (CSC402)

Faculty Name : Prof. Kirtida Naik

Course Code	Course Outcome Statement
CSC402.1	Analyze the running time and space complexity of algorithms.
CSC402.2	Describe, apply and analyze the complexity of divide and conquer strategy.
CSC402.3	Describe, apply and analyze the complexity of greedy strategy.
CSC402.4	Describe, apply and analyze the complexity of dynamic programming strategy.
CSC402.5	Explain and apply backtracking, branch and bound.
CSC402.6	Explain and apply string matching techniques.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Database Management System (CSC403)

Faculty Name : Prof. Hima Kantharia

Course Code	Course Outcome Statement
CSC403.1	Recognize the need of database management system
CSC403.2	Design ER and EER diagram for real life applications
CSC403.3	Construct relational model and write relational algebra queries.
CSC403.4	Formulate SQL queries
CSC403.5	Apply the concept of normalization to relational database design.
CSC403.6	Describe the concept of transaction, concurrency and recovery.

Course Name : Operating System (CSC404)

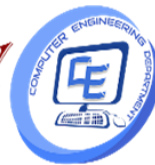**Faculty Name : Prof. Akshata S. Raut**

Course Code	Course Outcome Statement
CSC404.1	Understand the objectives, functions and structure of OS
CSC404.2	Analyze the concept of process management and evaluate performance of process scheduling algorithms.
CSC404.3	Understand and apply the concepts of synchronization and deadlocks
CSC404.4	Evaluate performance of Memory allocation and replacement policies
CSC404.5	Understand the concepts of file management.
CSC404.6	Apply concepts of I/O management and analyze techniques of disk scheduling.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Microprocessor (CSC405)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSC405.1	Describe core concepts of 8086 microprocessors.
CSC405.2	Interpret the instructions of 8086 and write assembly and Mixed language programs.
CSC405.3	Identify the specifications of peripheral chips.
CSC405.4	Design 8086 based system using memory and peripheral chips.
CSC405.5	Appraise the architecture of advanced processors
CSC405.6	Understand hyper threading technology

Course Name : Analysis of Algorithms Lab (CSL401)

Faculty Name : Prof. Kirtida Naik / Prof. Akshata S. Raut

Course Code	Course Outcome Statement
CSL401.1	Implement the algorithms using different approaches.
CSL401.2	Analyze the complexities of various algorithms.
CSL401.3	Compare the complexity of the algorithms for specific problem.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Database Management system Lab (CSL402)

Faculty Name : Prof. Hima Kantharia

Course Code	Course Outcome Statement
CSL402.1	Design ER /EER diagram and convert to relational model for the real world application.
CSL402.2	Apply DDL, DML, DCL and TCL commands
CSL402.3	Write simple and complex queries
CSL402.4	Use PL / SQL Constructs.
CSL402.5	Demonstrate the concept of concurrent transactions execution and frontend-backend connectivity

Course Name : Operating System Lab (CSL403)

Faculty Name : Prof. Akshata S. Raut

Course Code	Course Outcome Statement
CSL403.1	Understand the objectives, functions and structure of OS
CSL403.2	Analyze the concept of process management and evaluate performance of process scheduling algorithms.
CSL403.3	Understand and apply the concepts of synchronization and deadlocks
CSL403.4	Evaluate performance of Memory allocation and replacement policies
CSL403.5	Understand the concepts of file management.
CSL403.6	Apply concepts of I/O management and analyze techniques of disk scheduling.

Course Name : Microprocessor Lab (CSL404)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSL404.1	Explain the fundamental knowledge and basic technical competence in the field of Microprocessors.
CSL404.2	Use appropriate instructions to program microprocessor to perform various task.
CSL404.3	Develop the program in assembly/ mixed language for Intel 8086 processor.
CSL404.4	Demonstrate the execution and debugging of assembly/ mixed language program.

Course Name : Skill Base Lab Course: Python Programming (CSL405)
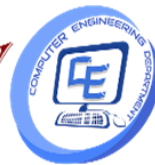
Faculty Name : Prof. Janhavi Sangoi

Course Code	Course Outcome Statement
CSL405.1	To understand basic concepts in python.
CSL405.2	To explore contents of files, directories and text processing with python
CSL405.3	To develop program for data structure using built in functions in python.
CSL405.4	To explore Django web framework for developing python-based web application.
CSL405.5	To understand Multithreading concepts using python.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Mini Project –1B (CSM401)

Faculty Name : Prof. Reshma Chaudhari / Prof. Hima Kantharia

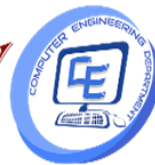| Course Code	Course Outcome Statement
CSM401.1	Identify problems based on societal /research needs.
CSM401.2	Apply Knowledge and skill to solve societal problems in a group.
CSM401.3	Develop interpersonal skills to work as member of a group or leader.
CSM401.4	Draw the proper inferences from available results through theoretical / experimental / simulations.
CSM401.5	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSM401.6	Use standard norms of engineering practices
CSM401.7	Excel in written and oral communication.
CSM401.8	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.
CSM401.9	Demonstrate project management principles during project work.

SEMESTER – V
C – SCHEME (R'19)

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Theoretical Computer Science (CSC501)

Faculty Name : Prof. Bhavika Thakur

Course Code	Course Outcome Statement
CSC501.1	Understand concepts of Theoretical Computer Science, difference and equivalence of DFA and NFA.
CSC501.2	Ability to compare different types of languages described by finite automata and regular expressions.
CSC501.3	Design Context free grammar, pushdown automata to recognize the language.
CSC501.4	Develop an understanding of computation through Turing Machine.
CSC501.5	Acquire fundamental understanding of decidability and undecidability.

Course Name : Software Engineering (CSC502)

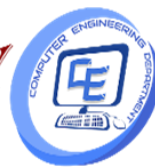**Faculty Name : Prof. Kirtida Naik**

Course Code	Course Outcome Statement
CSC502.1	Identify requirements & assess the process models.
CSC502.2	Plan, schedule and track the progress of the projects.
CSC502.3	Design the software projects.
CSC502.4	Do testing of software project.
CSC502.5	Identify risks, manage the change to assure quality in software projects.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Computer Network (CSC503)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSC503.1	Demonstrate the concepts of data communication at physical layer and compare ISO – OSI model with TCP/IP model.
CSC503.2	Explore different design issues at data link layer.
CSC503.3	Design the network using IP addressing and sub netting / supernetting schemes.
CSC503.4	Analyze transport layer protocols and congestion control algorithms.
CSC503.5	Explore protocols at application layer

Course Name : Data Warehousing and Mining (CSC504)

Faculty Name : Prof. Saniket Kudoo

Course Code	Course Outcome Statement
CSC504.1	Understand data warehouse fundamentals and design data warehouse with dimensional modelling and apply OLAP operations.
CSC504.2	Understand data mining principles and perform Data preprocessing and Visualization.
CSC504.3	Identify appropriate data mining algorithms to solve real world problems.
CSC504.4	Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining
CSC504.5	Describe complex information and social networks with respect to web mining.

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COMPUTER ENGINEERING DEPARTMENT
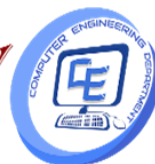
Course Name : DLOC-1 Internet Programming (CSDLO5012)

Faculty Name : Prof. Hima Kantharia

Course Code	Course Outcome Statement
CSDLO5012.1	Implement interactive web page(s) using HTML and CSS.
CSDLO5012.2	Design a responsive web site using JavaScript and demonstrate database connectivity using JDBC
CSDLO5012.3	Demonstrate Rich Internet Application using Ajax and demonstrate and differentiate various Web Extensions
CSDLO5012.4	Demonstrate web application using Reactive Js.

Course Name : Software Engineering Lab (CSL501)

Faculty Name : Prof. Kirtida Naik

Course Code	Course Outcome Statement
CSL501.1	Identify requirements and apply software process model to selected case study.
CSL501.2	Develop architectural models for the selected case study.
CSL501.3	Use computer-aided software engineering (CASE) tools.

Course Name : Computer Network Lab (CSL502)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSL502.1	Design and setup networking environment in Linux.
CSL502.2	Use Network tools and simulators such as NS2, Wireshark etc. to explore networking algorithms and protocols.
CSL502.3	Implement programs using core programming APIs for understanding networking concepts.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Data Warehousing and Mining Lab (CSL503)

Faculty Name : Prof. Saniket Kudoo

Course Code	Course Outcome Statement
CSL503.1	Design data warehouse and perform various OLAP operations.
CSL503.2	Implement data mining algorithms like classification.
CSL503.3	Implement clustering algorithms on a given set of data sample.
CSL503.4	Implement Association rule mining & web mining algorithm.

Course Name : Professional Communication & Ethics II (CSL504)
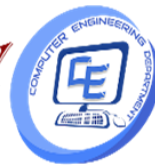
Faculty Name : Dr. Prashant Pawar

Course Code	Course Outcome Statement
CSL504.1	Plan and prepare effective business/ technical documents which will in turn provide solid foundation for their future managerial roles.
CSL504.2	Strategize their personal and professional skills to build a professional image and meet the demands of the industry.
CSL504.3	Emerge successful in group discussions, meetings, and result-oriented agreeable solutions in group communication situations.
CSL504.4	Deliver persuasive and professional presentations.
CSL504.5	Develop creative thinking and interpersonal skills required for effective professional communication.
CSL504.6	Apply codes of ethical conduct, personal integrity and norms of organizational behaviors.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Mini Project 2A (CSM501)

Faculty Name : Prof. Reshma Chaudhari/ Prof. Saniket Kudoo / Prof. Akshata S. Raut / Prof. Hima Kantharia

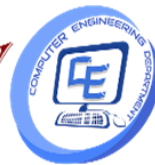| Course Code	Course Outcome Statement
CSM501.1	Identify societal/research/innovation/entrepreneurship problems through appropriate literature surveys
CSM501.2	Identify Methodology for solving above problem and apply engineering knowledge and skills to solve it
CSM501.3	Validate, Verify the results using test cases/benchmark data/theoretical/ inferences/experiments/simulations
CSM501.4	Analyze and evaluate the impact of solution/product/research/innovation /entrepreneurship towards societal/environmental/sustainable development
CSM501.5	Use standard norms of engineering practices and project management principles during project work
CSM501.6	Communicate through technical report writing and oral presentation. - The work may result in research/white paper/ article/blog writing and publication - The work may result in business plan for entrepreneurship product created - The work may result in patent filing.
CSM501.7	Gain technical competency towards participation in Competitions, Hackathons, etc.
CSM501.8	Demonstrate capabilities of self-learning, leading to lifelong learning.
CSM501.9	Develop interpersonal skills to work as a member of a group or as leader

SEMESTER – VI
C – SCHEME (R'19)

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VIVA INSTITUTE OF TECHNOLOGY

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COMPUTER ENGINEERING DEPARTMENT

Course Name : System Programming and Compiler Construction (CSC601)

Faculty Name : Prof. Reshma Chaudhari

Course Code	Course Outcome Statement
CSC601.1	Identify the relevance of different system programs.
CSC601.2	Explain various data structures used for assembler and microprocessor design.
CSC601.3	Distinguish between different loaders and linkers and their contribution in developing efficient user applications.
CSC601.4	Understand fundamentals of compiler design and identify the relationships among different phases of the compiler.

Course Name : Cryptography & System Security (CSC602)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSC602.1	Understand system security goals and concepts, classical encryption techniques
CSC602.2	Compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
CSC602.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes.
CSC602.4	Apply different digital signature algorithms to achieve authentication and design secure applications
CSC602.5	Understand network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols
CSC602.6	Analyze and apply system security concept to recognize malicious code.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Mobile Computing-VI (CSC603)

Faculty Name : Prof. Saniket Kudoo

Course Code	Course Outcome Statement
CSC603.1	To identify basic concepts and principles in computing, cellular architecture.
CSC603.2	To describe the components and functioning of mobile networking.
CSC603.3	To classify variety of security techniques in mobile network.
CSC603.4	To apply the concepts of WLAN for local as well as remote applications.
CSC603.5	To describe Long Term Evolution (LTE) architecture and its interfaces.

Course Name : Artificial Intelligence (CSC604)

Faculty Name : Dr. Brijesh Joshi

Course Code	Course Outcome Statement
CSC604.1	Ability to develop a basic understanding of AI building blocks presented in intelligent agents.
CSC604.2	Ability to choose an appropriate problem solving method and knowledge representation technique.
CSC604.3	Ability to analyze the strength and weaknesses of AI approaches to knowledge– intensive problem solving.
CSC604.4	Ability to design models for reasoning with uncertainty as well as the use of unreliable information.
CSC604.5	Ability to design and develop AI applications in real world scenarios.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : DLOC-2 Internet of Things (CSDLO6011)

Faculty Name : Prof. Akshata S. Raut

Course Code	Course Outcome Statement
CSDLO6011.1	Understand the concepts of IoT and the Things in IoT.
CSDLO6011.2	Emphasize core IoT functional Stack and understand application protocols for IoT.
CSDLO6011.3	Apply IoT knowledge to key industries that IoT is revolutionizing.
CSDLO6011.4	Examines various IoT hardware items and software platforms used in projects.

Course Name : System Programming and Compiler Construction Lab (CSL601)

Faculty Name : Prof. Reshma Chaudhari

Course Code	Course Outcome Statement
CSL601.1	Generate machine code by implementing two pass assemblers.
CSL601.2	Implement Two pass macro processor.
CSL601.3	Parse the given input string by constructing Top down/Bottom-up parser.
CSL601.4	Identify and Validate tokens for given high level language and Implement synthesis phase of compiler.
CSL601.5	Explore LEX & YACC tools.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Cryptography & System Security Lab (CSL602)

Faculty Name : Prof. Vinal Waghela

Course Code	Course Outcome Statement
CSL602.1	Apply the knowledge of symmetric and asymmetric cryptography to implement simple ciphers.
CSL602.2	Explore the different network reconnaissance tools to gather information about networks.
CSL602.3	Explore and use tools like sniffers, port scanners and other related tools for analysing packets in a Network.
CSL602.4	Set up firewalls and intrusion detection systems using open-source technologies and to explore email security.
CSL602.5	Explore various attacks like buffer-overflow and web application attack.

Course Name : Mobile Computing Lab (CSL603)

Faculty Name : Prof. Saniket Kudoo

Course Code	Course Outcome Statement
CSL603.1	Develop and demonstrate mobile applications using various tools
CSL603.2	Articulate the knowledge of GSM, CDMA & Bluetooth technologies and demonstrate it.
CSL603.3	Students will able to carry out simulation of frequency reuse, hidden/exposed terminal problem
CSL603.4	Implement security algorithms for mobile communication network
CSL603.5	Demonstrate simulation and compare the performance of Wireless LAN

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Artificial Intelligence Lab (CSL604)

Faculty Name : Dr. Brijesh Joshi

Course Code	Course Outcome Statement
CSL604.1	Identify languages and technologies for Artificial Intelligence
CSL604.2	Understand and implement uninformed and informed searching techniques for real world problems.
CSL604.3	Create a knowledge base using any AI language.
CSL604.4	Design and implement expert systems for real world problems.

Course Name : Skill base Lab Course: Cloud Computing (CSL605)

Faculty Name : Prof. Bhavika Thakur / Prof. Krutika Vartak

Course Code	Course Outcome Statement
CSL605.1	Implement different types of virtualization techniques.
CSL605.2	Analyze various cloud computing service models and implement them to solve the given problems.
CSL605.3	Design and develop real world web applications and deploy them on commercial cloud(s).
CSL605.4	Explain major security issues in the cloud and mechanisms to address them.
CSL605.5	Explore various commercially available cloud services and recommend the appropriate one for the given application.
CSL605.6	Implement the concept of containerization

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Mini Project - 2B (CSM601)

Faculty Name : Prof. Saniket Kudoo / Prof. Vinal Waghela

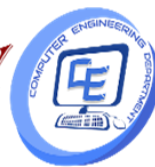| Course Code	Course Outcome Statement
CSM601.1	Identify societal/research/innovation/entrepreneurship problems through appropriate literature surveys
CSM601.2	Identify Methodology for solving above problem and apply engineering knowledge and skills to solve it
CSM601.3	Validate, Verify the results using test cases/benchmark data/theoretical/ inferences/experiments/simulations
CSM601.4	Analyze and evaluate the impact of solution/product/research/innovation /entrepreneurship towards societal/environmental/sustainable development
CSM601.5	Use standard norms of engineering practices and project management principles during project work
CSM601.6	Communicate through technical report writing and oral presentation. • The work may result in research/white paper/ article/blog writing and publication • The work may result in business plan for entrepreneurship product created • The work may result in patent filing.
CSM601.7	Gain technical competency towards participation in Competitions, Hackathons, etc.
CSM601.8	Demonstrate capabilities of self-learning, leading to lifelong learning.
CSM601.9	Develop interpersonal skills to work as a member of a group or as leader

SEMESTER – VII
C – SCHEME (R'19)

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Machine Learning (CSC701)

Faculty Name : Prof. Janhavi Sangoi

Course Code	Course Outcome Statement
CSC701.1	To acquire fundamental knowledge of developing machine learning models.
CSC701.2	To select, apply and evaluate an appropriate machine learning model for the given
CSC701.3	To demonstrate ensemble techniques to combine predictions from different models.
CSC701.4	To demonstrate the dimensionality reduction techniques.

Course Name : Big Data Analytics (CSC702)

Faculty Name : Prof. Akshata S. Raut

Course Code	Course Outcome Statement
CSC702.1	Understand the building blocks of Big Data Analytics.
CSC702.2	Apply fundamental enabling techniques like Hadoop and MapReduce in solving real world problems.
CSC702.3	Understand different NoSQL systems and how it handles big data.
CSC702.4	Apply advanced techniques for emerging applications like stream analytics.
CSC702.5	Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications, etc.
CSC702.6	Apply statistical computing techniques and graphics for analyzing big data.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : DLOC-3 Natural Language Processing (CSDC7013)

Faculty Name : Prof. Bhavika Thakur

Course Code	Course Outcome Statement
CSDC7013.1	To describe the field of natural language processing.
CSDC7013.2	To design language model for word level analysis for text processing.
CSDC7013.3	To design various POS tagging techniques and parsers.
CSDC7013.4	To design, implement and test algorithms for semantic and pragmatic analysis.
CSDC7013.5	To formulate the discourse segmentation and anaphora resolution.
CSDC7013.6	To apply NLP techniques to design real world NLP applications.

Course Name : DLOC-4 Information Retrieval (CSDC7023)
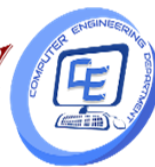
Faculty Name : Prof. Divya S.

Course Code	Course Outcome Statement
CSDC7023.1	Define and describe the basic concepts of the Information retrieval system.
CSDC7023.2	Design the various modeling techniques for information retrieval systems.
CSDC7023.3	Understand the query structure and various query operations
CSDC7023.4	Analyzing the indexing and scoring operation in information retrieval systems
CSDC7023.5	Perform the evaluation of information retrieval systems.
CSDC7023.6	Analyze various information retrieval for real world application.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : ILOC – 1 Management Information System (ILO 7013)

Faculty Name : Prof. Kirtida Naik

Course Code	Course Outcome Statement
ILO 7013.1	Explain how information systems Transform Business
ILO 7013.2	Identify the impact information systems have on an organization
ILO 7013.3	Describe IT infrastructure and its components and its current trends
ILO 7013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making
ILO 7013.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses

Course Name : Machine Learning Lab (CSL701)

Faculty Name : Prof. Janhavi Sangoi

Course Code	Course Outcome Statement
CSL701.1	To implement an appropriate machine learning model for the given application.
CSL701.2	To implement ensemble techniques to combine predictions from different models.
CSL701.3	To implement the dimensionality reduction techniques

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Big Data Analytics Lab (CSL702)

Faculty Name : Prof. Akshata S. Raut

Course Code	Course Outcome Statement
CSL702.1	To interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
CSL702.2	To implement algorithms that uses Map Reduce to apply on structured and unstructured data
CSL702.3	To perform hands-on NoSql databases such as Cassandra, HadoopHbase, MongoDB, etc.
CSL702.4	To implement various data streams algorithms.
CSL702.5	To develop and analyze the social network graphs with data visualization techniques.

Course Name : DLOL-3 Natural Language processing Lab (CSDL7013)

Faculty Name : Prof. Bhavika Thakur

Course Code	Course Outcome Statement
CSDL7013.1	Apply various text processing techniques.
CSDL7013.2	Design language model for word level analysis
CSDL7013.3	Model linguistic phenomena with formal grammar.
CSDL7013.4	Design, implement and analyze NLP algorithms.
CSDL7013.5	To apply NLP techniques to design real world NLP applications such as machine translation, sentiment analysis, text summarization, information extraction, Question Answering system etc.
CSDL7013.6	Implement proper experimental methodology for training and evaluating empirical NLP systems.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : DLOL-4 Information Retrieval Lab (CSDL7023)

Faculty Name : Prof. Divya S.

Course Code	Course Outcome Statement
CSDL7023.1	To frame queries for information retrieval
CSDL7023.2	To implement modeling techniques
CSDL7023.3	To perform query expansion techniques
CSDL7023.4	To demonstrate evaluation techniques for IR

Course Name : Major Project 1 (CSP701)

Faculty Name : Prof. Reshma Chaudhari

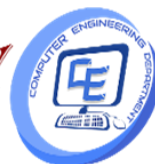| Course Code	Course Outcome Statement
CSP701.1	To develop the understanding of the problem domain through extensive review of literature.
CSP701.2	To Identify and analyze the problem in detail to define its scope with problem specific data.
CSP701.3	To know various techniques to be implemented for the selected problem and related technical skills through feasibility analysis.
CSP701.4	To design solutions for real-time problems that will positively impact society and environment.
CSP701.5	To develop clarity of presentation based on communication, teamwork and leadership skills.
CSP701.6	To inculcate professional and ethical behavior.

SEMESTER – VIII
C – SCHEME (R'19)

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COMPUTER ENGINEERING DEPARTMENT

Course Name : Distributed Computing (CSC801)

Faculty Name : Prof. Krutika Vartak

Course Code	Course Outcome Statement
CSC801.1	Demonstrate the knowledge of basic elements and concepts related to distributed system technologies.
CSC801.2	Illustrate the middleware technologies that support distributed applications such as RPC, RMI and Object-based middleware
CSC801.3	Analyze the various techniques used for clock synchronization, mutual exclusion and deadlock.
CSC801.4	Demonstrate the concepts of Resource and Process management.
CSC801.5	Demonstrate the concepts of Consistency, Replication Management and fault Tolerance.
CSC801.6	Apply the knowledge of Distributed File systems in building large-scale distributed applications.

**Course Name: DLOC-5 Digital Forensics (CSDC8012)**

Faculty Name : Prof. Kirtida Naik

Course Code	Course Outcome Statement
CSDC8012.1	Discuss the phases of Digital Forensics and methodology to handle the computer security incident.
CSDC8012.2	Describe the process of collection, analysis and recovery of the digital evidence.
CSDC8012.3	Explore various tools to analyze malwares and acquired images of RAM/hard drive.
CSDC8012.4	Acquire adequate perspectives of digital forensic investigation in mobile devices
CSDC8012.5	Analyze the source and content authentication of emails and browsers.
CSDC8012.6	Produce unambiguous investigation reports which offer valid conclusions.

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COMPUTER ENGINEERING DEPARTMENT
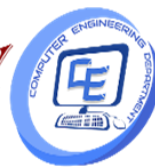
Course Name : DLOC-6 Social Media Analytics (CSDC8023)

Faculty Name : Prof. Bhavika Thakur

Course Code	Course Outcome Statement
CSDC8023.1	Understand the concept of Social media
CSDC8023.2	Understand the concept of social media Analytics and its significance.
CSDC8023.3	Learners will be able to analyze the effectiveness of social media
CSDC8023.4	Learners will be able to use different Social media analytics tools effectively and efficiently.
CSDC8023.5	Learners will be able to use different effective Visualization techniques to represent social media analytics.
CSDC8023.6	Acquire the fundamental perspectives and hands-on skills needed to work with social media data.

Course Name : ILOC-2 Project Management (ILO 8021)

Faculty Name : Prof. Hima Kantharia

Course Code	Course Outcome Statement
ILO 8021.1	Apply selection criteria and select an appropriate project from different options.
ILO 8021.2	Write work break down structure for a project and develop a schedule based on it.
ILO 8021.3	Identify opportunities and threats to the project and decide an approach to deal with them strategically.
ILO 8021.4	Use Earned value technique and determine & predict status of the project.
ILO 8021.5	Capture lessons learned during project phases and document them for future reference

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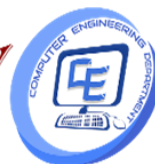
Course Name : Distributed Computing Lab (CSL801)

Faculty Name : Prof. Krutika Vartak

Course Code	Course Outcome Statement
CSL801.1	Develop test and debug usingMessage-Oriented Communication or RPC/RMI based client-server programs
CSL801.2	Implement techniques for clock synchronization.
CSL801.3	Implement techniques for Election Algorithms.
CSL801.4	Demonstrate mutual exclusion algorithms and deadlock handling
CSL801.5	Implement techniques of resource and process management.
CSL801.6	Describe the concepts of distributed File Systems with some case studies.

Course Name : DLOL-5 Digital Forensics Lab (CSDL8022)

Faculty Name : Prof. Kirtida Naik

Course Code	Course Outcome Statement
CSDL8022.1	Explore various forensics tools and use them to acquire, duplicate and analyze data and recover deleted data
CSDL8022.2	Implement penetration testing using forensics tools.
CSDL8022.3	Explore various forensics tools and use them to acquire and analyze live and static data.
CSDL8022.4	Verification of source and content authentication of emails and browsers.
CSDL8022.5	Demonstrate Timeline Report Analysis using forensics tools.
CSDL8022.6	Discuss real time crime forensics investigations scenarios.

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COMPUTER ENGINEERING DEPARTMENT

Course Name : DLOL-6 Social Media Analytics Lab (CSDL8023)

Faculty Name : Prof. Bhavika Thakur

Course Code	Course Outcome Statement
CSDL8023.1	Understand characteristics and types of social media networks.
CSDL8023.2	Use social media analytics tools for business
CSDL8023.3	Collect, monitor , store and track social media data
CSDL8023.4	Analyze and visualize social media data from multiple platforms
CSDL8023.5	Design and develop content and structure based social media analytics models.
CSDL8023.6	Design and implement social media analytics applications for business.

Course Name : Major Project 2 (CSP801)

Faculty Name : Prof. Reshma Chaudhari

Course Code	Course Outcome Statement
CSP801.1	Implement solutions for the selected problem by applying technical and professional skills.
CSP801.2	Analyze impact of solutions in societal and environmental context for sustainable development.
CSP801.3	Collaborate best practices along with effective use of modern tools.
CSP801.4	Develop proficiency in oral and written communication with effective leadership and teamwork.
CSP801.5	Nurture professional and ethical behavior
CSP801.6	Gain expertise that helps in building lifelong learning experience.