Course Name:	Applied Mathematics III	
Course Code	CSC301	
Faculty Name:	Revathy S, Pallavi M & Satyanarayana N	
Year	2	Sem III

CO Number	Course Outcome
CSC301.1	Students will be able to i) Obtain Laplace Transforms for a given standard function of 't' ii) Obtain Inverse Laplace Transforms for a given simple function of 's' iii) Define harmonic functions and Orthogonal trajectories iv) Obtain Karl Pearson's coefficient of correlation and Spearman's Rank correlation
CSC301.2	Students will be able to i) Obtain the Laplace Transforms, Inverse Laplace Transforms of combinations of standard functions using the properties of Laplace and Inverse Transforms. ii) Identify orthogonal and orthonormal functions and obtain Fourier series, half-range Fourier series and Fourier sine and cosine series of periodic functions.
CSC301.3	Students will be able to i) Find Cauchy – Riemann equations to verify if a function is analytic ii) Define Conformal mapping and obtain the image under given standard transformation iii) Define and obtain bilinear transformation and its fixed points. iv)Apply Heaviside's and Dirac Delta functions to obtain Laplace Transforms v) Apply Laplace and Inverse Laplace transform concepts to evaluate integrals, solve initial and boundary value problems.
CSC301.4	Students will be able to i) Obtain the harmonic conjugate and orthogonal trajectories of a given family of curves ii) Develop orthonormal functions from a set of orthogonal functions iii) Obtain Regression coefficient & Lines of Regression. iv) Obtain Fourier series for even and odd functions.
CSC301.5	Students will be able to i) Obtain images of regions under conformal mappings – translation, rotaion, inversion and BLT ii) Obtain an analytic function, given a linear combination of its real and imaginary parts
CSC301.6	Students will be able to i) Apply the concept of Z- transformation and its inverse of the given sequence ii) Find the fitting of the curves to the given data by applying Least square method. iii) Obtain Fourier series for functions in a general interval, Obtain complex form fourier series of functions.

Course Name:	Discrete Structures and Graph Theory	
Course Code	CSC302	
Faculty Name:	Ms. Kalpita Ajinkya Wagaskar	
Year	2	Sem III

CO Number	Course Outcome
CSC302.1	To develop analytical and critical thinking abilities by applying concepts of sets and logic in solving mathematical proofs and verification of theorems.
CSC302.2	To illustrate the usage of Relations and Functions in solving mathematical arguments and proof strategies.
CSC302.3	To demonstrate the principle of counting techniques like permutations and combinations by solving mathematical problems.
CSC302.4	To infer the importance of generating functions and graphs in construction of recursive algorithms and computer applications.
CSC302.5	To apply the concepts of algebraic structures like groups, rings, and fields to solve Encoding and Decoding problems.
CSC302.6	To correlate the concepts of discrete structures and their relevance within the context of computer science- in the areas like Cryptography, Data Mining, and Data Analysis.

Course Name:	Data Structures	
Course Code	CSC303	
Faculty Name:	Dr. Phiroj Shaikh	
Year	2	Sem III

CO Number	Course Outcome
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 Architecture		
Course Code	CSC304		
Faculty Name:	Deepali Kayande		
Year	2	Sem	III

CO Number	Course Outcome
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		
Course Code	CSC305		
Faculty Name:	Dipti Jadhav		
Year	2	Sem	III

CO Number	Course Outcome
CSC305.1	Ability to explain the basics of computer graphics and its applications in various fields.
CSC305.2	Design and implement various algorithms for scan conversion, polygon filling algorithms and their comparative analysis.(Using C/OpenGL)
CSC305.3	Ability to explain, design and implement 2D and 3D geometric transformations on graphics object and their usage in composite form.
CSC305.4	Extract scene with different clipping algorithms and implementing those algorithms using (C/OpenGL)
CSC305.5	Ability to render projected objects to naturalize the scene in 2D view
CSC305.6	Ability to create interactive graphics applications(C/OpenGL) using one or more application programming interfaces.

Course Name:	Data Structure Lab		
Course Code	CSL301		
Faculty Name:	Dr. Phiroj Shaikh and Ms. Priya Kaul		
Year	2	Sem	III

CO Number	Course Outcome
CSL301.1	Students will be able to implement linear data structures & be able to handle operations like insertion, deletion, searching and traversing on them.
CSL301.2	Students will be able to implement nonlinear data structures & be able to handle operations like insertion, deletion, searching and traversing on them
CSL301.3	Students will be able to choose appropriate data structure and apply it in various problems
CSL301.4	Students will be able to select appropriate searching techniques for given problems.
CSL301.5	Students will be able to implement the various graph data structure and apply it in required application.
CSL301.6	Students will be able to develop application using various data structure.

Course Name:	DLCA Lab		
Course Code	CSL302		
Faculty Name:	Deepali Kayande		
Year	2	Sem	III

CO Number	Course Outcome
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
CSL302.5	Understand the principles of design of combinational logic and sequential logic circuits using basic components.
CSL302.6	Design and simulate the basic digital circuit.

Course Name:	CG Lab		
Course Code	CSL303		
Faculty Name:	Mayura Gawhane/Dipti Jadhav		
Year	2	Sem	III

CO Number	Course Outcome
CSL303.1	Implement various output primitives C/ OpenGL
CSL303.2	Ability to implement filled area primitive algorithms using C/ OpenGL
CSL303.3	Apply 2D and 3D transformations algorithms on graphical objects.
CSL303.4	Ability to implement clipping algorithms on graphical objects.
CSL303.5	Implementation of curve and fractal generation.
CSL303.6	Ability to create interactive graphics applications in (C/OpenGL/P5.js) using one or more graphics application programming interfaces.

Course Name:	Skill Based Lab Course - OOPM with Java Lab		
Course Code	CSL304		
Faculty Name:	Ditty Varghese		
Year	2	Sem	III

CO Number	Course Outcome
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		
Course Code	CSM301		
Faculty Name:	Dr. Phiroz Shaikh		
Year	2	Sem	III

CO Number	Course Outcome
CSL304.1	Identify problems based on societal /research needs and apply knowledge & skill to solve societal problems in a group.
CSL304.2	Develop interpersonal skills to work as member of a group or leader.
CSL304.3	Draw the proper inferences from available results through theoretical/ experimental/simulations.
CSL304.4	Analyze the impact of solutions in societal and environmental context for sustainable development.
CSL304.5	Use standard norms of engineering practices and Excel in written and oral communication.
CSL304.6	Demonstrate capabilities of self-learning in a group, which leads to lifelong learning.

TE Comps				
Course Name:		Microprocessor		
Course Code		CSC501		
Faculty Name:		Sejal Chopra		
Year	3	**Sem**	V	

CO Number	Course Outcome
CSC501.1	Ability to explain the various architectures and internal working of x86 processors.
CSC501.2	Ability to use and apply appropriate instructions to program a microprocessor to perform various tasks.
CSC501.3	Ability to describe the concept and working of Interrupts.
CSC501.4	Ability to identify and describe the functions and features of different peripheral chips.
CSC501.5	Ability to interface and design system using memory chips and peripheral chips for 16-bit 8086 microprocessor
CSC501.6	Ability to appraise the structural modifications of advanced processors.

Course Name:		DBMS		
Course Code		CSC502		
Faculty Name:		Priya Kaul		
Year	3	**Sem**	V	

CO Number	Course Outcome
CSC502.1	To understand, define and explain the fundamentals of database management systems
CSC502.2	To design the conceptual model for any real-life problem.
CSC502.3	To convert the conceptual model to relational model and formulate relational algebra queries.
CSC502.4	To apply and formulate SQL queries to manage the database system.
CSC502.5	To analyze and design a relational database design using the concepts of normalization
CSC502.6	To correlate the concept of Transaction, Concurrency and Recovery Management with each other in DBMS.

Course Name:	CN		
Course Code	CSC503		
Year	Mr. Imram Ali Mirza		
CO Number	3	Sem	V

	Course Outcome
CSC503.1	Demonstrate the concepts of data communication at physical layer and compare ISO-OSI model with TCP/IP model .
CSC503.2	Demonstrate the knowledge of networking protocols at data link layer
CSC503.3	Design the network using IP addressing and subnetting/supernetting schemes
CSC503.4	Analyze various algorithms and protocols at network and transport layer
CSC503.5	Discuss protocols at application layer
CSC503.6	Analysing organizational requirements and selecting the most appropriate network architecture and technologies.

Course Name:	TCS		
Course Code	CSC504		
Faculty Name:	Shainila Mulla		
Year	3	Sem	V

CO Number	Course Outcome
CSC504.1	To identify concepts in automata theory & to differentiate between NFA & DFA
CSC504.2	To infer the equivalance of languages described by finite automata and regular expressions.
CSC504.3	Design finite automata & pushdown automata,to solve computational problems
CSC504.4	To associate regular and context free grammer for recognizing strings & token.
CSC504.5	To develop an understanding of computation through turing machines
CSC504.6	To describe the concepts of undecidability & decidability .

Course Name:	Multimedia System		
Course Code	CSDLO5011		
Faculty Name:	Dr. Phiroz Shaikh		
Year	3	Sem	V

CO Number	Course Outcome
CSDLO5012.1	Identify basics of multimedia and multimedia system architecture.
CSDLO5012.2	Describe different multimedia components.
CSDLO5012.3	Explain file formats for different multimedia components
CSDLO5012.4	Discuss various multimedia communication Techniques and distinguish with respect to application.
CSDLO5012.5	Analyze the different compression algorithms.
CSDLO5012.6	Apply different security techniques in multimedia environment.

Course Name:	AA		
Course Code	CSDLO5013		
Faculty Name:	Ditty Varghese		
Year	3	Sem	V

CO Number	Course Outcome
CSDLO5013.1	Ability to describe analysis techniques for algorithms.
CSDLO5013.2	Ability to identify appropriate data structure and design techniques for different problems
CSDLO5013.3	Ability to identify appropriate algorithm to be applied for the various application like geometric modeling, robotics, networking, etc.
CSDLO5013.4	Ability to analyze various algorithms.
CSDLO5013.5	Ability to appreciate the role of probability and randomization in the analysis of algorithm
CSDLO5013.6	Ability to describe analysis techniques for algorithms.

Course Name:	Microprocessor Lab		
Course Code	CSL501		
Faculty Name:	Sejal Chopra		
Year	3	Sem	V

CO Number	Course Outcome
CSL501.1	Ability to explain and identify different instructions of 8086 microprocessor.
CSL501.2	Ability to use and apply appropriate instructions to program a microprocessor to perform various tasks.
CSL501.3	Ability to perform arithmetic operations using assembly language programming.
CSL501.4	Ability to write assembly code based on array operations.
CSL501.5	Ability to develop the program in mixed language.
CSL501.6	Ability to write and execute assembly code for code conversions.

Course Name:	Computer Network Lab		
Course Code	CSL502		
Faculty Name:	Mr. Imram Ali Mirza		
Year	3	Sem	V

CO Number	Course Outcome
CSL502.1	Design and setup networking environment in Linux.
CSL502.2	Illustrate the use of basic networking commands in Linux.
CSL502.3	Use Network to simulate and explore networking algorithms
CSL502.4	Implement programs using core programming APIs for understanding networking concepts.
CSL502.5	Communicate technical information verbally, in writing, and in presentations.
CSL502.6	Use Network to simulate and explore networking protocols.

Course Name:	Database & Info. System Lab		
Course Code	CSL503		
Faculty Name:	Priya Kaul		
Year	3	Sem	V

CO Number	Course Outcome
CSL503.1	Ability to design and create conceptual or relational model for any the real life problem with open source software tool.
CSL503.2	Ability to apply SQL commands on database.
CSL503.3	Ability to apply Data Integrity and Security to protect the database from unauthorized access and manipulation.
CSL503.4	Ability to examine effect of concurrency control on database and implement and execute subquery/complex queries
CSL503.5	Ability to apply views and triggers for specific task.
CSL503.6	Ability to create database system and access data through front end.

Course Name:	Web Design Lab	
Course Code	CSL504	
Faculty Name:	Deepali Kayande	
Year	3	Sem	V

CO Number	Course Outcome
CSL504.1	Understand the core concepts and features of Web Technology
CSL504.2	Design static web pages using HTML5 and CSS3
CSL504.3	Apply the concept of client side validation and design dynamic web pages using JavaScript and JQuery.
CSL504.4	Evaluate client and server side technologies and create Interactive web pages using PHP , AJAX with database connectivity using MySQL.
CSL504.5	Understand the basics of XML, DTD and XSL and develop web pages using XML / XSLT.
CSL504.6	Analyze end user requirements and Create web application using appropriate web technologies and web development framework

Course Name:	BCE	
Course Code	CSL505	
Faculty Name:	Ms. Devyani Balasra	
Year	3	Sem	V

CO Number	Course Outcome
CSL505.1	Students will be able to relate to techniques of formal and technical writing and to principles of corporate ethics which includes knowledge of Intellectual Property Rights and ethical codes of conduct in business and corporate activities
CSL505.2	Students will be able to explain the objectives, format and style of technical report, and technical proposal and the importance of interpersonal skills and paraphrase a technical paper
CSL505.3	Students will be able to describe strategies for effective meetings and group discussions and techniques for effective preparation for different types of interviewwhich includes resume writing and statement of purpose
CSL505.4	Students will be able to apply conceptual awareness of interpersonal skills, strategies for effective meetings which includes documentation, and group discussions to complete a mock project
CSL505.5	Students will be able to make use of the given format while drafting a technical report and a technical proposal and the techniques of effective preparation for interviews while appearing for a mock interview
CSL505.6	Students will be able to evaluate technical reports and technical proposals using the given rubric

BE Comps

Course Name:	DSIP	
Course Code	CSC701	
Faculty Name:	Dipti Jadhav	
Year	4	Sem	VII

CO Number	Course Outcome
CSC701.1	Apply the concept of DT Signal and DT Systems.
CSC701.2	Classify and analyze discrete time signals and systems
CSC701.3	Apply Digital Signal Transform techniques DFT and FFT.
CSC701.4	Explain and implement image enhancement techniques
CSC701.5	Compare image segmentation techniques.
CSC701.6	Survey on latest research based on Digital Signal & Image Processing.

Course Name:	MCC		
Course Code	CSC702		
Faculty Name:	Dr. Amiya Kumar Tripathy		
Year	4	Sem	VII

CO Number	Course Outcome
CSC702.1	To identify basic concepts and principles in mobile communication and computing
CSC702.2	To express the components and functioning of mobile networking.
CSC702.3	To apply the concepts of WLAN for local as well as remote applications.
CSC702.4	To classify variety of security techniques in mobile network.
CSC702.5	To apply the concepts of mobility management
CSC702.6	To describe Long Term Evolution (LTE) architecture and its interfaces.

Course Name:	AI & SC		
Course Code	CSC703		
Faculty Name:	Ms. Kalpita Ajinkya Wagaskar		
Year	4	Sem	VII

CO Number	Course Outcome
CSC703.1	Students will be able to state the difference between AI and SC
CSC703.2	Students will be able to explain IA,KBA,PSA, and illustrate ANN, Fuzzy Logic and Expert system architecture
CSC703.3	Students will be able to solve problems using informed, uninformed search methods, optimization techniques and ANN
CSC703.4	Students will be able to identify planning types and agents and illustrate t he fuzzy inference system
CSC703.5	Students will be able to critique and justify different neural network algorithms and compare the results and infer error percentage
CSC703.6	Students will be able to formulate problems and design FOL equation for the problems stated

Course Name:	ASS & DF		
Course Code	CSDLO7031		
Faculty Name:	Shafaque Fatma Syed		
Year	4	Sem	VII

CO Number	
CSDLO7031.1	Understand cyber attacks and apply access control policies and control mechanisms.
CSDLO7031.2	Identify malicious code and targeted malicious code.
CSDLO7031.3	Detect and counter threats to web applications.
CSDLO7031.4	Explain the vulnerabilities of Wi-Fi networks and explore different measures to secure wireless protocols, WLAN and VPN networks.
CSDLO7031.5	Identify the ethical and legal issues associated with cyber crimes and be able to mitigate impact of crimes with suitable policies.
CSDLO7031.6	Use different forensic tools to acquire and duplicate data from compromised systems and analyze the same.

Course Name:	BDA		
Course Code	CSDLO7032		
Faculty Name:	Sana Shaikh		
Year	4	Sem	VII

CO Number	Course Outcome
CSDLO7032.1	Understand the key issues in big data management and its associated applications for business decisions and strategy.
CSDLO7032.2	Apply scalable algorithms based on Hadoop and Map Reduce to perform big data analytics.
CSDLO7032.3	Use NoSQL tools to develop problem solving and critical thinking skills for managing large datasets.
CSDLO7032.4	Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
CSDLO7032.5	Apply various methods and techniques for Clustering, and identifying frequent Itemsets from large datasets.
CSDLO7032.6	Discover information from social network graphs and Solve complex real world problems in various applications.

Course Name:	CSL		
Course Code	ILO7016		
Faculty Name:	Dr. Phiroj Shaikh		
Year	4	Sem	VII

CO Number	Course Outcome
ILO7016.1	Outline the concept of cybercrime and its effect on the outside world.
ILO7016.2	Infer the cyber offenses and cybercrimes methodologies and it's probable targets.
ILO7016.3	Understands the various tools and methods used in Cybercrimes.
ILO7016.4	Interpret and distinguish different aspects of cyber law in various legal issues.
ILO7016.5	Understands the Indian IT Act and its amendments.
ILO7016.6	Apply information security standards compliance during software design and development.

Course Name:	DSIP Lab		
Course Code	CSL701		
Faculty Name:	Dipti Jadhav		
Year	4	Sem	VII

CO Number	Course Outcome
CSL701.1	Perform Sampling and reconstruction of the signal.
CSL701.2	Implement and apply operations like Convolution, Correlation.
CSL701.3	Implement DFT and FFT on DT signals.
CSL701.4	Implement image enhancement techniques
CSL701.5	Classify and implement image segmentation techniques.
CSL701.6	Survey on latest research and module implementation based on Digital Signal & Image Processing.

Course Name:	MADT Lab		
Course Code	CSL702		
Faculty Name:	Dr. Amiya Kumar Tripathy		
Year	4	Sem	VII

CO Number	Course Outcome
CSL702.1	To demonstrate mobile applications using various tools
CSL702.2	To articulate the knowledge of GSM, CDMA & Bluetooth technologies and demonstrate it.
CSL702.3	To carry out simulation of frequency reuse , hidden terminal problem
CSL702.4	To develop security algorithms for mobile communication network
CSL702.5	To demonstrate simulation and compare the performance of Wireless LAN
CSL702.6	To implement mobile node discovery and route maintains.

Course Name:	AI & SC lab		
Course Code	CSL703		
Faculty Name:	Ms. Kalpita Ajinkya Wagaskar		
Year	4	Sem	VII

CO Number	Course Outcome
CSL703.1	To realize the basic techniques to build intelligent systems
CSL703.2	To create knowledge base and apply appropriate search techniques used in problem solving.
CSL703.3	To formulate a given Problem using rules of AI
CSL703.4	Implement First Orer Logic for the given story
CSL703.5	Apply the supervised/unsupervised learning algorithm.
CSL703.6	To Design a fuzzy controller system.

Course Name:	Computational Lab - I (ASS)		
Course Code	CSL704		
Faculty Name:	Shafaque Fatma Syed		
Year	4	Sem	VII

CO Number	Course Outcome
CSL704.1	Analyze static code and program vulnerabilities using open source tools.
CSL704.2	Explore and analyze network vulnerabilities using open source tools.
CSL704.3	Explore and analyze different security tools to detect web application and browser vulnerabilities.
CSL704.4	Explore and analyze different tools to secure wireless networks and routers, and mobile devices and perform penetration testing, and analyze its impact.
CSL704.5	Understand and implement AAA using RADIUS and TACACS.
CSL704.6	Explore various forensics tools in Kali Linux and use them to acquire, duplicate and analyze data and recover deleted data.

Course Name:	Computational Lab - I (BDA)			
Course Code	CSL704			
Faculty Name:	Sana Shaikh			
Year	4	Sem	VII	

CO Number	Course Outcome
CSL704.1	Use the Hadoop file system, debug and run simple Java programs.
CSL704.2	Learn to write complex MapReduce programs.
CSL704.3	Learn how to ingest data using Sqoop or Flume.
CSL704.4	Derive insights using Data Analytics techniques with Hive/PIG/R/Hbase.
CSL704.5	Implement stream data analysis or predictive analysis using big data tools.
CSL704.6	Develop real-life projects using Hadoop and its Ecosystem.

Course Name:	Major Project - I			
Course Code	CSP705			
Faculty Name:	Shafaque Fatma Syed			
Year	4	Sem	VII	

CO Number	Course Outcome
CSP705.1	Students will be able to identify issues related to social, health, safety, legal etc. and propose technological solutions with due consideration to environment and sustainability.
CSP705.2	Students will be able to plan the activities, prepare a schedule and budget, execute and monitor the progress by following project management practices.
CSP705.3	Students will be able to demonstrate team work and team spirit and overcome challanges.
CSP705.4	Students will be able to demonstrate ethical issues related to project.
CSP705.5	Students will be able to communicate effectively their project ideas, literature summary and design engineering solutions through reports and presentations.