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) 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) To understand the basic techniques of statistics like correlation, regression, and curve fitting for data analysis, Machine learning, and AI.iii) Understand the concepts of probability and expectation for getting the spread of the data.
CSC301.4	Students will be able to i) to use Lpalce transform to solve the real integrals in engineering problems. Ii) Obtain the harmonic conjugate and orthogonal trajectories of a given family of curves iii) Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning, and AI.iv) Obtain Fourier series for a periodic function. v) Use probability theory for understanding the spread and variation in the data
CSC301.5	Students will be able to i) Obtain an analytic function, given a linear combination of its real and imaginary parts
CSC301.6	Students will be able to i) 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.

Course Name:	Discrete Structures and Graph Theory	
Course Code	CSC302	
Faculty Name:	Ms. Priya Kaul	
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:	Mr. Imran Ali Mirza	
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:	Ms. Sejal Chopra	
Year	2	Sem	III

CO Number	Course Outcome
CSC304.1	Ability of the student to learn different number systems, codes and basic structure of computer system.
CSC304.2	Ability to estimate the output of ALU functions using the arithmetic operations/algorithms.
CSC304.3	Ability to analyze various digital components and processor organization.
CSC304.4	Ability to design and demonstrate generation of control signals of computer.
CSC304.5	Ability to design and demonstrate the memory organization.
CSC304.6	Ability to classify and compare various parallel processing mechanisms and different buses.

Course Name:	Computer Graphics		
Course Code	CSC305		
Faculty Name:	Dr. Phiroj Shaikh		
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:	Mr. Imran Ali Mirza		
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, sea
CSL301.2	Students will be able to implement nonlinear data structures & be able to handle operations like insertion, deletion,
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:	Ms. Sejal Chopra		
Year	2	Sem	III

CO Number	Course Outcome
CSL302.1	Ability of the student to understand the basic components like logic gates.
CSL302.2	Ability to estimate the output of combinational circuits.
CSL302.3	Ability to analyze various sequential circuits.
CSL302.4	Ability to design the basic building blocks of a computer: adders
CSL302.5	Ability to design and estimate the output of the basic building blocks of a computer: ALU/ registers/ CPU/ memory
CSL302.6	Ability to implement various algorithms for arithmetic operations.

Course Name:	CG Lab		
Course Code	CSL303		
Faculty Name:	Dr. Phiroj Shaikh		
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. Amiya Tripathy, Dr. Phiroj Shaikh, Mr. Imran Ali Mirza, Ms. Sana Shaikh, Ms. Shainila Mulla, Ms. Sejal Chopra, Ms. Ditty Varghese, Ms. Priya Kaul		
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:	TCS		
Course Code	CSC501		
Faculty Name:	Shainila Mulla		
Year	3	Sem	V

CO Number	Course Outcome
CSC501.1	To identify concepts in automata theory & to differentiate between NFA & DFA
CSC501.2	To infer the equivalance of languages described by finite automata and regular expressions.
CSC501.3	Design finite automata & pushdown automata,to solve computational problems
CSC501.4	To associate regular and context free grammer for recognizing strings & token.
CSC501.5	To develop an understanding of computation through turing machines
CSC501.6	To describe the concepts of undecidability & decidability .

Course Name:	Software Engineering		
Course Code	CSC502		
Faculty Name:	Mr. Imram Ali Mirza		
Year	3	Sem	V
CO Number	Course Outcome		
CSC502.1	Understand and demonstrate basic knowledge in software engineering.		
CSC502.2	Identify requirements, analyse and prepare models.		
CSC502.3	Plan, schedule and track the progress of the projects.		
CSC502.4	Understands the concepts of software design principles.		
CSC502.5	Identify risks; manage the change to assure quality in software projects.		
CSC502.6	Apply testing principles on software project and understand the maintenance concepts.		

Course Name:	CN		
Course Code	CSC503		
Faculty Name:	Mr. Imram Ali Mirza		
Year	3	Sem	V
CO Number	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:	Data Warehousing and Mining		
Course Code	CSC504		
Faculty Name:	Kalpita Wagaskar		
Year	3	Sem	V
CO Number	Course Outcome		
CSC504.1	To define Data Warehouse fundamentals, Data Mining principles and relate web mining with real world scenarios.		
CSC504.2	To illustrate the design of a Data Warehouse using dimensional modelling and demonstrate OLAP operations on the same.		
CSC504.3	To identify and apply appropriate data mining algorithms on a given data set.		
CSC504.4	To compare and contrast different data mining techniques like classification, prediction, clustering and association rule mining		
CSC504.5	To evaluate the results of data mining algorithms and infer useful information from the same.		
CSC504.6	To create a solution for a real world analytics problem.		

Course Name:	Adv. Database Mangement System		
Course Code	CSDO501		
Faculty Name:	Priya Kaul		
Year	3	Sem	V
CO Number	Course Outcome		
CSDO501.1	Design distributed database using the various techniques for query processing		
CSDO501.2	Measure query cost and perform distributed transaction management		
CSDO501.3	Organize the data using XML and JSON database for better interoperability		
CSDO501.4	Compare different types of NoSQL databases		
CSDO501.5	Formulate NoSQL queries using Mongodb		
CSDO501.6	Describe various trends in advance databases through temporal, graph based and spatial based databases		

Course Name:	Computer Network Lab	
Course Code	CSL503	
Faculty Name:	Mr. Imran Ali Mirza	
Year	3	Sem	V

CO Number	Course Outcome
CSL503.1	Design and setup networking environment in Linux.
CSL503.2	Illustrate the use of basic networking commands in Linux.
CSL503.3	Use Network to simulate and explore networking algorithms
CSL503.4	Implement programs using core programming APIs for understanding networking concepts.
CSL503.5	Communicate technical information verbally, in writing, and in presentations.
CSL503.6	Use Network to simulate and explore networking protocols.

Course Name:	SE Lab	
Course Code	CSL502	
Faculty Name:	Mr. Imran Ali Mirza	
Year	3	Sem	V

CO Number	Course Outcome
CSL502.1	Students will be able to understand the software engineering concepts and prepare the problem statement & proposed solution for the selected case study.
CSL502.2	Students will be able to identify software requirement specification and formulate it for the selected case study.
CSL502.3	Students will be able to apply software engineering process model to the selected case study.
CSL502.4	Students will be able to analyze, design models and evaluate for the selected case study using UML modeling.
CSL502.5	Students will be able to Use various software engineering tools.
CSL502.6	Students will be able to implement and present a case study based on the software engineering concept.

Course Name:	BCE - II	
Course Code	CSL504	
Faculty Name:	Ms. Devyani Balasra	
Year	3	Sem	V

CO Number	Course Outcome
CSL504.1	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
CSL504.2	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
CSL504.3	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
CSL504.4	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
CSL504.5	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
CSL504.6	Students will be able to evaluate technical reports and technical proposals using the given rubric

Course Name:	Mini Project - 2A	
Course Code	CSM501	
Faculty Name:	All Faculty	
Year	2	Sem	V

CO Number	Course Outcome
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.

BE			
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	Classify and implement 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:	Ms. Shainila Mulla		
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	Describe 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:	MIS (ILO)		
Course Code	ILO7013		
Faculty Name:	Ms. Priya Kaul		
Year	4	Sem	VII
CO Number	**Course Outcome**		
ILO7013.1	Explain how information systems transform Businesses.		
ILO7013.2	Identify the impact of information systems have on an organization		
ILO7013.3	Describe IT infrastructure and its components and its current trends		
ILO7013.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making		
ILO7013.5	Explain how informed consent, legislation, industry self regulation and technology tools help protect data privacy.		
ILO7013.6	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses module		

Course Name:	MADT Lab		
Course Code	CSL702		
Faculty Name:	Dr. Amiya Kumar Tripathy, Ms. Priya Kaul		
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:	Ms. Shainila Mulla		
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:	DSIP Lab		
Course Code	CSL701		
Faculty Name:	Dipti Jadhav		
Year	4	Sem	VII

CO Number	Course Outcome
CSL701.1	Sample and reconstruct given 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:	Major Project - I		
Course Code	CSP705		
Faculty Name:	Ms. Ditty Varghese		
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 project design through reports and presentations.