

DON BOSCO INSTITUTE OF TECHNOLOGY, KURLA, MUMBAI

Department of Computer Engineering (Even semester, 2019-20)

SE Comps

Course Name:	AM-IV		
Course Code	CSC401		
Faculty Name:	Revathy S & Satyanarayana N		
Year	2	Sem	IV

CO Number	Course Outcome
CSC401.1	Students will be able to obtain Eigen values and Eigen vectors for a given square matrix
CSC401.2	Students will be able to (i) Infer properties of Eigen values and Eigen vectors (ii) Check if a matrix is derogatory or not (iii) Calculate conditional Probabilities using Bayes' theorem (iv) Obtain pdf and cdf of discrete and continuous random variables
CSC401.3	Students will be able to (i) Construct diagonal matrices using the concept of similarity (ii) Verify Cayley- Hamilton theorem (iii) Obtain functions of square matrices (iv) Obtain conditional probabilities using Bayes' theorem (v) Obtain MGF and hence obtain the mean and variance of a random variable (vi) Obtain moments and probabilities of Binomial, Poisson and Normal distributions
CSC401.4	Students will be able to (i) Obtain probabilities and z-values for normal distributions (ii) Obtain Taylor's and Laurent Series (iii) Locate zeros and poles and find residues at poles
CSC401.5	Students will be able to (i) Evaluate integrals using Cauchy's theorems (ii) Use Linear and Nonlinear Programming methods to solve optimization problems
CSC401.6	Students will be able to (i) perform tests of significance for large and small samples Chi-square test to test to check independence of attributes and 'goodness of fit'. (ii) Apply Big – M method and Dual Simplex method to optimize an LPP and analyze solutions obtained

Course Name:	AOA		
Course Code	CSC402		
Faculty Name:	Ditty Varghese		
Year	2	Sem	IV

CO Number	Course Outcome
CSC402.1	Ability to recognize conventions and notations of algorithm analysis and describe different algorithmic strategies.
CSC402.2	Ability to identify and explain the algorithmic working of different strategies like divide & conquer, greedy, dynamic etc.
CSC402.3	Ability to apply strategies such as divide and conquer, greedy, dynamic, backtracking and branch & bound. on programming problems.
CSC402.4	Ability to discuss, design and analyze different string matching algorithms.
CSC402.5	Ability to analyze the space and time complexity for different algorithms.
CSC402.6	Ability to identify the different categories of problem such as P, NP and NP Complete.

Course Name:	COA		
Course Code	CSC403		
Faculty Name:	Sejal Chopra		
Year	2	Sem	IV

CO Number	Course Outcome
CSC403.1	Ability of the student to understand and describe the basics of computer architecture.
CSC403.2	Ability to estimate the output of ALU operations for fixed or floating point representation and system performance.
CSC403.3	Ability to classify and compare pipelined and parallel processing architectures with analysis of different hazards.
CSC403.4	Ability to design, construct and manage control unit or memory system.
CSC403.5	Ability to engage students in self-learning activity/independent activity to prepare a report on "Recent Developments in processor architecture and organisation.
CSC403.6	Ability to design an optimum processor architecture executing a specific program.

Course Name:	CG		
Course Code	CSC404		
Faculty Name:	Dipti Jadhav		
Year	2	Sem	IV

CO Number	Course Outcome
CSC404.1	Ability to explain the basics of computer graphics, different graphics systems and applications of computer graphics.
CSC404.2	Ability to explain and compare various algorithms for scan conversion and filling of basic objects and their comparative analysis.
CSC404.3	Ability to explain, 2D and 3D geometric transformations on graphics objects and their application in composite form.
CSC404.4	Ability to compare techniques for clipping, projection and visible surface detection
CSC404.5	Ability to classify curves and fractals and evaluate fractal dimensions
CSC404.6	Comprehend the fundamentals of animation,virtual reality, underlying technologies, for developing an graphics application.

Course Name:	OS		
Course Code	CSC405		
Faculty Name:	Shainila Mulla		
Year	2	Sem	IV

CO Number	Course Outcome
CSC405.1	Ability to understand,describe and explain the basics of computing resources that are managed by the operating system.
CSC405.2	Ability to analyze and apply the knowledge of process & thread management , concurrency to solve operating system design problems.
CSC405.3	Ability to implement & simulate algorithms on process scheduling .
CSC405.4	Ability to analyze concepts on memory management techniques.
CSC405.5	Ability to design , compare and analyse the performance metrics of various operating systems
CSC405.6	Ability to apply and analyze file management and I/O management

Course Name:	AOA Lab		
Course Code	CSL401		
Faculty Name:	Ditty Varghese		
Year	2	Sem	IV

CO Number	Course Outcome
CSL401.1	Ability to prove the correctness and analyze the running time of the basic algorithms for those classic problems in various domains.
CSL401.2	Ability to develop the efficient algorithms for the new problem by applying suitable design strategy.
CSL401.3	Ability to analyze the complexities of various problems in different domains.
CSL401.4	Ability to evaluate which algorithm strategy is better by implementing the algorithms using different strategies.
CSL401.5	Ability to apply different algorithmic strategies to classic problems.
CSL401.6	Ability to differentiate between strategies and deduce which fits better as per the problem definition.

Course Name:	CG Lab		
Course Code	CSL402		
Faculty Name:	Dipti Jadhav		
Year	2	Sem	IV

CO Number	Course Outcome
CSL402.1	Ability to explain the working principle, utility of various input/ output devices and graphical tools.
CSL402.2	Ability to explain scan conversion and filled area primitives of output primitives
CSL402.3	Ability to implement various output and filled area primitive algorithms using C/ OpenGL
CSL402.4	Ability to analyze 2D and 3D transformation and clipping algorithms on graphical objects.
CSL402.5	Ability to implement curve and fractal generation and evaluate dimensions
CSL402.6	Ability to develop a Graphical application based on learned concept (C/OpenGL/p5.js)

Course Name:	Processor Architecture Lab		
Course Code	CSL403		
Faculty Name:	Sejal Chopra		
Year	2	Sem	IV

CO Number	Course Outcome
CSL403.1	Ability to compile a code for computer operations.
CSL403.2	Ability to estimate the output of computer hardware operations using simulator.
CSL403.3	Ability to execute few programs on microprocessor kits .
CSL403.4	Ability to explain and compare various components and buses on system
CSL403.5	Ability to explain and compare multi-core processors.
CSL403.6	Ability to engage students in self-learning activity through a mini-project

Course Name:	OS Lab		
Course Code	CSL404		
Faculty Name:	Shainila Mulla		
Year	2		

CO Number	Course Outcome
CSL404.1	Ability to Understand and execute basic operating system commands.
CSL404.2	Ability to write shell scripts and shell commands using kernel API s
CSL404.3	Ability to explore various system call
CSL404.4	Ability to implement and analyze different process scheduling algorithms
CSL404.5	Ability to implement and analyze different memorymanagement algorithms.
CSL404.6	Ability to evaluate process management techniques and deadlock handling using CPUOS simulator .

Course Name:	OST Lab	
Course Code	CSL405	
Faculty Name:	Sana Shaikh	
Year		Sem

CO Number	Course Outcome
CSL405.1	Ability to develop simple programs using basic concepts in Python and Perl.
CSL405.2	Ability to demonstrate advanced concepts related to Python and Perl.
CSL405.3	Ability to use various data structures in Python.
CSL405.4	Ability to understand and apply Django framework for developing Python based web applications.
CSL405.5	Ability to design GUI based applications in Python.
CSL405.6	Ability to develop Mini projects using Python and/or Perl.

TE Comps

Course Name:	SE	
Course Code	CSC601	
Faculty Name:	Imran Ali Mirza	
Year	3	Sem VI

CO Number	Course Outcome
CSC60.1	Understand and demonstrate basic knowledge in software engineering.
CSC60.2	Identify requirements, analyse and prepare models.
CSC60.3	Plan, schedule and track the progress of the projects.
CSC60.4	Understands the concepts of software design principles.
CSC60.5	Identify risks; manage the change to assure quality in software projects.
CSC60.6	Apply testing principles on software project and understand the maintenance concepts.

Course Name:	SPCC	
Course Code	CSC602	
Faculty Name:	Mayura Gavhane	
Year	3	Sem VI

CO Number	Course Outcome
CSC602.1	Explain the basics of system programs like editors, compiler, assembler, linker, loader, interpreter, debugger
CSC602.2	Students will be able to describe working of different system programs.
CSC602.3	Students will be able to examine different data structures and passes of system softwares like assembler, linker, loader and Macro processor
CSC602.4	Students will be able to analyze the implementation approach of system programs.
CSC602.5	Justify the need of synthesis phase to produce object code optimized in terms of high execution speed and less memory usage
CSC602.6	Design different parsers for given context free grammars.

Course Name:	DWM		
Course Code	CSC603		
Faculty Name:	Priya Kaul		
Year	3	Sem	VI

CO Number	Course Outcome
CSC603.1	To define Data Warehouse fundamentals, Data Mining principles and relate web mining with real world scenarios.
CSC603.2	To illustrate the design of a Data Warehouse using dimensional modelling and demonstrate OLAP operations on the same.
CSC603.3	To identify and apply appropriate data mining algorithms on a given data set.
CSC603.4	To compare and contrast different data mining techniques like classification, prediction, clustering and association rule mining
CSC603.5	To evaluate the results of data mining algorithms and infer useful information from the same.
CSC603.6	To create a solution for a real world analytics problem.

Course Name:	CSS		
Course Code	CSC604		
Faculty Name:	Shafaque Syed		
Year	3	Sem	VI

CO Number	Course Outcome
CSC604.1	Understand system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory
CSC604.2	Understand, compare and apply different encryption and decryption techniques to solve problems related to confidentiality and authentication
CSC604.3	Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes
CSC604.4	Apply different digital signature algorithms to achieve authentication and design secure applications
CSC604.5	Understand network security basics, analyze different attacks on networks and evaluate the performance of firewalls and security protocols like SSL, IPSec, and PGP
CSC604.6	Analyze and apply system security concept to recognize malicious code

Course Name:	ML		
Course Code	CSDLO6021		
Faculty Name:	Mayura Gavhane		
Year	3	Sem	VI

CO Number	Course Outcome
CSDLO6021.1	Gain knowledge about basic concepts of Machine Learning.
CSDLO6021.2	Identify basics of optimization techniques and neural Networks
CSDLO6021.3	Solve the problems using various machine learning techniques
CSDLO6021.4	Analyze different Machine Learning Techniques with regression and trees
CSDLO6021.5	Compare the machine learning with classification and clustering .
CSDLO6021.6	Design application using Machine Learning techniques

Course Name:	ERP		
Course Code	CSDLO6023		
Faculty Name:	Shainila Mulla		
Year	3	Sem	VI

CO Number	Course Outcome
CSDLO6023.1	To understand the basic concepts of ERP.
CSDLO6023.2	To identify the challenges associated with implementing enterprise systems and their impacts on organisation
CSDLO6023.3	To apply design principles to various business modules in ERP
CSDLO6023.4	To apply the concepts of BPR, SCM and CRM
CSDLO6023.5	To analyze security issues in ERP
CSDLO6023.6	To be able to develop a project using ERP concepts and techniques for an enterprise

Course Name:	SE Lab		
Course Code	CSL601		
Faculty Name:	Imran Ali Mirza		
Year	3	Sem	VI

CO Number	Course Outcome
CSL601.1	Students will be able to understand the software engineering concepts and prepare the problem statement & proposed solution for the selected case study.
CSL601.2	Students will be able to identify software requirement specification and formulate it for the selected case study.
CSL601.3	Students will be able to apply software engineering process model to the selected case study.
CSL601.4	Students will be able to analyze, design models and evaluate for the selected case study using UML modeling.
CSL601.5	Students will be able to Use various software engineering tools.
CSL601.6	Students will be able to implement and present a case study based on the software engineering concept.

Course Name:	SS Lab		
Course Code	CSL602		
Faculty Name:	Mayura Gavhane		
Year	3	Sem	VI

CO Number	Course Outcome
CSL602.1	Identify and validate different tokens for given high level language code.
CSL602.2	Classify different databases of single pass macro processor.
CSL602.3	Generate machine code by using various databases generated in pass two pass assembler.
CSL602.4	Parse the given input string by constructing Top down /Bottom up parser.
CSL602.5	Implement synthesis phase of compiler with code optimization techniques.
CSL602.6	Construct Top down/Bottom up parser using LEX and YACC tool

Course Name:	DWM Lab		
Course Code	CSL603		
Faculty Name:	Priya Kaul		
Year	3	Sem	VI

CO Number	Course Outcome
CSL603.1	To design Star Schema and Snowflake schemes for a given problem statement.
CSL603.2	To implement OLAP operations like Slice, Dice, Drill down, Rollup, pivot for a given problem statement.
CSL603.3	To distinguish between working of Data mining approaches when applied a given data set and analyze the variations by changing input parameters.
CSL603.4	To compare the working of Data Mining approaches – classification, clustering, and association mining using modern tools like Weka.
CSL603.5	To simulate working of Spatial Clustering algorithms using programming languages.
CSL603.6	To adapt page ranking and HITS algorithm for a given scenario(for a web page).

Course Name:	System Security Lab		
Course Code	CSL604		
Faculty Name:	Shafaque Syed		
Year	3	Sem	VI

CO Number	Course Outcome
CSL604.1	Apply the knowledge of symmetric cryptography to implement simple ciphers.
CSL604.2	Analyze and implement public key algorithms like RSA and El Gamal.
CSL604.3	Analyze and evaluate performance of hashing algorithms.
CSL604.4	Explore the different network reconnaissance tools to gather information about networks and Use tools like sniffers, port scanners and other related tools for analyzing packets in a network.
CSL604.5	Set up firewalls and intrusion detection systems using open source technologies and to explore email security.
CSL604.6	Explore various attacks like buffer-overflow, and web-application attacks.

Course Name:	Mini-Project		
Course Code	CSP605		
Faculty Name:	Mayura Gawane and Shainila Mulla		
Year	3	Sem	VI

CO Number	Course Outcome
CSP605.1	To acquire practical knowledge within the chosen area of technology for project development.
CSP605.2	To identify, analyze the problems within an organization
CSP605.3	To formulate and handle programming projects with a comprehensive and systematic approach
CSP605.4	To contribute as an individual or in a team in development of technical projects
CSP605.5	To explore project management tools
CSP605.6	To develop effective communication skills for presentation of project related activities

BE Comps

Course Name:	HMI		
Course Code	CSC801		
Faculty Name:	Dipti Jadhav		
Year	4	Sem	VIII
CO Number	Course Outcome		
CSC801.1	Ability to know concepts and strategies for making design decisions.		
CSC801.2	Ability to understand the importance of human psychology in designing good interfaces.		
CSC801.3	Apply Interactive Design process in real world applications		
CSC801.4	Analyzing existing interface designs and user experience		
CSC801.5	Ability to Evaluate UI design and justify		
CSC801.6	Ability to do research in Machine Interaction Design and generate redesign ideas.		

Course Name:	DC		
Course Code	CSC802		
Faculty Name:	Dr. Amiya Kumar Tripathy		
Year	4	Sem	VIII
CO Number	Course Outcome		
CSC802.1	Understand the basic elements and concepts related to distributed system Technologies		
CSC802.2	Illustrate the middleware technologies that support distributed applications such as RPC, RMI and Object based middleware		
CSC802.3	Analyze the various techniques used for clock synchronization and mutual exclusion		
CSC802.4	Demonstrate the concepts of Resource and Process management and synchronization algorithms		
CSC802.5	Demonstrate the concepts of Consistency and Replication Management		
CSC802.6	Apply Distributed File System to analyze various file systems towards building large-scale distributed applications		

Course Name:	HPC		
Course Code	CSDLO8011		
Faculty Name:	Kalpita Wagaskar		
Year	4	Sem	VIII
CO Number	Course Outcome		
CSDLO8011.1	To identify the different applications and differentiate between various levels and architectural models of HPC.		
CSDLO8011.2	To associate different performance measure with real time sytem and explain the concepts of paralell algorithm design.		
CSDLO8011.3	To apply and solve performance problems of commub-nication cost and system performance and demonstrate the use of load balancing		
CSDLO8011.4	To compare and contrast the mapping techniques nad interaction overheads and analyze the performance measures and its impact on HPC systems		
CSDLO8011.5	To assess different pipelines and evaluate the performance measures of real time systems		
CSDLO8011.6	To construct a hypothetical pipeline and analyze the performance and develop high end program using HPC concepts		

Course Name:	NLP		
Course Code	CSDLO8012		
Faculty Name:	Phiroj Shaikh		
Year	4	Sem	VIII

CO Number	Course Outcome
CSDLO8012.1	Locate and retrieve the knowledge of natural languages to step ahead for automated processing natural language text.
CSDLO8012.2	Understand & contrast basics of word level analysis concept and techniques.
CSDLO8012.3	Articulate and implement syntax analysis of natural language text with various methodologies.
CSDLO8012.4	Categorize and illustrate semantic analysis of natural language text with various constructs.
CSDLO8012.5	Assess pragmatic analysis with discourse and reference resolution.
CSDLO8012.6	Build real world NLP applications such as machine translation, text categorization, text summarization, information extraction...etc.

Course Name:	PM		
Course Code	ILO8021		
Faculty Name:	Deepali Kayande		
Year	4	Sem	VIII

CO Number	Course Outcome
ILO8021.1	Remember the definitions and concepts related to project management foundation at various stages.
ILO8021.2	Understanding the principles, processes, different tools and techniques of project management.
ILO8021.3	Apply the risk management plan and analyse the role of stakeholders.
ILO8021.4	Analyze the learning and understand techniques for Project planning, scheduling and Execution Control.
ILO8021.5	Test the contract management, Project Procurement, Service level Agreements and productivity.
ILO8021.6	Plan and learn the various administrations and controls that are practiced in Industry.

Course Name:	HMI LAB		
Course Code	CSL801		
Faculty Name:	Dipti Jadhav		
Year	4	Sem	VIII

CO Number	Course Outcome
CSL801.1	Ability to know concepts and strategies for making design decisions.
CSL801.2	Ability to understand the importance of human psychology and abilities in designing good interfaces (Virtual Lab)
CSL801.3	Apply HMI in their day-to-day activities
CSL801.4	Ability to criticize existing interface designs, and improve them
CSL801.5	Ability to Evaluate UI design and generating redesigning ideas
CSL801.6	Design prototype for social and technical task.

Course Name:	DC LAB		
Course Code	CSL802		
Faculty Name:	Dr. Amiya Kumar Tripathy		
Year	4	Sem	VIII

CO Number	Course Outcome
CSL802.1	Demonstrate basic knowledge of the elements and concepts related to distributed system Technologies
CSL802.2	Apply the middleware technologies that support distributed applications such as RPC, RMI and Object based middleware
CSL802.3	Analyze and implemnt techniques used for clock synchronization and mutual exclusion
CSL802.4	Demonstrate the Resource and Process management Process in DS
CSL802.5	Demonstrate the concepts of Consistency and Replication Management
CSL802.6	Design and implement application programs on distributed systems.

Course Name:	CCL		
Course Code	CSL803		
Faculty Name:	Ditty Varghese and Deepali Kayande		
Year	4	Sem	VIII

CO Number	Course Outcome
CSL803.1	Ability to understand the cloud computing architecture styles and the deployment models.
CSL803.2	Ability to use different services provided by AWS like EC2 etc.
CSL803.3	Ability to install and study Openstack and explore the concepts of infrastructure as a service.
CSL803.4	Ability to setup cloud environment using owncloud and assign users groups as per access rights.
CSL803.5	Ability to identify the concepts of hosted and bare metal virtualization to create and run virtual machines.
CSL803.6	Ability to work as part of a team to implement cloud based mini-projects.

Course Name:	Computational Lab-II (HPC) and Computational Lab-II (NLP)		
Course Code	CSL804		
Faculty Name:	Kalpita Wagaskar and Dr. Phiroj Shaikh		
Year	4	Sem	VIII

CO Number	Course Outcome
CSL804.1	To realize the basic techniques to build operational system
CSL804.2	To understand the various programming constructs and tools used
CSL804.3	To understand and use libraries and analyze the program flow
CSL804.4	To apply the tools and constructs on complex probelms
CSL804.5	To Design and analyze a problem statement for solving real life problem
CSL804.6	To implement and evaluate the design with respect to performance measures of the system designed

Course Name:	Major Project-II		
Course Code	CSP805		
Faculty Name:	Shafaque Syed		
Year	4	Sem	VIII

CO Number	Course Outcome
CSP805.1	Students will be able to convert the design into a Product/Model/Prototype and validate the results.
CSP805.2	Students will be able to execute the project plan and monitor progress and maintain deadlines.
CSP805.3	Students will be able to summarize the work in the form of technical documentation following ethical practices.