DON BOSCO INSTITUTE OF TECHONOLGY, KURLA, MUMBAI

Department of IT, CAY- (Even semester, 2020-21)

Course Name:	Engineering Mathematics-IV		
Course Code	ITC401		
Faculty name	Satyanarayana Nagula		
Year	2	**Sem**	IV

CO Number	Course Outcomes
ITC401.1	Students will be able to Obtain Eigen values and Eigen vectors for a given square matrix
ITC401.2	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
ITC401.3	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.
ITC401.4	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
ITC401.5	Students will be able to (i) Evaluate integrals using Cauchy's theorems, (ii) Use Linear and Nonlinear Programming methods to solve optimization problems
ITC401.6	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:	Computer Network and Network Design		
Course Code	ITC402		
Faculty Name:	Nilesh Ghavate		
Year	2	**Sem**	IV

CO Number	Course Outcome
ITC402.1	Describe the functionalities of each layer of the models and compare the Models.
ITC402.2	Categorize the types of transmission media and explain data link layer concepts, design issues and protocols.
ITC402.3	Analyze the routing protocols and assign IP address to networks.
ITC402.4	Explain the data transportation and session management issues and related protocols used for end to end delivery of data.
ITC402.5	List the data presentation techniques and illustrate the client/server model in application layer protocols.
ITC402.6	Use of networking concepts of IP address, Routing, and application services to design a network for an organization

Course Name:	Operating System		
Course Code	ITC403		
Faculty Name:	Tayyabali Sayyad		
Year	2	Sem	IV

CO Number	Course Outcome
ITC403.1	Understand the basic concepts related to Operating System
ITC403.2	Describe the process management policies and illustrate scheduling of processes by CPU
ITC403.3	Explain and apply synchronization primitives and evaluate deadlock conditionsas handled by Operating System
ITC403.4	Describe and analyze the memory allocation and management functions of Operating System.
ITC403.5	Analyze and evaluate the services provided by Operating System for storage management.
ITC403.6	Compare the functions of various special-purpose Operating Systems.

Course Name:	Automata Theory		
Course Code	ITC404		
Faculty name	Uday Nayak		
Year	2	Sem	IV

CO Number	Course Outcome
ITC404.1	Student will be able to compare different types of languages and machines (Theory)
ITC404.2	Student will be able to demonstrate Power and Limitations of theoretical models of Computation. (Theory)
ITC404.3	Student will be able to identify the Unsolvable problem (Theory)
ITC404.4	Student will be able to design different types of machines as per the constraints of language.
ITC404.5	Student will be able to demonstrate the use of pumping lemma and closure properties to prove that some problems cannot be solved by particular machines.
ITC404.6	Students will be able to evaluate given problem statement is decidable or not.

Course Name:	Computer Organisation and Architecture		
Course Code	ITC405		
Faculty Name:	Janhavi Baikerikar		
Year	2	Sem	IV

CO Number	Course Outcome
ITC405.1	Demonstrate the fundamentals of Digital Logic Design
ITC405.2	Describe basic organization of computer, the architecture of 8086 microprocessor and implement assembly language programming for 8086 microprocessor
ITC405.3	Demonstrate control unit operations and conceptualize instruction level parallelism.
ITC405.4	List and Identify integers and real numbers and perform computer arithmetic operations on integers.

ITC405.5	Categorize memory organization and explain the function of each element of a memory hierarchy.
ITC405.6	Examine different methods for computer I/O mechanism.

Course Name:	Network Lab		
Course Code	ITL401		
Faculty Name:	Nilesh Ghavate		
Year	2	**Sem**	IV

CO Number	**Course Outcome**
ITL401.1	Execute and evaluate network administration commands and demonstrate their use in different network scenarios
ITL401.2	Demonstrate the installation and configuration of network simulator.
ITL401.3	Demonstrate and measure different network scenarios and their performance behavior.
ITL401.4	Implement the socket programming for client server architecture.
ITL401.5	Analyze the traffic flow of different protocols
ITL401.6	Design a network for an organization using a network design tool

Course Name:	Unix Lab		
Course Code	ITL402		
Faculty Name:	Tayyabali Sayyad		
Year	2	**Sem**	IV

CO Number	**Course Outcome**
ITL402.1	Understand the architecture and functioning of Unix
ITL402.2	Identify the Unix general purpose commands
ITL402.3	Apply Unix commands for system administrative tasks such as file system management and user management.
ITL402.4	Execute Unix commands for system administrative tasks such as process management and memory management
ITL402.5	Implement basic shell scripts for different applications.
ITL402.6	Implement advanced scripts using awk & perl languages and grep, sed, etc. commandsfor performing various tasks

Course Name:	Microprocessor Lab		
Course Code	ITL403		
Faculty Name:	Janhavi Baikerikar		
Year	2	**Sem**	IV

CO Number	**Course Outcome**
ITL403.1	Demonstrate various components and peripheral of computer system
ITL403.2	Analyze and design combinational circuits
ITL403.3	Build a program on a microprocessor using arithmetic & logical instruction set of 8086.
ITL403.4	Develop the assembly level programming using 8086 loop instruction set

ITL403.5	Write programs based on string and procedure for 8086 microprocessor
ITL403.6	Design interfacing of peripheral devices with 8086 microprocessor.

Course Name:	Python Lab		
Course Code	ITL404		
Faculty Name:	Shiv Negi		
Year	2	**Sem**	IV

CO Number	**Course Outcome**
ITL404.1	Understand the structure, syntax, and semantics of the Python language.
ITL404.2	Interpret advanced data types and functions in python.
ITL404.3	Illustrate the concepts of object-oriented programming as used in Python
ITL404.4	Create Python applications using modules, packages, multithreading and exception handling.
ITL404.5	Gain proficiency in writing File Handling programs ,also create GUI applications and evaluate database operations in python.
ITL404.6	Design and Develop cost-effective robust applications using the latest Python trends and technologies

Course Name:	Mini Project – 1 B for Python based automation projects		
Course Code	ITM401		
Faculty Name:	Shiv Negi		
Year	2	**Sem**	IV

CO Number	**Course Outcome**
ITM401.1	Identify problems based on societal /research needs.
ITM401.2	Apply Knowledge and skill to solve societal problems in a group.
ITM401.3	Demonstrate capabilities of self-learning in a group, which leads to life long learning.
ITM401.4	Excel in written and oral communication.
ITM401.5	Demonstrate project management principles during project work.

Course Name:	Software Engineering with Project Managment		
Course Code	ITC601		
Faculty name	Vaishali K.		
Year	3	Sem	VI

CO Number	Course Outcome
ITC601.1	Students will be able to define various software application domains and remember different process model used in software development.
ITC601.2	Students will be able to classify different types of software requirements and their gathering techniques.
ITC601.3	Students will be able to convert the requirements model into the design model

ITC601.4	Students will be able distinguish among SCM and SQA and classify different testing strategies and tactics and compare them.
ITC601.5	Students will be able to justify role of SDLC in Software Project Development and they can evaluate importance of Software Engineering in PLC.
ITC601.6	Students will be able to generate project schedule and can construct, design and develop network diagram for different type of Projects.

Course Name:	Data Mining & Business Intelligence		
Course Code	ITC602		
Faculty name	Aruna Khubalkar		
Year	3	Sem	VI

CO Number	**Course Outcome**
ITC602.1	Demonstrate an understanding of the importance of data mining and the principles of business intelligence.
ITC602.2	Organize and Prepare the data needed for data mining using preprocessing techniques.
ITC602.3	Perform exploratory analysis of the data to be used for mining.
ITC602.4	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.
ITC602.5	Define and apply metrics to measure the performance of various data mining algorithms.
ITC602.6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support.

Course Name:	Cloud Computing Service		
Course Code	ITC603		
Faculty name	Sunantha K		
Year	3	Sem	VI

CO Number	**Course Outcome**
ITC603.1	Define Cloud Computing and memorize the different Cloud service and deployment models
ITC603.2	Describe importance of virtualization along with their technologies.
ITC603.3	Use and Examine different cloud computing services
ITC603.4	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
ITC603.5	Describe the key components of Amazon web Service
ITC603.6	Design & develop backup strategies for cloud data based on features

Course Name:	Wireless Network
Course Code	ITC604
Faculty name	Tayyabli Sayyad

Year	3	Sem	VI

CO Number	Course Outcome
ITC604.1	Explain the basic concepts of wireless network and wireless generations
ITC604.2	Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc
ITC604.3	Appraise the importance of Ad-hoc networks such as MANET and VANET and Wireless Sensor network
ITC604.4	Describe and judge the emerging wireless technologies standards such as WLL,WLAN, WPAN, WMAN
ITC604.5	Explain the design considerations for deploying the wireless network infrastructure.
ITC604.6	Differentiate and support the security measures, standards. Services and layer wise security considerations.

Course Name:	Digital Forensiics		
Course Code	ITDLO-II-6023		
Faculty name	Janhavi Baikerikar		
Year	3	Sem	VI

CO Number	Course Outcome
ITDLO-11-6025.1	Define the concept of ethical hacking and its associated applications in Information Communication Technology (ICT) world.
ITDLO-11-6025.2	Underline the need of digital forensic and role of digital evidences
ITDLO-11-6025.3	Explain the methodology of incident response and various security issues in ICT world, and identify digital forensic tools for data collection
ITDLO-11-6025.4	Recognize the importance of digital forensic duplication and various tools for analysis to achieve adequate perspectives of digital forensic investigation in various applications /devices like Windows/Unix system.
ITDLO-11-6025.5	Apply the knowledge of IDS to secure network and performing router and network analysis
ITDLO-11-6025.6	List the method to generate legal evidence and supporting investigation reports and will also be able to use various digital forensic tools

Course Name:	Software Design Lab		
Course Code	ITL601		
Faculty name	Vaishali K.		
Year	3	Sem	VI

CO Number	Course Outcome
ITL601.1	Students will be able to sketch a Modeling with UML.
ITL601.2	Students will be able to deploy Structural Modeling.
ITL601.3	Students will be able to deploy Behavioral modeling.
ITL601.4	Students will be able to deploy Architectural modeling.
ITL601.5	Students will be able to do estimation about schedule and cost for project development.
ITL601.6	Students will be able to select project development tool.

Course Name:	Business Intelligence Lab		
Course Code	ITL602		
Faculty name	Aruna Khubalkar		
Year	3	Sem	VI

CO Number	Course Outcome
ITL602.1	Identify sources of Data for mining and perform data exploration
ITL602.2	Organize and prepare the data needed for data mining algorithms in terms of attributes and class inputs, training, validating, and testing files.
ITL602.3	Implement the appropriate data mining methods like classification, clustering or association mining on large data sets using open source tools like WEKA
ITL602.4	Implement various data mining algorithms from scratch using languages like Python/ Java etc.
ITL602.5	Evaluate and compare performance of some available BI packages
ITL602.6	Apply BI to solve practical problems : Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret and visualize the results and provide decision support.

Course Name:	Cloud Service Design Lab		
Course Code	ITL603		
Faculty name	Sunantha K		
Year	3	Sem	VI

CO Number	Course Outcome
ITL603.1	Define & implement Virtualization using different types of Hypervisors
ITL603.2	Describe steps to perform on demand Application delivery using Ulteo.
ITL603.3	Examine the installation and configuration of Open stack cloud
ITL603.4	Analyze and understand the functioning of different components involved in Amazon web services cloud platform.
ITL603.5	Describe the functioning of Platform as a Service

Course Name:	Sensor Network Lab		
Course Code	ITCL604		
Faculty name	Tayyabli Sayyad		
Year	3	Sem	VI

CO Number	Course Outcome
ITL604.1	Identify the requirements for the real world problems
ITL604.2	Conduct a survey of several available literatures in the preferred field of study.

ITL604.3	Study and enhance software/ hardware skills.
ITL604.4	Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing
ITL604.5	To report and present the findings of the study conducted in the preferred domain
ITL604.6	Demonstrate an ability to work in teams and manage the conduct of the research study.

Course Name:	Mini Project		
Course Code	ITM605		
Faculty name	Prasad Padalkar		
Year	3	Sem	VI

CO Number	**Course Outcome**
ITM605.1	IDENTIFY potential research areas in the field of IT
ITM605.2	DISCUSS available literature in the preferred field of study
ITM605.3	CHOOSE appropriate method of solutions for research challenge
ITM605.4	ANALYZE the feasibility of solutions
ITM605.5	FORMULATE and propose a plan for creating a solution for the research plan identified
ITM605.6	Report and DEFEND the findings of the study conducted in the preferred domain

Course Name:	Big Data Analytics		
Course Code	ITC801		
Faculty name	Uday Nayak		
Year	4	Sem	VIII

CO Number	**Course Outcome**
ITC801.1	Explain the motivation for big data systems and identify the main sources of Big Data in the real world.
ITC801.2	Demonstrate an ability to use frameworks like Hadoop, NoSQL to efficiently store retrieve and process Big Data for Analytics.
ITC801.3	Implement several Data Intensive tasks using the Map Reduce Paradigm.
ITC801.4	Apply several newer algorithms for Clustering Classifying and finding associations in Big Data.
ITC801.5	Design algorithms to analyze Big data like streams, Web Graphs and Social Media data.
ITC801.6	Design and implement successful Recommendation engines for enterprises.

Course Name:	Internet of Everything		
Course Code	ITC802		
Faculty name	Prasad Padalkar		
Year	4	Sem	VIII

CO Number	**Course Outcome**
ITC802.1	RECALL the concepts of IOT.
ITC802.2	IDENTIFY the different technology.

ITC802.3	APPLY IOT to different applications.
ITC802.4	ANALYZE and evaluate protocols used in IOT.
ITC802.5	DESIGN applications in IOT.
ITC802.6	EVALUATE the data received through sensors in IOT.

Course Name:	User Interaction Design		
Course Code	ITDLO8041		
Faculty name	Nilesh Ghavate		
Year	4	Sem	VIII

CO Number	Course Outcome
ITDLO8041.1	Students will be able to identify and criticize bad features of interface designs.
ITDLO8041.2	Students will be able to predict good features of interface designs.
ITDLO8041.3	Students will be able to illustrate and analyze user needs and formulate user design specifications.
ITDLO8041.4	Students will be able to interpret and evaluate the data collected during the process.
ITDLO8041.5	Students will be able to evaluate designs based on theoretical frameworks and methodological approaches.
ITDLO8041.6	Students will be able to produce/show better techniques to improve the user interaction design Interfaces.

Course Name:	Big Data Lab		
Course Code	ITL801		
Faculty name	Uday Nayak		
Year	4	Sem	VIII

CO Number	Course Outcome
ITC801.1	Demonstrate capability to use Big Data Frameworks like Hadoop
ITC801.2	Program applications using tools like Hive, pig, , NO SQL and MongoDB for Big data Applications
ITC801.3	Construct scalable algorithms for large Datasets using Map Reduce techniques
ITC801.4	Implement algorithms for Clustering, Classifying and finding associations in Big Data
ITC801.5	Design and implement algorithms to analyze Big data like streams, Web Graphs and Social Media data and construct recommendation systems.
ITC801.6	Apply the knowledge of Big Data gained to fully develop a BDA applications for real life applications.

Course Name:	Internet of Everything Lab		
Course Code	ITL802		
Faculty name	Prasad Padalkar		
Year	4	Sem	VIII

CO Number	Course Outcome
ITL802.1	IDENTIFY the requirements for the real world problems.

ITL802.2	EXPLAIN software/ hardware used.
ITL802.3	INTERPRET available literatures in the preferred field of study.
ITL802.4	MODEL and build the project successfully by hardware/sensor requirements, coding, emulating and testing.
ITL802.5	PREPARE report and present the findings of the study conducted in the preferred domain
ITL802.6	DEFEND the project design and implementation

Course Name:	DevOps Lab		
Course Code	ITL803		
Faculty name	Nilesh Ghavate		
Year	4	Sem	VIII

CO Number	**Course Outcome**
ITL803.1	Remember the importance of DevOps tools used in software development life cycle
ITL803.2	Understand the importance of Jenkins to Build, Deploy and Test Software Applications
ITL803.3	Examine the different Version Control strategies
ITL803.4	Analyze & Illustrate the Containerization of OS images and deployment of applications over Docker
ITL803.5	Summarize the importance of Software Configuration Management in DevOp
ITL803.6	Synthesize the provisioning using Chef/Puppet/Ansible or Saltstack.

Course Name:	R Programming Lab		
Course Code	ITL804		
Faculty name	Shiv Negi		
Year	4	Sem	VIII

CO Number	**Course Outcome**
ITL804.1	Install and use R for simple programming tasks.
ITL804.2	Extend the functionality of R by using add-on packages
ITL804.3	Extract data from files and other sources and perform various data manipulation tasks on them.
ITL804.4	Code statistical functions in R.
ITL804.5	Use R Graphics and Tables to visualize results of various statistical operations on data .
ITL804.6	Apply the knowledge of R gained to data Analytics for real life applications.

Course Name:	Project-II			
Course Code	ITM805			
Faculty name	Sunantha K.			
Year	4	Sem	VIII	

CO Number	Course Outcome
ITM805.1	Discover Potential Research Areas in the field of IT
ITM805.2	Conduct survey of several available literature in the preferred field of study
ITM805.3	Compare & contrast the several Existing solutions for research challenge
ITM805.4	Demonstrate an ability to work in team and manage the conduct of the research study
ITM805.5	To formulate and propose a plan for creating a solution of the research plan identified
ITM805.6	To report and present the findings of the study conducted in the preferred domain