	COURSE OUTCOMES
	Department of IT, CAY- (Even semester, 2021-22)

Course Name:	Engineering Mathematics-IV			
Course Code	ITC401			
Faculty name	Pallavi			
Year	2	Sem	IV	

CO Number	Course Outcomes
ITC401.1	Apply the concepts of eigen values and eigen vectors to solve engineering problems
ITC401.3	Apply the concept of Z- transformation and its inverse in engineering problems
ITC401.2	Illustrate the use of concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
ITC401.4	Apply the concept of probability distribution to engineering problems & testing hypothesis of small samples using sampling theory.
ITC401.5	Apply the concept of Linear Programming to solve the optimization problems
ITC401.6	Use the Non-Linear Programming techniques to solve the optimization problems

Course Name:	Computer Network and Network Design			
Course Code	ITC402			
Faculty Name:	Nilesh G			
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:	Ms. Aruna Khubalkar			
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 conditions as 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	Prasad Padalkar		
Year	2	Sem	IV

CO Number	Course Outcome
ITC404.1	Students will be able to list and define various machines , grammars and language
ITC404.2	Students will be able to explain the working of various machines , grammars and language
ITC404.3	Students will be apply concept of acceptor and rejector to various machines.
ITC404.4	Students will be able to analyze various machines, grammar and languages suitability to solve problem.
ITC404.5	Students will able to be select various machines, grammar and languages suitability to solve problem.
ITC404.6	Students will be able to analyze various machines, grammar and languages suitability to solve problem.

Course Name:	Computer Organization and Architecture		
Course Code	ITC405		
Faculty Name:	Janhavi B		
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 microprocessors.
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:	Networking lab
Course Code	ITL401

Faculty Name:	Nilesh		
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		
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. commands for performing various tasks.

Course Name:	Microprocessor Lab		
Course Code	ITL403		
Faculty Name:	Janhavi B.		
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 instructions 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	Develop interpersonal skills to work as member of a group or leader.
ITM401.4	Analyse the impact of solutions in societal and environmental context for sustainable development.
ITM401.5	Use standard norms of engineering practices including written and oral technical communication.
ITM401.6	Demonstrate project management principles during project work

Course Name:	Data Mining and Business Intelligence		
Course Code	ITC601		
Faculty name	Aruna Khubalkar		
Year	3	**Sem**	VI

CO Number	Course Outcome
ITC601.1	Demonstrate an understanding of the importance of data warehousing and data mining and the principles of business intelligence
ITC601.2	Organize and Prepare the data needed for data mining using preprocessing techniques
ITC601.3	Perform exploratory analysis of the data to be used for mining.

ITC601.4	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.
ITC601.5	Define and apply metrics to measure the performance of various data mining algorithms.
ITC601.6	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:	Web X.0		
Course Code	ITC602		
Faculty name	Vaishali K.		
Year	3	Sem	VI
CO Number	Course Outcome		
ITC602.1	Understand the basic concepts related to web analytics and semantic web.		
ITC602.2	Understand how TypeScript can help you eliminate bugs in your code and enable you to scale your code.		
ITC602.3	Understand AngularJS framework and build dynamic, responsive single-page web applications.		
ITC602.4	Apply MongoDB for frontend and backend connectivity using REST API.		
ITC602.5	Apply Flask web development framework to build web applications with less code.		
ITC602.6	Develop Rich Internet Application using proper choice of Framework.		

Course Name:	Wireless Technology		
Course Code	ITC603		
Faculty name	Tayyabali Sayyad		
Year	3	Sem	VI
CO Number	Course Outcome		
ITC603.1	Describe the basic concepts of Wireless Network and Wireless Generations		
ITC603.2	Demonstrate and Evaluate the various Wide Area Wireless Technologies		
ITC603.3	Analyze the prevalent IEEE standards used for implementation of WLAN and WMAN Technologies		
ITC603.4	Appraise the importance of WPAN, WSN and Ad-hoc Networks		
ITC603.5	Analyze various Wireless Network Security Standards		
ITC603.6	Review the design considerations for deploying the Wireless Network Infrastructure		

Course Name:	AI and DS – 1		
Course Code	ITC604		
Faculty name	Sunantha K.		
Year	3	Sem	VI
CO Number	Course Outcome		

ITC604.1	Develop a basic understanding of the building blocks of AI as presented in terms of intelligent agents.
ITC604.2	Apply an appropriate problem-solving method and knowledge-representation scheme
ITC604.3	Develop an ability to analyse and formalize the problem (as a state space, graph, etc). They will be able to evaluate and select the appropriate search method.
ITC604.4	Apply problem solving concepts with data science and will be able to tackle them from a statistical perspective.
ITC604.5	Choose and apply appropriately from a wider range of exploratory and inferential methods for analysing data and will be able to evaluate and interpret the results contextually
ITC604.6	Understand and apply types of machine learning methods for real world problems.

Course Name:	Digital Forensics		
Course Code	ITDLO-II-6023		
Faculty name	Janhavi Baikerikar		
Year	3	Sem	VI
CO Number	**Course Outcome**		
ITDLO-11-6023.1	Define the concept of ethical hacking and its associated applications in Information Communication Technology (ICT) world.
ITDLO-11-6023.2	Underline the need of digital forensic and role of digital evidences
ITDLO-11-6023.3	Explain the methodology of incident response and various security issues in ICT world, and identify digital forensic tools for data collection
ITDLO-11-6023.4	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-11-6023.5	Apply the knowledge of IDS to secure network and performing router and network analysis
ITDLO-11-6023.6	List the method to generate legal evidence and supporting investigation reports and will also be able to use various digital forensic tools

Course Name:	Business Intelligence Lab		
Course Code	ITL601		
Faculty name	Aruna Khubalkar		
Year	3	Sem	VI
CO Number	**Course Outcome**		
ITL601.1	Identify sources of Data for mining and perform data exploration
ITL601.2	Organize and prepare the data needed for data mining algorithms in terms of attributes and class inputs, training, validating, and testing files.
ITL601.3	Implement the appropriate data mining methods like classification, clustering or association mining on large data sets using open source tools like WEKA
ITL601.4	Implement various data mining algorithms from scratch using languages like Python/ Java etc.

ITL601.5	Evaluate and compare performance of some available BI packages
ITL601.6	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:	Web Lab		
Course Code	ITL602		
Faculty name	Vaishali K.		
Year	3	Sem	VI
CO Number	Course Outcome		
ITL602.1	Understand open source tools for web analytics and semantic web apps development & deployment.		
ITL602.2	Understand the basic concepts of TypeScript for designing web applications.		
ITL602.3	Implement Single Page Applications using AngularJS Framework.		
ITL602.4	Develop Rich Internet Applications using AJAX.		
ITL602.5	Create REST Web services using MongoDB.		
ITL602.6	Design web applications using Flask.		

Course Name:	Sensor Lab		
Course Code	ITL603		
Faculty name	Vaishali K.		
Year	3	Sem	VI
CO Number	Course Outcome		
ITL603.1	Differentiate between various wireless communication technologies based on the range of communication, cost, propagation delay, power and throughput.		
ITL603.2	Conduct a literature survey of sensors used in real world wireless applications.		
ITL603.3	Demonstrate the simulation of WSN using the Network Simulators (Contiki/Tinker CAD/ Cup carbon etc)		
ITL603.4	Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing		
ITL603.5	Report and present the findings of the study conducted in the preferred domain		
ITL603.6	Demonstrate the ability to work in teams and manage the conduct of the research study.		

Course Name:	MAD & PWA Lab		
Course Code	ITL604		
Faculty name	Nilesh G.		
Year	3	Sem	VI
CO Number	Course Outcome		
ITL604.1	Understand cross platform mobile application development using Flutter framework		
ITL604.2	Design and Develop interactive Flutter App by using widgets, layouts, gestures and animation		

ITL604.3	Analyze and Build production ready Flutter App by incorporating backend services and deploying on Android / iOS
ITL604.4	Understand various PWA frameworks and their requirements
ITL604.5	Design and Develop a responsive User Interface by applying PWA Design techniques
ITL604.6	Develop and Analyse PWA Features and deploy it over app hosting solutions

Course Name:	DS using Python Skill based Lab		
Course Code	ITL605		
Faculty name	Sunantha K.		
Year	3	Sem	VI
CO Number	**Course Outcome**		
ITL604.1	Understand the concept of Data science process and associated terminologies to solve real-world problems.
ITL604.2	Analyze the data using different statistical techniques and visualize the outcome using different types of plots
ITL604.3	Analyze and apply the supervised machine learning techniques like Classification, Regression or Support Vector Machine on data for building the models of data and solve the problems.
ITL604.4	Apply the different unsupervised machine learning algorithms like Clustering, Decision Trees, Random Forests or Association to solve the problems
ITL604.5	Design and Build an application that performs exploratory data analysis using Apache Spark.
ITL604.6	Design and develop a data science application that can have data acquisition, processing, visualization and statistical analysis methods with supported machine learning technique to solve the real-world problem

Course Name:	Mini Project – 2 B Based on ML		
Course Code	ITM601		
Faculty name	Sunantha K.		
Year	3	Sem	VI
CO Number	**Course Outcome**		
ITM605.1	Identify problems based on societal /research needs.
ITM605.2	Apply Knowledge and skill to solve societal problems in a group.
ITM605.3	Develop interpersonal skills to work as member of a group or leader.
ITM605.4	Draw the proper inferences from available results through theoretical/ experimental/simulations
ITM605.5	Analyse the impact of solutions in societal and environmental context for sustainable development
ITM605.6	Use standard norms of engineering practices
ITM605.7	Excel in written and oral communication.
ITM605.8	Demonstrate capabilities of self-learning in a group, which leads to life long learning
ITM605.9	Demonstrate project management principles during project work.

Course Name:	Big Data Analytics		
Course Code	ITC801		
Faculty name	Sunantha K.		
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	Students will apply the concepts of the Internet of Things		
ITC802.2	Identify the different technologies used in Internet of Things.		
ITC802.3	Apply IoT to different applications in various domains		
ITC802.4	Analyze and evaluate protocols used in IoT.		
ITC802.5	Design and develop smart city-based applications using IoT.		
ITC802.6	Analyze and evaluate the data received through sensors in IoT.		

Course Name:	User Interaction Design		
Course Code	ITDLO8041		
Faculty name	Nilesh G.		
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	Aruna Khubalkar		
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 Applicaions		
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		
ITC801.6	Apply the knowledge of Big Data gained to fully develop a BDA applications for real life		

Course Name:	Internet of Everything Lab		
Course Code	ITL802		
Faculty name	Anagha Shastri		
Year	4	Sem	VIII
CO Number	**Course Outcome**		
ITL802.1	Identify the requirements for the real world problems.		
ITL802.2	Conduct a survey of several available literatures in the preferred field of study.		
ITL802.3	Study and enhance software/ hardware skills related to IoT and Cloud technologies		
ITL802.4	Demonstrate and build the project successfully by hardware/sensor requirements, coding,emulating and testing.		
ITL802.5	To report and present the findings of the study conducted in the preferred domain		
ITL802.6	Demonstrate an ability to work in teams and manage the conduct of the research study.		

Course Name:	DevOps Lab		
Course Code	ITL803		
Faculty name	Tayyabali Sayyad		
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,which is used to build & test software Applications & Continuous integration in Devops Environment		
ITL803.3	Examine the different version control strategy		

ITL803.4	Analyze & illustrate the Containerization of OS images and deployment of applications over Dockers
ITL803.5	Summarize the importance of Software configuration Management in DevOps
ITL803.6	Synthesize the provisioning using Chef /Puppet / Ansible or Saltstack

Course Name:	R Programming Lab		
Course Code	ITL804		
Faculty name	Prasad Padalkar		
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	To formulate and propose a plan for creating a solution of the research plan identified		
ITM805.4	Compare & contrast the several Existing solutions for research challenge		
ITM805.5	To report and present the findings of the study conducted in the preferred domain		
ITM805.6	Demonstrate an ability to work in team and manage the conduct of the research study		