Department of IT, CAY- (Even semester, 2019-20)

Course Name:	Appled Mathematics – IV		
Course Code	Revathy		
Faculty name	ITC401		
Year	2	**Sem**	IV

CO Number	Course Outcome
ITC401.1	Students will be able to Define prime numbers, composite numbersIdentify discrete and continuous random variablesFactorize a given positive integer as a product of numbers Identify population, sample (small and large)Define Karl Pearson's correlation coefficient and Spearman's rank correlation coefficient
ITC401.2	Students will be able to Identify primes in any given range of integers Factorize given numbers into prime factors Find the GCD of numbers using the Euclidean algorithm Obtain Euler's totient function for any positive integer Obtain the regression coefficients and the correlation coefficient Obtain pdf and cdf, mean and variance and mgf of discrete and continuous random variables
ITC401.3	Students will be able to Use (extended) Euclidean algorithm to obtain inverses congruence modulo m MGF and hence obtain the mean and variance (up to first 4 moments) of a random variable Obtain probabilities using correct interpretation of Binomial distribution, Poisson and normal approximations to binomial distribution and also Binomial approximation to normal distribution
ITC401.4	Students will be able to Identify quadratic residues, Legendre and Jacobi symbols Apply Central Limit Theorem to obtain probabilities Verify if a graph is Eulerian or Hamiltonian Check if a given set is a group, ring, integral domain or a field
ITC401.5	Students will be able to Obtain right and left cosets of subgroups of a group Obtain probabilities and z-values for normal distributions identify regression lines and regression coefficients
ITC401.6	Students will be able to Check if a given poset is a lattice and whether it is distributive and complemented Check if a given structure is a Boolean Algebra perform tests of significance of large and small samples and chi-square tests

Course Name:	Computer Networks		
Course Code	ITC402		
Faculty Name:	Nilesh Ghavate		
Year	2	**Sem**	IV

CO Number	Course Outcome
ITC402.1	Describe the functions of each layer in OSI and TCP/IP model.
ITC402.2	Explain the functions of Application layer and Presentation layer paradigms and Protocols.
ITC402.3	Describe the Session layer design issues and Transport layer services.
ITC402.4	Classify the routing protocols and analyze how to assign the IP addresses for the given network.
ITC402.5	Describe the functions of data link layer and explain the protocols.
ITC402.6	Explain the types of transmission media with real-time applications.

Course Name:	Operating system		
Course Code	ITC403		
Faculty Name:	Vaishali K		
Year	2	Sem	IV

CO Number	Course Outcome
ITC403.1	To understand the main components of an OS & their functions.
ITC403.2	To study the process management and scheduling.
ITC403.3	To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.
ITC403.4	To understand the concepts and implementation Memory management policies and virtual memory.
ITC403.5	To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS
ITC403.6	To study the need for special purpose operating system with the advent of new emerging technology

Course Name:	Computer organaization & Architecture		
Course Code	ITC404		
Faculty name	Janhavi Baikerikar		
Year	2	Sem	IV

CO Number	Course Outcome
ITC404.1	Describe basic organization of computer and the architecture of 8086 microprocessor.
ITC404.2	Implement assembly language program for given task for 8086 microprocessor.
ITC404.3	Demonstrate control unit operations and conceptualize instruction level parallelism.
ITC404.4	Demonstrate and perform computer arithmetic operations on integer and real numbers.
ITC404.5	Categorize memory organization and explain the function of each element of a memory Hierarchy.
ITC404.6	Identify and compare different methods for computer I/O mechanisms.

Course Name:	Automata Theory		
Course Code	ITC405		
Faculty Name:	Uday Nayak		
Year	2	Sem	IV

CO Number	Course Outcome
ITC405.1	Understand, design, construct, analyze and interpret Regular languages, Expression and Grammars
ITC405.2	Design different types of Finite Automata and Machines as Acceptor, Verifier and Translator
ITC405.3	Understand, design, analyze and interpret Context Free languages, Expression and Grammars
ITC405.4	Design different types of Push down Automata as Simple Parser.
ITC405.5	Design different types of Turing Machines as Acceptor, Verifier, Translator and Basic Computing Machine

ITC405.6	Compare, understand and analyze different languages, grammars, Automata and Machines and appreciate their power and convert Automata to Programs and Functions

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	Analyze the contents the packet contents of different protocols.
ITL401.5	Implement the socket programming for client server architecture.
ITL401.6	Design and setup a organization network using packet tracer.

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

CO Number	Course Outcome
ITL402.1	To understand the main components of an OS & their functions.
ITL402.2	To study the process management and scheduling.
ITL402.3	To understand various issues in Inter Process Communication (IPC) and the role of OS in IPC.
ITL402.4	To understand the concepts and implementation Memory management policies and virtual memory.
ITL402.5	To understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS
ITL402.6	To study the need for special purpose operating system with the advent of new emerging technology

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

CO Number	Course Outcome
ITL403.1	Describe basic organization of computer and the architecture of 8086 microprocessor.
ITL403.2	Implement assembly language program for given task for 8086 microprocessor.

ITL403.3	Demonstrate control unit operations and conceptualize instruction level parallelism.
ITL403.4	Demonstrate and perform computer arithmetic operations on integer and real numbers.
ITL403.5	Categorize memory organization and explain the function of each element of a memory Hierarchy.
ITL403.6	Identify and compare different methods for computer I/O mechanisms.

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

CO Number	**Course Outcome**
ITL404.1	Able to describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
ITL404.2	Express and apply different Decision Making statements, looping statements and concpt of user defined method.s
ITL404.3	Interpret and implement Object oriented programming in Python
ITL404.4	Implement different File handling operations
ITL404.5	Able to design GUI for the given Applications , setup and evaluat database connection to perform database operations
ITL404.6	Design and develop Client Server network applications using Python

Course Name:	Software Engineering with Project Managment		
Course Code	ITC601		
Faculty name	Vijaya Bharathi		
Year	3	Sem	VI

CO Number	Course Outcome
ITC601.1	Define various software application domains and remember different process model used in software development.
ITC601.2	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
ITC601.3	Convert the requirements model into the design model and demonstrate use of software and user-interface design principles.
ITC601.4	Distinguish among SCM and SQA and can classify different testing strategies and tactics and compare them.
ITC601.5	Justify role of SDLC in Software Project Development and they can evaluate importance of Software Engineering in PLC.
ITC601.6	Generate project schedule and can construct, design and develop network diagram for different type of Projects. They can also organize different activities of project as per Risk impact factor.

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 & memorize the different cloud service & deployment models
ITC603.2	Describe the importance of virtualization along with their technologies
ITC603.3	Use and Examine different cloud computing service
ITC603.4	Analyze the component of open stack & Google Cloud platform & understand Mobile Cloud Computing
ITC603.5	Describe the key component of Amazon Web Service
ITC603.6	Design & Develop back up strategies for cloud data based on feature

Course Name:	Wireless Network		
Course Code	ITC604		
Faculty name	Tayyabli		
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 networks
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 B.		
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	Vijaya Bharathi		
Year	3	Sem	VI

CO Number	Course Outcome
ITL601.1	Model the System with UML.
ITL601.2	Deploy Structural Modeling.
ITL601.3	Deploy Behavioral Modeling.
ITL601.4	Deploy Architectural Modeling.
ITL601.5	Examine estimation about schedule and cost for project development.
ITL601.6	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	Students will be able to understand and implemnt virtualization using different Types of Hypervisors
ITL603.2	Students will be able to demonstrate on demand application delivery over the the web
ITL603.3	studenst will be able to install and configure open source cloud enviornment
ITL603.4	Students will be able to analyze and understand the fucntioning of different components involved in Amazon Web
ITL603.5	Studnets will be able to demonstarte platform as service using Google App Engine
ITL603.6	Studnets will be able to design & synthezise storage as a service using own cloud

Course Name:	Sensor Network Lab		
Course Code	ITCL604		
Faculty name	Prasad Padalkar / Nilesh G / Anagha S		
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	Ms.Vijayabharathi Jagan		
Year	3	Sem	VI

CO Number	Course Outcome
ITM605.1	Discover potential research areas in the field of IT
ITM605.2	Conduct a survey of several available literature in the preferred field of study
ITM605.3	Compare and contrast the several existing solutions for research challenge
ITM605.4	Demonstrate an ability to work in teams and manage the conduct of the research study.
ITM605.5	Formulate and propose a plan for creating a solution for the research plan identified
ITM605.6	To report and present 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	Tayyabali		
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 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:	Information Retrieval Systems		
Course Code	ITDLO8042		
Faculty name	Aruna Khubalkar		
Year	4	Sem	VIII

CO Number	Course Outcome
ITDLO8042.1	Students will define and describe the objectives the basic concepts of Information retrieval system.
ITDLO8042.2	Students will evaluate the taxonomy of different information retrieval models.
ITDLO8042.3	Students will solve and process text and multimedia retrieval queries and their operations
ITDLO8042.4	Students will distinguish & evaluate text processing techniques and operations in information retrieval system.
ITDLO8042.5	Students will demonstrate and evaluate various indexing and searching techniques.
ITDLO8042.6	Student will design the user interface for an information retrieval system.

Course Name:	Enterprise Resource Planning		
Course Code	ITDLO8045		
Faculty name	Anagha Shastri		
Year	4	Sem	VIII

CO Number	Course Outcome
ITDLO8045.1	Visualize the basic structure and explain the basic concepts of ERP.
ITDLO8045.2	Describe different technologies used in ERP.
ITDLO8045.3	Explain and apply the concepts of ERP Manufacturing perspective and ERP modules.
ITDLO8045.4	Discuss the benefits of ERP
ITDLO8045.5	Compare features of various ERP softwares and simulate ERP life cycle using modern tools.
ITDLO8045.6	Develop e-business design for web portals and describe payment methods, e- procurement and e-governance.

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 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	Tayyabali		
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	Sunantha/Vijaya		
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