	COURSE OUTCOMES
Department of IT , CAY- (Odd semester, 2024-25)	

Course Name:	Engineering Mathematics-III		
Course Code	ITC301		
Faculty	Satyanarayana		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITC301.1	Define Laplace and Inverse Laplace Transforms, Fourier series, even and odd functions, Analytic functions, Harmonic functions, orthogonal trajectories and Karl Pearson's Correlation Coefficient.
ITC301.2	Find Laplace and Inverse Laplace Transforms of standard functions; Classify whether the function is even or odd, explain analytic and orthogonal trajectories, find Karl Pearson's Correlation Coefficient and Spearman's Rank Correlation Coefficient,
ITC301.3	Use standard results to find the Laplace Transforms, Inverse Laplace Transforms of combinations of standard functions; Use a standard integral formulae to obtain Fourier series ; Use Cauchy – Riemann equations to verify analyticity; Check if the function is harmonic; Use Bayes' theorem to find conditional probabilities; find the regression lines using correlation coefficient and by method of least squares; calculate unknown constants, expectation and variance and moment generating function of a given random
ITC301.4	Analyze use of combination of properties to find the Laplace Transforms; partial fractions, derivatives and convolution theorem to find Inverse Laplace Transforms; Examine whether the function is even or odd and accordingly find Fourier Series and Half Range Series; Examine if a given function can be a real/imaginary part of an analytic function and construct the corresponding analytic function. Obtain harmonic conjugate and orthogonal trajectories; Identify respective regression lines and coefficients; Obtain moments using the moment generating function
ITC301.5	Evaluate integrals by comparing with Laplace transforms; determine an analytic function given a linear combination of its real and imaginary parts; Deduce using Fourier series; Decide whether line of regression is y on x or x on y and also if given lines represent regression lines or not.
ITC301.6	Develop linear regression equations for a given data and forecast values.

Course Name:	Data Structures & Analysis		
Course Code	ITC302		
Faculty	Nilesh Ghavate		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITC 302.1	Classify and Apply the concepts of stacks, queues and linked list in real life problem solving.

ITC 302.2	Classify, apply and analyze the concepts trees in real life problem solving.
ITC 302.3	Illustrate and justify the concepts of graphs in real life problem solving.
ITC 302.4	List and examine the concepts of sorting, searching techniques in real life problem solving.
ITC 302.5	Use and identify the concepts of recursion, hashing in real life problem solving.
ITC 302.6	Examine and justify different methods of stacks, queues, linked list, trees and graphs to various applications.

Course Name:	Database Managment System		
Course Code	ITC303		
Faculty	Shiv Negi		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITC303.1	Identify the need of Database Management System.
ITC303.2	Design conceptual model for real life applications.
ITC303.3	Create Relational Model for real life applications
ITC303.4	Formulate query using SQL commands.
ITC303.5	Apply the concept of normalization to relational database design.
ITC303.6	Demonstrate the concept of transaction, concurrency and recovery

Course Name:	Principle of Communication		
Course Code	ITC304		
Faculty	Janhavi Baikerikar		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITC304.1	Define the terms used in the Analog and Digital Communication
ITC304.2	Explain the different modulation techniques, Propagation of wave and Noise
ITC304.3	Solve numericals for noise calculation, Fourier transforms
ITC304.4	Compare and Contrast various modulation techniques used in Analog and Digital Communication
ITC304.5	Evaluate the interaction of various modulation parameter on communication
ITC304.6	Compile various modulation technique based on the power consumption

Course Name:	Paradigms and Computer Programming Fundamentals		
Course Code	ITC305		
Faculty	Udaychandra Nayak		
Year	2	**Sem**	III

CO Number	**Course Outcome**

ITC305.1	Remember different programming paradigms.
ITC305.2	Explain the object oriented constructs and use them in program design.
ITC305.3	Apply scripting languages for different application domains.
ITC305.4	Analyze the role of concurrency in parallel and distributed programming.
ITC305.5	Evaluate declarative programming paradigms through functional and logic programming.
ITC305.6	Create software and/or programs based on declarative, OOP, multi-threading, and scripting paradigms.

Course Name:	Data Structure Lab		
Course Code	ITL301		
Faculty	Nilesh Ghavate		
Year	2	**Sem**	III

CO Number	Course Outcome
ITL301.1	Understand and use the basic concepts and principles of various linked lists, stacks and queues.
ITL301.2	Understand the concepts and apply the methods in basic trees.
ITL301.3	Use and identify the methods in advanced trees.
ITL301.4	Understand the concepts and apply the methods in graphs.
ITL301.5	Understand the concepts and apply the techniques of searching, hashing and sorting
ITL301.6	Illustrate and examine the methods of linked lists, stacks, queues, trees and graphs to various real time proble

Course Name:	SQL Lab		
Course Code	ITL302		
Faculty	Shiv Negi		
Year	2	**Sem**	III

CO Number	Course Outcome
ITL302.1	Define problem statement and Construct the conceptual model for real life application.
ITL302.2	Create and populate a RDBMS using SQL.
ITL302.3	Formulate and write SQL queries for efficient information retrieval
ITL302.4	Apply view, triggers and procedures to demonstrate specific event handling.
ITL302.5	Demonstrate database connectivity using JDBC.
ITL302.6	Demonstrate the concept of concurrent transactions.

Course Name:	Computer programming Paradigms Lab		
Course Code	ITL303		
Faculty	Udaychandra Nayak		
Year	2	**Sem**	III

CO Number	Course Outcome

ITL303.1	Remember the need of exception handling and garbage collection
ITL303.2	Explain the multithreaded programs in Java
ITL303.3	Apply various programming paradigms to a single problem statement
ITL303.4	Analyze the implementations in multiple paradigms at coding and execution level
ITL303.5	Evaluate object oriented concepts in Java
ITL303.6	Create and design solution baed on declarative programming using functional and logic programming.

Course Name:	Java Lab (SBL)		
Course Code	ITL304		
Faculty	Tayyabali Sayyad		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITL304.1	Explain the fundamental concepts of Java Programing.
ITL304.2	Use the concepts of classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
ITL304.3	Demonstrate how to extend java classes and achieve reusability using Inheritance, Interface and Packages.
ITL304.4	Construct robust and faster programmed solutions to problems using concept of Multithreading, exceptions
ITL304.5	Design and develop Graphical User Interface using Abstract Window Toolkit and Swings along with
ITL304.6	Develop Graphical User Interface by exploring JavaFX framework based on MVC Architecture.

Course Name:	Mini Project – 1 A for Front end / backend Application using JAVA		
Course Code	ITM301		
Faculty	Tayyabali Sayyad		
Year	2	**Sem**	III

CO Number	**Course Outcome**
ITM301.1	Students will be able to explain the concepts of the Software Deveopment processes
ITM301.2	Students will be able to identify problems based on societal /research needs.
ITM301.3	Develop interpersonal skills to work as member of a group or leader and Apply Knowledge and skill to solve societal problems in a group.
ITM301.4	Draw the proper inferences from available results through theoretical/ experimental/simulations and analyse impact of solutions in societal and environmental context for sustainable development.
ITM301.5	Use standard norms of engineering practices and oral, written communication techniques
ITM301.6	Demonstrate capabilities of self-learning and project management skills in a group, which leads to life long

Course Name:	Internet Programming		
Course Code	ITC501		
Faculty	Vaishali K.		
Year	3	Sem	V

CO Number	Course Outcome
ITC501.1	To memorizing the protocols and technology used for web programming.
ITC501.2	To summarizing the basic concept of HTML, Javascript,React and node JS.
ITC501.3	To use web programming knowledge to design web pages
ITC501.4	To illustrating the functionality of react and nodejs
ITC501.5	To Integrate and evaluate frontend and backend application.
ITC501.6	To develop web based application using web technology

Course Name:	Computer Network Security		
Course Code	ITC502		
Faculty	Aruna Khubalkar		
Year	3	Sem	V

CO Number	Course Outcome
ITC502.1	Identify and state the fundamentals components of system security.
ITC502.2	Explain the fundamentals concepts of computer security and network security. Also describe different
ITC502.3	Apply different cryptographic techniques using classical and block encryption methods.
ITC502.4	Analyze functionalities of different IDS and Firewalls.
ITC502.5	Evaluate basic cryptographic techniques and techniques for the network security.
ITC502.6	Design packet filtering firewall.

Course Name:	Entrepreneurship and E-business		
Course Code	ITC503		
Faculty	Janhavi Baikerikar		
Year	3	Sem	V

CO Number	Course Outcome
ITC503.1	Understand the concept of entrepreneurship and its close relationship with enterprise and owner-managemen
ITC503.2	Understand the nature of business development in the context of existing organizations and of new business s
ITC503.3	Comprehended important factors for starting a new venture and business development.
ITC503.4	Know issues and decisions involved in financing and resourcing a business start-up
ITC503.5	Describe various E-business Models

ITC503.6	Discuss various E-business Strategies.

Course Name:	Software Engineering		
Course Code	ITC504		
Faculty	Mrudul Arkadi		
Year	3	**Sem**	V

CO Number	Course Outcome
ITC504.1	Understand and use basic knowledge in software engineering.
ITC504.2	Identify requirements, analyze and prepare models.
ITC504.3	Plan, schedule and track the progress of the projects.
ITC504.4	Design & develop the software solutions for the growth of society
ITC504.5	To demonstrate and evaluate real time projects with respect to software engineering principles
ITC504.6	create test cases and assure quality in software solution

Course Name:	Advanced Data structure and		
Course Code	ITDO5014		
Faculty	Prasad Padalkar		
Year	3	**Sem**	V

CO Number	Course Outcome
ITDO-5014.1	Reproduce the algorithms
ITDO-5014.2	Explain the logic of algorithm
ITDO-5014.3	Examine the algorithm to determin its complexity
ITDO-5014.4	Categorize the algorithms into different categories
ITDO-5014.5	Choose the algorthim based on the complexity parameters
ITDO-5014.6	Construct an iterative or recurssive algorthim based on mathematical logic

Course Name:	Internet Programming Lab		
Course Code	ITL501		
Faculty	Vaishali K.		
Year	3	**Sem**	V

CO Number	Course Outcome
ITL501.1	To memorize the basics of web programming
ITL501.2	To explain the basic concept of HTML, Javascript, CSS

ITL501.3	To use web programming knowledge to design web pages
ITL501.4	To analyze web pages using react and nodejs
ITL501.5	To design interactive web page using Javascript
ITL501.6	To create front end and backend application using react and nodejs.

Course Name:	Security Lab		
Course Code	ITL502		
Faculty	Aruna Khubalkar		
Year	3	**Sem**	V

CO Number	Course Outcome
ITL502.1	Student will be able to describe different cryptographic and reconnaissance techniques and methods.
ITL502.2	Student will be able to summarize working of different cryptographic methods and reconnaissance tools.
ITL502.3	Student will be able to illustrate different cryptographic techniques/ methods. Also student will be able to use different reconnaissance tools.
ITL502.4	Student will be able to analyze packets in the network by using reconnaissance tools like Wireshark, port
ITL502.5	Student will be able to select appropriate cipher modes for encryption and tools for network reconnaissance.
ITL502.6	Student will be able to create a product cipher.

Course Name:	DevOps Lab		
Course Code	ITL503		
Faculty	Sunantha Krishnan		
Year	3	**Sem**	V

CO Number	Course Outcome
ITL503.1	To understand the fundamentals of DevOps engineering and be fully proficient with DevOps terminologies, concepts, benefits, and deployment options to meet your business requirements
ITL503.2	To obtain complete knowledge of Git, GitHub,jenkin, Selenium, Docker & Ansible
ITL503.3	To execute Jenkins Software Applications on server environment using Docker, Ansible, Selenium and
ITL503.4	To analyse by building Jenkins Software Applications on server environment using Docker, Ansible, Selenium and Jenkin
ITL503.5	To link and validate the importance of Jenkin, Docker, Selenium and Github and Ansible
ITL503.6	To Synthesize software configuration and provisioning usingJenkin, Docker and Ansible.

Course Name:	Advance Devops Lab		
Course Code	ITL504		
Faculty	Mr. Tayyabali Sayyad		
Year	3	**Sem**	V

CO Number	Course Outcome
ITL 504.1	Students will be able to identify technologies used for i) coding ii) infrastrure provesining ii) deploying and iv) monitoring the software development in cloud platform
ITL 504.2	Students will be able to understand i) DevOps practices and cloud native environments ii) security and speed in software development iii) troubleshooting techniques for monitoring entire infrastructure iv) software-defined hardware are provisioned dynamically v) Static Analysis SAST process
ITL 504.3	Students will be able to demonstrate i) aws cloud9 IDE collaboration ii) aws code CodeBuild , CodePipeLine, and CodeDeploy iii) Install and Spin Up a Kubernetes Cluster on aws cloud iv) Build, change, and destroy cloud infrastructure Using Terraform v) Create a Jenkins CICD Pipeline to perform a static analysis vi) Service monitoring, using Nagios vii) servieless computing using aws lambda
ITL 504.4	Students will be able to explain/relate/analyze role of various tools / technologies/ practices used in DevOps
ITL 504.5	Students will be able to recommend / review / select devops tools for optimizing the software development, deployment and monitoring
ITL 504.6	Students will be able to arrange, assemble / devise tools for the effecient delivery of the software products

Course Name:	Professional Communication and Ethics-II (PCE-II)		
Course Code	ITL505		
Faculty	Sachin Sugave		
Year	3	**Sem**	V

CO Number	Course Outcome
505.1	Students will be able to relate to techniques of formal and technical writing and principles of corporate ethics which includes knowledge of Intellectual Property Rights and ethical codes of conduct in business
505.2	Students will be able to explain the objectives, format and style of the technical report, and technical proposal, and the importance of interpersonal skills and paraphrase a technical paper
505.3	Students will be able to make use of the techniques for mock interviews and interpersonal skills in
505.4	Students will be able to compare various forms of technical writing like technical reports, Technical proposals, and Meeting documentation.
505.5	Students will be able to evaluate technical reports and technical proposals using the given rubric
505.6	Students will be able to design resumes and Statement of Purpose as per the given format

Course Name:	Mini Project -2A Web Based Business Model		
Course Code	ITM501		
Faculty	Vaishali K.		
Year	3	**Sem**	V

CO Number	Course Outcome

ITM505.1	Identify problems based on societal /research needs.
ITM505.2	Understand the importance of this problem.
ITM505.3	Apply Knowledge and skill to solve societal problems in a group.
ITM505.4	Analyse the impact of solutions in societal and environmental context.
ITM505.5	Evaluate the problems using standard norms of engineering practices
ITM505.6	To create and deploy a project using project management principles.

Course Name:	AI and DS –II		
Course Code	ITC701		
Faculty	Sunantha K.		
Year	4	**Sem**	VII

CO Number	Course Outcome
ITC701.1	Remember the basic stages of DS, mathematical models and techniques of cognitive, fuzzy, ML & DL
ITC701.2	Understand the stages of DS, Models and techniques of Fuzzy, Cognitive, ML & DL
ITC701.3	Apply the models and techniques for various data science applications
ITC701.4	Analyse the current trend in DS and the process to build fuzzy , cognitive a and ML or DL based
ITC701.5	Evaluate the performance of the developed Realtime applications
ITC701.6	Design models for DS using fuzzy, cognitive , ML & DL

Course Name:	Internet of Everything		
Course Code	ITC702		
Faculty	Janhavi B.		
Year	4	**Sem**	VII

CO Number	Course Outcome
ITC702.1	Students will be able to list the architerctural models, protocols, hardwares, softwares used in IoT systems
ITC702.2	Students will be able to explain the architerctural models, protocols, hardwares, softwares used in IoT
ITC702.3	Students will be able to apply the concept of layred architecture for IoT systems
ITC702.4	Students will be able to analyze and compare the architerctural models, protocols, hardwares, softwares
ITC702.5	Students will be able to select the appropriate architerctural models, protocols, hardwares, softwares used in
ITC702.6	Students will be able to design the IoT system for real world problem

Course Name:	Infrastructure Security		
Course Code	ITDO7013		
Faculty	Prasad Padalkar		
Year	4	**Sem**	VII

CO Number	Course Outcome
ITDO7013.1	Define the concept of vulnerabilities, attacks and protection mechanisms
ITDO7013.2	Explain the need for security protocols/solutions in the Enterprise Infrastructure. Also they can explain
ITDO7013.3	Illustrate software vulnerabilities and attacks related to Infrastructure security.
ITDO7013.4	Analyze different software vulnerabilities and attacks on the databases and the Web.
ITDO7013.5	Evaluate different attacks on Software and Web.
ITDO7013.6	Design appropriate security policies to protect infrastructure components

Course Name:	Information Retrieval System		
Course Code	ITDO7024		
Faculty	Aruna Khubalkar		
Year	4	**Sem**	VII

CO Number	Course Outcome
ITDO7024.1	Define the objectives of the basic concepts of Information retrieval system.
ITDO7024.2.	Describe the the basic concepts of Information retrieval system.
ITDO7024.3.	Solve and process text and multimedia retrieval queries and their operations
ITDO7024.4.	Distinguish different text processing techniques and operations in information retrieval system.
ITDO7024.5.	Evaluate the taxonomy, various indexing & searching techniques and text processing techniques & operations in information retrieval system
ITDO7024.6.	Design the user interface for an information retrieval system.

Course Name:	Management Information System		
Course Code	ILO7013		
Faculty	Prasad Padalkar		
Year	4	**Sem**	VII

CO Number	Course Outcome
ILO7013.1	Outine the basic definition associated with business and MIS
ILO7013.2	Describe the business process and relation to IS
ILO7013.3	Examine the use of IT for IS to make business decision smooth
ILO7013.4	Diagnose the case study for IT implemenation of IS and their outcomes
ILO7013.5	Categorise the various components of business process, IS which can be automated
ILO7013.6	Evaluate the different IS implementation using case study

Course Name:	Data Science Lab
Course Code	ITL701

Faculty name	Sunantha K.		
Year	4	Sem	VII

CO Number	Course Outcome
ITL701.1	Identifying real life applications of DS
ITL701.2	Explore use cases of Cognitive Computing
ITL701.3	Implement reasoning with uncertainty & fuzzy controller system.
ITL701.4	Implement and analyse applications based on current trends in Data Science.
ITL701.5	Evaluate performance of applications
ITL701.6	Develop real life applications using learning concepts.

Course Name:	IOE Lab		
Course Code	ITL702		
Faculty name	Janhavi B.		
Year	4	Sem	VII

CO Number	Course Outcome
ITL702.1	Student will be able to list different types of sensors used in the IOT domain.
ITL702.2	Student will be able to explain different hardwares used in IOT.
ITL702.3	Student will be able to demonstrate working of different sensors, code and test it.
ITL702.4	Student will be able to identify the requirements for the real world problems.
ITL702.5	Student will be able to select appropriate sensors/hardware for the real world problems.
ITL702.6	Student will be able to build the project successfully by hardware/sensor requirements, coding, emulating

Course Name:	Secure Application Development		
Course Code	ITL703		
Faculty name	Nilesh Ghavate		
Year	4	Sem	VII

CO Number	Course Outcome
ITL703.1	Apply secure programming of application code.
ITL703.2	Understand the Owasp methodologies and standards.
ITL703.3	Identify main vulnerabilities inherent in applications.
ITL703.4	Apply Data Validation and Authentication for application
ITL703.5	Apply Security at Session Layer Management
ITL703.6	Apply secure coding for cryptography .

Course Name:	Recent Open Source Project Lab

Course Code	ITL704		
Faculty name	Mrudul Arkadi		
Year	4	Sem	VII

CO Number	Course Outcome
ITL704.1	To remember the basic concept of Open Source Software.
ITL704.2	To understand the concept of GPU and Contribute to open source
ITL704.3	To apply your knowledge of operating system, network management,
ITL704.4	Analysis of different technologies, applications and services.
ITL704.5	To evaluate your knowledge of Open Source Technology
ITL704.6	To contribute in open source technology

Course Name:	Project -1		
Course Code	ITM705		
Faculty name	Uday		
Year	4	Sem	VII

CO Number	Course Outcome
ITM705.1	Identify problems based on societal /research needs.
ITM705.2	Document, Demonstrate project management principles during project work, as per the engineering practices and excel in this.
ITM705.3	Demonstrate capabilities of self learning in a group for a life long learning & Apply Knowledge and skill to solve societal problems in a group.
ITM705.4	Analyse the impact of solutions in societal and environmental context for sustainable development.
ITM705.5	Draw the proper inferences from available results through theoretical/ experimental/simulations.
ITM705.6	Develop interpersonal skills to work as member of a group or leader.