



LOYOLA INSTITUTE OF TECHNOLOGY

Palanchur, Chennai-600123

Approved by AICTE,

New Delhi

Affiliated to Anna University, Chennai

(An ISO Certified Institution)

Department of Cyber Security

2021 Regulations

Course Outcomes (COs)

ODD SEM (I)

I YEAR (5 Theory + 3 Labs)

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	HS3152 Professional English - I	CO1	To use appropriate words in a professional context
		CO2	To gain understanding of basic grammatic structures and use them in right context.
		CO3	To read and infer the denotative and connotative meanings of technical texts
		CO4	To write definitions, descriptions, narrations and essays on various topics
		CO5	To help learners use language effectively in professional contexts.
		CO6	To develop learners' ability to read and write complex texts.
2	MA3151 Matrices and Calculus	CO1	Use the matrix algebra methods for solving practical problems.
		CO2	Apply differential calculus tools in solving various application problems.
		CO3	Able to use differential calculus ideas on several variable functions.
		CO4	Apply different methods of integration in solving practical problems.
		CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems
		CO6	Be familiar with Differential Calculus.
3	PH3151	CO1	Understand the importance of mechanics.

	Engineering Physics	CO2	Express their knowledge in electromagnetic waves.
		CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
		CO4	Understand the importance of quantum physics.
		CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.
		CO6	Understand the basics of oscillations, optics and lasers.
4	CY3151 Engineering Chemistry	CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
		CO2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
		CO3	To apply the knowledge of phase rule and composites for material selection requirements.
		CO4	To recommend suitable fuels for engineering processes and applications.
		CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.
		CO6	Understand working processes of Energy Conservation.
5	GE3151 Problem Solving and Python Programming	CO1	Develop algorithmic solutions to simple computational problems.
		CO2	Develop and execute simple Python programs
		CO3	Write simple Python programs using conditionals and loops for solving problems.
		CO4	Decompose a Python program into functions.
		CO5	Represent compound data using Python lists, tuples, dictionaries etc
		CO6	Read and write data from/to files in Python programs.
6	GE3171 Problem Solving and Python Programming Laboratory	CO1	Develop algorithmic solutions to simple computational problems
		CO2	Develop and execute simple Python programs.
		CO3	Implement programs in Python using conditionals and loops for solving problems
		CO4	Deploy functions to decompose a Python program.
		CO5	Process compound data using Python data structures.
		CO6	Utilize Python packages in developing software applications.

7	BS3171 Physics and Chemistry Laboratory	CO1	Use graphical models to analyze laboratory data.
		CO2	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
		CO3	Access, process and analyze scientific information.
		CO4	Solve problems individually and collaboratively.
		CO5	Learning proper use of Lab Experiments.
		CO6	Learn problem solving skills related to physics principles.
8	GE3172 English Laboratory	CO1	To listen to and comprehend general as well as complex academic information
		CO2	To listen to and understand different points of view in a discussion
		CO3	To speak fluently and accurately in formal and informal communicative contexts
		CO4	To describe products and processes and explain their uses and purposes clearly and accurately
		CO5	To express their opinions effectively in both formal and informal discussions
		CO6	To enhance the communicative competence of learners

EVEN SEM (II)**I YEAR (6 Theory + 3 Labs)**

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	HS3252 Professional English - II	CO1	To compare and contrast products and ideas in technical texts.
		CO2	To identify and report cause and effects in events, industrial processes through technical texts
		CO3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
		CO4	To present their ideas and opinions in a planned and logical manner
		CO5	To draft effective resumes in the context of job search
		CO6	To improve sentences grammatically.
2	MA3251 Statistics and Numerical Methods	CO1	Apply the concept of testing of hypothesis for small and large samples in real life problem
		CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
		CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
		CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
		CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
		CO6	Solve algebraic and transcendental equations with Engineering Applications.
3	PH3256 Physics for Information Science	CO1	gain knowledge on classical and quantum electron theories, and energy band structures
		CO2	acquire knowledge on basics of semiconductor physics and its applications in various devices
		CO3	get knowledge on magnetic properties of materials and their applications in data storage,
		CO4	have the necessary understanding on the functioning of optical materials for optoelectronics
		CO5	understand the basics of quantum structures and their applications and basics of quantum computing

		CO6	Infuse and gain knowledge in semiconductor physics.
4	BE3251 Basic Electrical and Electronics Engineering	CO1	Compute the electric circuit parameters for simple problems
		CO2	Explain the working principle and applications of electrical machines
		CO3	Analyze the characteristics of analog electronic devices
		CO4	Explain the basic concepts of digital electronics
		CO5	Explain the operating principles of measuring instruments
		CO6	Analyze different study state of circuits with simple problems.
5	GE3251 Engineering Graphics	CO1	Use BIS conventions and specifications for engineering drawing.
		CO2	Construct the conic curves, involutes and cycloid.
		CO3	Solve practical problems involving projection of lines.
		CO4	Draw the orthographic, isometric and perspective projections of simple solids.
		CO5	Draw the development of simple solids.
		CO6	Draw freehand sketch of simple objects.
6	CS3251 Programming in C	CO1	Demonstrate knowledge on C Programming constructs
		CO2	Develop simple applications in C using basic constructs
		CO3	Design and implement applications using arrays and strings
		CO4	Develop and implement modular applications in C using functions.
		CO5	Develop applications in C using structures and pointers.
		CO6	Design applications using sequential and random access file processing.
7	GE3271 Engineering Practices Laboratory	CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
		CO2	Wire various electrical joints in common household electrical wire work.
		CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a

			tray out of metal sheet using sheet metal work.
		CO4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.
		CO5	Preparing plumbing line sketches
		CO6	Analyse common industrial trusses using models.
8	CS3271 Programming in C Laboratory	CO1	Demonstrate knowledge on C programming constructs.
		CO2	Develop programs in C using basic constructs.
		CO3	Develop programs in C using arrays.
		CO4	Develop applications in C using strings, pointers, functions
		CO5	Develop applications in C using structures.
		CO6	Develop applications in C using file processing.
9	GE3272 Communication laboratory	CO1	Speak effectively in group discussions held in a formal/semi formal contexts.
		CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
		CO3	Write emails, letters and effective job applications.
		CO4	Write critical reports to convey data and information with clarity and precision
		CO5	Give appropriate instructions and recommendations for safe execution of tasks
		CO6	Identify varied group discussion skills and apply them to take part in effective discussions

ODD SEM (III)**II YEAR (6 Theory + 3 Labs)**

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	MA3354 Discrete Mathematics	CO1	Have knowledge of the concepts needed to test the logic of a program.
		CO2	Have an understanding in identifying structures on many levels.
		CO3	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
		CO4	Be aware of the counting principles
		CO5	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
		CO6	Expose to Applications of Algebraic structures
2	CS3351 Digital Principles and Computer Organization	CO1	Design various combinational digital circuits using logic gates
		CO2	Design sequential circuits and analyze the design procedures
		CO3	State the fundamentals of computer systems and analyze the execution of an instruction
		CO4	Analyze different types of control design and identify hazards
		CO5	Identify the characteristics of various memory systems and I/O communication
		CO6	study the design of data path unit and control unit
3	CS3352 Foundations of Data Science	CO1	Define the data science process
		CO2	Understand different types of data description for data science process
		CO3	Gain knowledge on relationships between data
		CO4	Use the Python Libraries for Data Wrangling
		CO5	Apply visualization Libraries in Python to interpret and explore data
		CO6	Draw Histograms and different plots
4	CD3291 Data Structures and Algorithms	CO1	explain abstract data types
		CO2	design, implement, and analyze linear data structures, such as lists, queues, and stacks, according to the needs

			of different applications
		CO3	design, implement, and analyze efficient tree structures to meet requirements such as searching, indexing, and sorting
		CO4	model problems as graph problems and implement efficient graph algorithms to solve them
		CO5	Analyse different sorting and searching techniques
		CO6	Analyse Sorting Algorithms
5	CS3391 Object Oriented Programming	CO1	Apply the concepts of classes and objects to solve simple problems
		CO2	Develop programs using inheritance, packages and interfaces
		CO3	Make use of exception handling mechanisms and multithreaded model to solve real world problems
		CO4	Build Java applications with I/O packages, string classes, Collections and generics concepts
		CO5	Integrate the concepts of event handling and Java FX components and controls for developing GUI based applications
		CO6	develop a java application with threads and generics classes
6	CD3281 Data Structures and Algorithms Laboratory	CO1	implement ADTs as Python classes
		CO2	design, implement, and analyse linear data structures, such as lists, queues, and stacks, according to the needs of different applications
		CO3	design, implement, and analyse efficient tree structures to meet requirements such as searching, indexing, and sorting
		CO4	model problems as graph problems and implement efficient graph algorithms to solve them
		CO5	implement sorting, searching and hashing algorithms
		CO6	solve problems using tree and graph structures
7	CS3381 Object Oriented Programming Laboratory	CO1	Design and develop java programs using object oriented programming concepts
		CO2	Develop simple applications using object oriented concepts such as package, exceptions
		CO3	Create GUIs and event driven programming applications for real world problems
		CO4	Implement multithreading, and generics concepts
		CO5	Implement and deploy web applications using Java

		CO6	Implement exception handling and creation of user defined exceptions
8	CS3361 Data Science Laboratory	CO1	Make use of the python libraries for data science
		CO2	Make use of the basic Statistical and Probability measures for data science.
		CO3	Perform descriptive analytics on the benchmark data sets.
		CO4	Perform correlation and regression analytics on standard data sets
		CO5	Present and interpret data using visualization packages in Python.
		CO6	Visualize Geographic Data with Basemap
		9	GE3361 Professional Development
CO2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding		
CO3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.		
CO4	Enhance the Overall Quality of the Presentations		
CO5	utilizing many more critical features offered in MS office tools		
CO6	Inspect document for accessibility		

EVEN SEM (IV)**I YEAR (6 Theory + 2 Labs)**

S.No	Name of the Subject (In Abbreviation)	Course Outcomes	Statement
1	CS3452 Theory of Computation	CO1	Construct automata theory using Finite Automata
		CO2	Write regular expressions for any pattern
		CO3	Design context free grammar and Pushdown Automata
		CO4	Design Turing machine for computational functions
		CO5	Differentiate between decidable and undecidable problems
		CO6	Analyse Real time Problems with Different algorithms
2	CS3491 Artificial Intelligence and Machine Learning	CO1	Use appropriate search algorithms for problem solving
		CO2	Apply reasoning under uncertainty
		CO3	Build supervised learning models
		CO4	Build ensembling and unsupervised models
		CO5	Build deep learning neural network models
		CO6	Implement EM for Bayesian networks
3	CB3401 Database Management Systems and Security	CO1	Model an application's data requirements using conceptual modeling and design database schemas based on the conceptual model.
		CO2	Formulate solutions to a broad range of query problems using relational algebra/SQL.
		CO3	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
		CO4	Run transactions and estimate the procedures for controlling the consequences of concurrent data access.
		CO5	Understand and handle security issues in database management systems.
		CO6	learn to secure Database Management systems
4	CB3402 Operating Systems and Security	CO1	To gain understanding on the concepts of Operating Systems.
		CO2	To acquire knowledge on process management concepts including scheduling, synchronization, threads and deadlock.
		CO3	To have understanding on memory, file and I/O management activities of OS

		CO4	To understand security issues in operating systems and appreciate the need for security models
		CO5	To gain exposure to the operating systems security models of WINDOWS and UNIX OS
		CO6	Implement the various CPU Scheduling Algorithms
5	CB3491 Cryptography and Cyber Security	CO1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
		CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms
		CO3	Apply the different cryptographic operations of public key cryptography
		CO4	Apply the various Authentication schemes to simulate different applications
		CO5	Understand various cyber crimes and cyber security.
		CO6	Develop cryptographic algorithms for information security.
6	GE3451 Environmental Sciences and Sustainability	CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
		CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
		CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
		CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
		CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
		CO6	Analyze climate changes and concept of carbon credit
7	CB3411 Cryptography and Cyber Security Laboratory	CO1	Develop a code for classical encryption techniques.
		CO2	Build a symmetric and asymmetric algorithms.
		CO3	Construct a code for various Authentication schemes
		CO4	Apply the principles of digital signature.
		CO5	evolve cryptographic algorithms for information security.
		CO6	Know the fundamental mathematical concepts related to security.

8	CB3412 Database Management Systems and Security Laboratory	CO1	Create databases with different types of key constraints.
		CO2	Write simple and complex SQL queries using DML and DCL commands.
		CO3	Realize database design using 3NF and BCNF.
		CO4	Use advanced features such as stored procedures and triggers
		CO5	Secure databases and mitigate attacks on databases.
		CO6	Write programs that will defend against the SQLi attacks.