





Sem	Course Code	Course Name	CO #	CO (Course Outcomes)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2		
3rd	HSMCS-101	Human values and Professional Ethics	CO1	Discriminate between valuable and superficial in the life.						2		3				1				
3rd			CO2	Encourages students to discover what they consider valuable.						3				2						
3rd			CO3	Understand the value required to be a good human being and apply these values in real life.							2		2							
3rd			CO4	Evaluate and modify the behavior.											1	1				
3rd			CO5	Understand fundamental and organizational duties and protect individual and social rights.									2							
3rd			CO6	Know about professional behavior, values and guiding principles.										3	2	2				
3rd	LPCCS-101	Object Oriented Programming Laboratory	CO1	Apply control structures, arrays and strings to develop programs.	3		3	2	1											
3rd			CO2	Design object-oriented programs using classes, objects, constructors, destructors along with various types of functions.	3		3	2	2											
3rd			CO3	Develop programs using overloading and virtual functions in polymorphism.	2		2	2	1											
3rd			CO4	Demonstrate the reusability aspect of object-oriented programming using Inheritance.		2			2											
3rd			CO5	Create programs using exception handling and file handling.	2		2	2	1											
3rd			CO6	Develop projects using object oriented programming for real time requirements.		3	3	1	1						3	2	2	1	2	
3rd			CO1	Configure protocols concerning various network technologies over different mediums and layers.	1		2	2	3									2		
3rd			CO2	Apply the knowledge of different network components, transmission mediums and tools to solve various problems of communication.	2		2	2	3								2			



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3rd			CO5	To demonstrate pleasant interpersonal skills in developing understanding and appreciation of individual differences in building		2		3	2										
3rd			CO6	To demonstrate presentation skills, report writing, good management, team spirit, managerial skills and quality delivery of projects				3											
3rd	PRCS-101	Seminar and Technical Report Writing For Engineers	CO1	Illustrate the basic components of technical report writing.		1		1	1					2		1			
3rd			CO2	Utilize various communication skills to present the technical work.	1		1	1	2					2		1			
3rd			CO3	Make use of Latex concepts to prepare technical reports and documents.	1		1	1	3					3		2	1		
3rd			CO4	Adapt the ethics of copyrights and infringement.		1	1	1	1				1				1		
3rd			CO5	Implement the unique qualities of technical reference and citation styles.	1		1	1	2					1		2			
3rd			CO6	Follow the stages of the writing process (prewriting/writing/rewriting) and apply them to technical and		2	1	1	3					1	3		3	2	
4th			PCCS-103	Discrete Mathematics	CO1	Apply sets, relations and functions to solve problems.	3		1	2	1								
4th	CO2	Construct mathematical proofs to verify the correctness of an argument using propositional logic, predicate logic and truth tables.						1											
4th	CO3	Apply counting techniques and combinatorics to determine discrete probability.			1		1	1	1										
4th	CO4	Solve problems involving recurrence relations and generating functions.			2		2	2	1										
4th	CO5	Prove elementary properties of algebraic structures in analysis and interpretation of data to provide valid conclusions.							3										
4th	CO6	Make use of graphs and trees to model real world problems.				3		2									1		2



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4th	PCCS-106	Data Structures	CO3	Utilize stacks for solving problems that works on the principle of recursion.	2		2	2	1								2			
4th			CO4	Make use of queues in solving problems having sequential processing.	2		2	2	2									2		
4th			CO5	Implement the concept of non-linear data structures-tree and graph in real world problems.		3		2											3	
4th			CO6	Analyse efficiency of different algorithms for searching and sorting.		3		3											3	3
4th	PCCS-107	Software Engineering	CO1	Explain software process models and fundamentals of software engineering to use suitable process model for a given scenario.		3		2	1	1							1	1		
4th			CO2	Analyse software requirements for designing SRS documents		2	2	1	1									1	2	
4th			CO3	Discuss project management including planning, cost estimation, scheduling and risk management		2		1	3							1	1	3		
4th			CO4	Apply software design strategies to translate SRS to software design.	3		2	2	1									2	2	
4th			CO5	Apply coding standards and testing techniques for a given software design.	3		2	2	3									2	2	
4th			CO6	Recognize the importance of software maintenance , PSP, Six Sigma and re-engineering		2		1	1										1	
4th	LPCCS-103	Computer Architecture and Microprocessor	CO1	Design half adder and full adder combinational circuits		1		1	3	1										
4th			CO2	Apply binary multiplication and mapping techniques of cache memory through simulation using GNUsim8085	2		1	1	3								1			
4th			CO3	Analyze the architecture of ALU, GNUsim8085 simulator and 8085 microprocessor		1		2									3			





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4th			CO5	Represent trees and graphs using appropriate data structures and perform traversal operations on trees and graphs.		1		1												
4th			CO6	Implement different searching and sorting algorithms using relevant data structures	1		2	3	2									1		
4th	MCCS-101	Environmental Sciences	CO1	Measure environmental variables and interpret results.				2			2									
4th			CO2	Evaluate local, regional and global environment topics related to resource use and management.				2			2							2		
4th			CO3	Propose solutions to environmental problems related to resource use and management		2	2	1	1			2								2
4th			CO4	Interpret the results of scientific studies of environmental problems		3		3	2			3						2		
4th			CO5	Describe threats to global biodiversity, their implications and potential solutions.		2		3	3			3						1		
5th			PCCS-108	Artificial Intelligence	CO1	Demonstrate the foundation of Artificial Intelligence and Agents.		1		1	1									
5th	CO2	Apply the principles of search strategies and game playing to solve problems.			3		3	2	1								2	3		
5th	CO3	Provide solution to complex problems using concept of knowledge representation, inference and planning.						3												
5th	CO4	Formulate valid solutions for problems involving uncertain inputs or outcomes by using decision making techniques.						2											1	
5th	CO5	Apply inductive learning algorithms for providing solution to prediction based problems.				2		2	2	1										
5th	CO6	Demonstrate and enrich knowledge of AI to understand existing systems.					2		2	1										2
5th					CO1	Elaborate the basic principles of database management systems and NoSql Databases		1		1	1							1	2	



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5th	LCCS-111	Analysis of Algorithms	CO4	Use string matching algorithms for pattern matching.	1		2	2	1											
5th			CO5	Apply graph traversal techniques to search a node and find optimal path.	1		2	2	1											
5th			CO6	Use backtracking and NP completeness strategy to find solution.	1		2	1	3									1		
5th	LPCCS-106	Artificial Intelligence Laboratory	CO1	Write basic programs using fundamental python programming constructs.	3		1	2	3											
5th			CO2	Implement efficient uninformed search techniques to solve problems.	3		3	2	1											
5th			CO3	Implement informed search strategies by designing appropriate heuristic function.		2	1	3	2											
5th			CO4	Develop two player tic-tac-toe game by choosing appropriate game playing strategies.		1		1												
5th			CO5	Design Bayesian network to infer from the given data.	3		2	3	2											
5th			CO6	Develop systems to solve real-world problems using artificial intelligence frameworks and platforms.		3	1	2	3					3	3	3		2	3	
5th	LPCCS-107	Database Management Systems Laboratory	CO1	Construct a database by using DDL, DML with SQL constraints.	1		1	1	1							1	1	1		
5th			CO2	Formulate SQL queries using logical operators and SQL operators.	1		1	1	1								1	1	1	
5th			CO3	Write SQL queries for Relational Algebra.	1		1	1	1								1	1	1	
5th			CO4	Create views using group by ,having clause and SQL functions.	1		3	2	3								2	2	1	
5th			CO5	Design SQL queries while using joins, sub queries, nested queries and SQL operations.	1		3	2	3	Cre e (L6)							2	2	1	

















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6th			CO6	Identify approaches of data mining tools and its associated problems.	2		3	1	2											
6th	PECS-120	Natural Language Processing	CO1	Apply the knowledge of engineering to understand the computational properties of natural languages and to implement the algorithms for	2		1	2	1											
6th			CO2	Utilize the models and methods of statistical natural language processing for common nlp tasks such as speech recognition, machine	2		1	1	2									2		
6th			CO3	Understand the key concepts of morphology, syntactic analysis for implementing pos tagging algorithms and context free		1		3	1											
6th			CO4	Identify and apply natural language processing algorithms to solve real world problems.	3		2	1	3											
6th			CO5	Understanding semantics and pragmatics of English language for processing.		2		3	1											
6th			CO6	Implement, and apply state-of-the-art techniques to novel problems involving natural language data.	1		1	1	1										1	
6th			PECS-126	Java Programming	CO1	Understanding of Java's core features, its object-oriented principles, and the significance of Java bytecode.		1		1	1									
6th	CO2	Identify the various aspects of a specific problem and apply the concepts of classes and objects to develop object-oriented model.				2		2												
6th	CO3	Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages to formulate a solution for			3		3	3	3										3	
6th	CO4	Design event driven GUI based and web based applications by implementing concepts like event handling and sockets.				3	3	3	3										3	
6th	CO5	Examine the errors in the developed system and resolve them by applying the knowledge of exception handling.				1		1											1	
6th	CO6	Apply multithreading and Synchronization concepts to develop high-performance, responsive software solutions for				1	1	1	1										1	1
6th					CO1	Develop testing methodologies, debugging tools and maintenance models to ensure accountability of software.		3		2						3	3		3	2

























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8th			CO5	Determine the concepts and issues related to distributed systems.																	
8th			CO6	Evaluate performance, reliability and other issues while designing token based and non token based algorithms in distributed environment.																	
8th	PECS-107	Component Based Development	CO1	Explain Component Based Systems along with their Purpose and Scope L2		2		2	2												
8th			CO2	Apply Software Engineering Practices in Component Based Development. L3	1			1	1												
8th			CO3	Apply catalysis techniques for Defining Component Infrastructures. L3	2				2										1		
8th			CO4	Apply software metrics to measure the performance of Software Components. L3	2				2												
8th			CO5	Explain Software Component Project Management Processes and issues in its testing.L2			1			1											
8th			CO6	Explain the use of Component Technologies in Next Generation Software Components.L2			3			3											1
8th			PECS-112	Internet of Things	CO1	Understand general concepts of internet of things (IoT).		3		2	1								2		
8th	CO2	Discriminate the functionality of ip and mac addresses along-with the application layer protocols.			3		3	2	2												
8th	CO3	Illustration of the design principles for connected devices and web connectivity.					3		3											2	
8th	CO4	Analyze various M2M and IoT architectures.					2		3												
8th	CO5	Apply design concepts to IoT solutions.			2			3	2	2									2		3

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8th			CO6	Create IoT solutions using sensors, actuators, and devices.	3		2	2	2							1				
8th	PECS-119	Data Science	CO1	Analyze the need and usage of various facets of data.		3		1	1											
8th			CO2	Examine the steps for Data collection and Data Science process		1		3	2										1	
8th			CO3	Identify and apply various forms of representing data	3		2	1	1											
8th			CO4	Perform exploratory data analysis.		3		3												
8th			CO5	Understand and apply various visualization techniques	2		1	1	1											
8th			CO6	Demonstrate and enrich knowledge for various model validation techniques.					2											2
8th			PECS-124	Deep Learning	CO1	Explain key concepts and terminologies related to deep learning.		2		1	2									2
8th	CO2	Implement feedforward, Convolutional and Recurrent Neural Network architectures.			3		2	2	3											
8th	CO3	Apply techniques to optimize hyperparameters for improving model performance and efficiency.			2		3	3	3											2
8th	CO4	Explain the usage of CNN architecture to extract features from input data.				2		3	3											
8th	CO5	Understand the functioning and training algorithm for RBMs and their application in Generative Modeling.				2		2	1											
8th	CO6	Develop skills to evaluate various advanced learning approaches and select suitable technique for use cases.							3											2
8th					CO1	Demonstrate the android features and develop application using Android.		3		2	1							2		



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8th	PECS-130	Mobile Application Development	CO2	Utilize rapid prototyping techniques to design and develop sophisticated mobile Interfaces.	3		3	2	2											
8th			CO3	Design and develop mobile application that accommodates user specific requirements and constraints analysis.		3		3										2		
8th			CO4	Illustrate android basic principles and common APIs to manage data for mobile application development.		2		3												
8th			CO5	Apply mobile applications for Android and iOS based operating system that uses basic and advanced phone features.	2		3	2	2									2		3
8th			CO6	Make use of the concept React Native for creating Hybrid Mobile Application.	3		2	2	2									1		
8th	LPECS-103	Component Based Development Laboratory	CO1	Model the documentation of software configuration management and risk management. L3	2		2													
8th			CO2	Explain the design process of software component infrastructure. L2		2		2										2		
8th			CO3	Analyze the cost effectiveness of COTS software. L4		2		2												
8th			CO4	Discover Test cases, Test scripts/procedures and Test incident of a system. L4		2		2												
8th			CO5	Apply knowledge of C++ server, CORBA and Javabeans to develop a component based model. L3				3	3											3
8th			CO6	Develop any component based system. L6			3	3												
8th	PECS-106	Internet of Things	CO1	Understand internet of things along-with its hardware and software components.				2	3				2			1	1			
8th			CO2	Interface I/O devices, sensors & communication modules.	2		3	2	3								2			
8th			CO3	Use wireless peripherals for exchange of data.	2		2	2	3								2			







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8th	LPECS-115	Mobile Application Development Laboratory	CO3	Develop an application using basic graphical primitives and databases	3		2	3	2										
8th			CO4	Make use of location identification using GPS in an application	3		2	3	3										
8th			CO5	Construct an application using multi-threading and RSS feed	3		2	3	2										
8th			CO6	Model new applications to handheld devices	3		2	3	2										
7th/8th	TR-103	Training-III	CO1	Acquire the basic skills about project development, organization and implementation to provide solution for a problem.	2		3	2	2								2		
7th/8th			CO2	Gain first-hand experience of working as an engineering professional and technical application of engineering		3	3	2	2										
7th/8th			CO3	Attain new skills and be aware of the state-of-art in engineering disciplines of their own interest.		2		3											
7th/8th			CO4	Learn modern tools and contemporary ideas by practicing self-learning.		2		3											
7th/8th			CO5	Learn work ethics by interacting with engineers and other professional groups thereby, increasing technical, interpersonal		3		1											
7th/8th			CO6	Writing technical reports, demonstrate and presenting their projects.					2										
7th/8th			CO1	Improve their ability to solve problems utilizing the tools and available industrial environment.				2	3								2		
7th/8th			CO2	Understand the professional responsibility, duty and ethics of an engineer.						2		3	3						2
7th/8th			CO3	Get familiar with real-world working conditions and procedures, to develop professionalism and team-work capabilities.			2								3	2			2



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7th/8th			CO5	Implement various CICD tools and techniques for effective application of relevant standards for project		2	2	3	3		2								
7th/8th			CO6	Identify the benefits of various tools for software debugging, UML Diagrams and various project		2		3	3	1									
7th/8th		Technical Aptitude	CO1	Apply technical expertise in design, coding and testing principles in software systems development	2		2	2	2				1			1	1		
7th/8th	CO2		Identify and use technical and analytical thinking to model the research based problems and solve them.		2		2									1	1		
7th/8th	CO3		Understand the use of technical aptitude in all the aspects of career and prepare for them accordingly.		1		1	2									2	2	
7th/8th	CO4		Solve different types of questions based on Core areas of Computer Science and Engineering.	2		2	2	2									2	2	
7th/8th	CO5		Speak fluently and confidently to demonstrate various techniques during presentations.	2		2	2	2					1		2		2	2	
7th/8th	CO6		Demonstrate corporate readiness in terms of attitude, communication, team work and emotional balance	2		2	2	2					2		2		2	2	