

Galgotias College of Engineering and Technology, Greater Noida

Statements of Course Outcomes (COs) and Mapping with Program Outcomes (POs) and Program Specific Outcomes (PSOs) : Dept. of CSE : 2019-20

S. No.	Sub Code	COx	Statement of Course Outcomes (COs)	Kx	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2		
			Statement of Course Outcomes (COs) Upon completion of topic concerned, students will be able to :	Blooms Knowledge Level	Engineering knowledge	Problem Analysis	Design/development of solutions	Conduct investigations of complex problems	Modern tool usage	The Engineer and Society	Environment & sustainability	Ethics	Individual and team work	Communications	Project management and finance	Life Long Learning	Design computer based systems using theoretical, computer science that demonstrate the comprehension of the trade-offs involve in the design choice	Design, develop and test software for different applications with real time constraints		
1	KAS 301	CO-1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	K2	-	-	-	-	-	2	-	2	-	3	-	3	-	-		
		CO-2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	K3	-	-	-	-	-	-	-	-	-	2	3	-	3	-	-	
		CO-3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	K2	-	-	-	-	-	-	-	-	-	2	3	-	3	-	-	
		CO-4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.	K1	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-	
		CO-5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.	K2	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-	
		KAS 301										2.00		2.00	2.00	3.00		3.00		
2	KNC 301/ KNC 401	CO-1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	K3	3	2	-	-	-	-	-	-	-	-	-	-	-	3	-	
		CO-2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats.	K2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO-3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	K2	3	2	2	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO-4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios.	K3	3	3	2	-	-	-	-	-	-	-	-	-	-	2	3	2
		CO-5	To articulate the well know cyber attack incidents, explain the attack scenarios, and explain mitigation techniques. .	K1	3	3	2	-	-	-	-	-	-	-	-	-	-	-	3	2
		KNC 301					3.00	2.40	2.00									2.00	3.00	2.00
3	KOE 038	CO-1	Understand the concept of PN junction and special purpose diodes.	K3	3	3	2	-	-	-	-	-	-	-	-	-	3	3	3	
		CO-2	Study the application of conventional diode and semiconductor diode.	K2	3	3	2	-	-	-	-	-	-	-	-	-	3	3	3	
		CO-3	Analyse the I-V characteristics of BJT and FET.	K2	3	3	2	-	-	-	-	-	-	-	-	-	3	3	3	
		CO-4	Analyse the of Op-Amp, amplifiers, integrator, and differentiator	K3	3	3	2	-	-	-	-	-	-	-	-	-	3	3	3	
		CO-5	Understand the concept of digital storage oscilloscope and compare of DSO with analog oscilloscope.	K1	3	2	1	-	-	-	-	-	-	-	-	-	3	3	3	
		KOE 038					3.00	2.80	1.80									3.00	3.00	3.00
4	KCS 301	CO-1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications	K ₁ , K ₂	3	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		CO-2	Discuss the computational efficiency of the sorting and searching algorithms	K ₂	3	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		CO-3	Implementation of Trees and Graphs and perform various operations on these data s	K ₃	3	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		CO-4	Understanding the concept of recursion, application of recursion and its implementat	K ₄	3	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		CO-5	Identify the alternative implementations of data structures with respect to its perform	K ₅ , K ₆	2	2	3	2	-	-	-	-	-	-	-	-	2	3	2	
		KCS 301					2.80	2.80	3.00	2.00								2.00	3.00	2.00
5	KCS 302	CO-1	Study of the basic structure and operation of a digital computer system.	K ₁ , K ₂	3	2	2	1	-	-	-	-	-	-	-	-	3	3	3	
		CO-2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.	K ₂ , K ₄	3	3	3	1	-	-	-	-	-	-	-	-	3	3	3	
		CO-3	Implementation of control unit techniques and the concept of Pipelining	K ₃	3	3	3	2	-	-	-	-	-	-	-	-	3	3	3	
		CO-4	Understanding the hierarchical memory system, cache memories and virtual memory	K ₂	3	2	2	2	-	-	-	-	-	-	-	-	3	3	3	
		CO-5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces	K ₂ , K ₄	3	2	2	2	-	-	-	-	-	-	-	-	3	3	3	
		KCS 302					3.00	2.40	2.40	1.60								3.00	3.00	3.00
6	KCS 303	CO-1	Write an argument using logical notation and determine if the argument is or is not valid.	K ₃ , K ₄	3	3	2	2	-	-	-	-	-	-	-	-	3	2	-	
		CO-2	Understand the basic principles of sets and operations in sets	K ₁ , K ₂	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-	
		CO-3	Demonstrate an understanding of relations and functions and be able to determine their properties.	K ₃	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-	
		CO-4	Demonstrate different traversal methods for trees and graphs.	K ₁ , K ₄	3	3	2	-	-	-	-	-	-	-	-	-	3	2	-	
		CO-5	Model problems in Computer Science using graphs and trees.	K ₂ , K ₆	3	2	2	2	-	-	-	-	-	-	-	-	3	2	-	
		KCS 303					3.00	2.80	2.00	2.00								3.00	2.00	
7	KCS 351	CO-1	Remember and understand basic data structure concepts.	K3	2	2	2	2	2	-	-	-	-	-	-	-	3	3	3	
		CO-2	Choose the appropriate data structure for algorithm design.	K3	3	3	3	3	2	-	-	-	-	-	-	-	3	3	3	
		CO-3	Apply fundamental of data structure for Sorting, Searching, Stack & Queues	K3	3	3	3	3	2	-	-	-	-	-	-	-	3	3	3	
		KCS 351					2.67	2.67	2.67	2.67	2.00						3.00	3.00	3.00	
8	KCS 352	CO-1	Understand the operations of digital logic circuits and the organization of computer system.	K3	3	2	1	1	1	-	-	-	-	-	-	-	1	3	-	
		CO-2	Design digital logic circuit for Input / Output and Arithmetic and Logical Unit	K3	3	3	3	2	2	-	-	-	-	-	-	-	1	3	-	
		CO-3	Design and Implement the circuit for Control Unit of the Computer System.	K3	3	3	3	2	2	-	-	-	-	-	-	-	1	3	-	
		KCS 352					3.00	2.67	2.33	1.67	1.67						1.00	3.00		
9	KCS 353	CO-1	Implement the concepts of set theory and mathematical induction.	K3	3	3	3	-	2	-	-	-	-	-	-	-	3	2	2	
		CO-2	Implement the concept of recursion and Boolean algebra.	K3	3	3	3	-	2	-	-	-	-	-	-	-	3	2	2	
		CO-3	Implement state of art problems using the concepts of discrete structures.	K3	3	3	3	2	2	-	-	-	-	-	-	-	3	2	2	
		KCS 353					3	3	3	2	2						3	2	2	
10	KCS 354	CO-1	Discover potential research areas in the field of Computer Science and Engineering.	K2	2	3	2	1	2	1	2	2	3	3	1	3	3	3	3	
		CO-2	Work as a responsible member and possibly a leader of a team in developing software solutions.	K2	3	3	3	3	3	2	1	1	3	3	3	2	3	3	3	
		CO-3	Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project.	K3	3	3	3	3	3	2	1	1	3	3	2	2	3	3	3	
		KCS 354					2.67	3.00	2.67	2.33	2.67	1.67	1.33	1.33	3.00	3.00	2.00	2.33	3.00	3.00

11	KCS 401	CO-1	Understand the structure and functions of OS	K _{1, K₂}	2	2	2	2	-	-	-	-	-	-	2	2	2	
		CO-2	Learn about Processes, Threads and Scheduling algorithms.	K _{1, K₂}	2	2	2	2	-	-	-	-	-	-	-	2	2	2
		CO-3	Understand the principles of concurrency and Deadlocks	K ₂	3	3	2	2	-	-	-	-	-	-	-	3	3	3
		CO-4	Learn various memory management scheme	K ₂	3	3	2	2	-	-	-	-	-	-	-	3	3	3
		CO-5	Study I/O management and File systems.	K _{2, K₄}	3	3	2	2	2	-	-	-	-	-	-	3	3	3
KCS 401					2.60	2.60	2.00	2.00	2.00						2.60	2.60	2.60	
12	KCS 451	CO-1	Understand and remember various CPU scheduling, memory management, process	K2	2	2	2	-	2	-	-	-	-	-	-	1	3	3
		CO-2	Analyse and apply the various operating system algorithms.	K3	3	3	3	3	-	-	-	-	-	-	-	2	3	3
		CO-3	Implement and execute the various operating system algorithms	K3	3	3	3	3	3	-	-	-	-	-	-	2	3	3
KCS 451					2.67	2.67	2.67	3.00	2.50						1.67	3.00	3.00	
13	KCS 402	CO-1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars	K _{4, K₆}	3	3	3	3	-	-	-	-	-	-	3	3	2	
		CO-2	Analyse and design, Turing machines, formal languages, and grammars	K _{4, K₆}	3	3	3	2	-	-	-	-	-	-	3	3	2	
		CO-3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving	K _{1, K₅}	3	3	2	2	-	-	-	-	-	-	3	3	2	
		CO-4	Prove the basic results of the Theory of Computation	K _{2, K₃}	3	2	2	2	-	-	-	-	-	-	2	3	2	
		CO-5	State and explain the relevance of the Church-Turing thesis	K _{1, K₅}	2	2	3	2	-	-	-	-	-	-	2	3	2	
KCS 402					2.80	2.60	2.60	2.20						2.60	3.00	2.00		
14	KCS 452	CO-1	Understand 8085, 8086 microprocessor and familiarize with the assembly level programming	K2 & K3	2	2	2	-	2	1	-	-	2	-	2	3	3	
		CO-2	Interface various devices to the microprocessor	K3	3	3	3	3	2	1	-	-	2	-	2	3	3	
		CO-3	Measure and record the experimental data, analyze the results, and prepare a formal laboratory report	K3	3	3	3	3	2	1	-	-	2	-	2	3	3	
		KCS 452					2.6667	2.667	2.667	3	2	1		2		2	3	3
15	KCS 403	CO-1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.	K _{3, K₄}	3	-	-	-	1	-	-	-	-	-	-	-	-	
		CO-2	Analyze a detailed s/w & h/w structure of the Microprocessor.	K _{2, K₄}	3	-	-	-	2	-	-	-	-	-	-	-	-	
		CO-3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.	K ₃	3	3	3	2	-	-	-	-	-	-	-	3	3	
		CO-4	Analyze the properties of Microprocessors(8085/8086)	K ₄	3	-	-	3	-	-	-	-	-	-	-	3	-	
		CO-5	Evaluate the data transfer information through serial & parallel ports.	K ₅	3	-	-	-	-	-	-	-	-	-	-	2	3	-
KCS 403					3	3	3	2.5	1.5					2	3	3		
16	KCS 453	CO-1	Learn and understand the basic concepts and constructs of Python programming.	K2	2	2	2	3	2	-	-	-	2	-	-	-	3	
		CO-2	Analyze and apply the appropriate programming constructs for problem solving.	K3 & K4	3	3	3	3	2	-	-	-	2	-	2	3	3	
		CO-3	Implement projects using Python programming skills.	K3	3	3	3	3	2	1	-	-	2	-	2	2	3	3
KCS 453					2.6667	2.667	2.667	3	2	1		2		2	2	3	3	
17	KAS 402	CO-1	Remember the concept of partial differential equation and to solve partial differential equations	K1	3	2	1	-	-	-	-	-	-	-	1	-	-	
		CO-2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations	K4	3	3	1	3	2	-	-	-	-	-	1	-	-	
		CO-3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting	K2	3	1	1	1	-	-	-	-	-	-	1	-	-	
		CO-4	Remember the concept of probability to evaluate probability distributions	K1	3	1	1	3	-	-	-	-	-	-	1	-	-	
		CO-5	Apply the concept of hypothesis testing and statistical quality control to create control charts	K3	3	1	3	1	3	-	-	-	-	-	1	-	-	
KAS 402					3.00	1.60	1.40	2.00	2.50					1.00				
18	KVE 401	CO-1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society	K2	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.	K2	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society	K2	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.	K3	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.	K2 & K3	-	-	-	-	-	3	3	3	3	2	-	3	-	-
KVE 401					-	-	-	-	-	3	3	3	3	2	-	3	-	-
19	RAS 501	CO-1	Understand the basic concepts of Engineering Economics & theory of demand.		2	-	3	-	-	3	3	3	-	3	-	3	-	-
		CO-2	Understand concept of supply and make use of various methods of demand forecasting for estimating demand of any product.		2	-	2	2	-	3	3	2	3	3	-	3	-	-
		CO-3	Explain basic concepts related to production and cost		-	-	2	-	-	3	3	3	2	3	3	3	-	-
		CO-4	Outline of various market structures.		-	-	2	-	-	3	3	2	2	2	2	3	-	-
		CO-5	Understand nature and structure of Indian economy and basic concepts related to NI, Inflation and business cycle.		-	-	2	-	-	3	3	2	2	2	2	3	-	-
RAS 501					2	-	2.2	2	-	3	3	2.4	2.25	2.6	2.33	3	-	-
20	RCS 501	CO-1	Define basic terms of database management system and explain Entity relationship model.		1	1	3	-	2	-	-	-	-	-	2	2	3	
		CO-2	Understand the concept of relational data model and use of languages such as SQL, Relational Algebra and Relational Calculus		2	2	1	2	2	-	-	-	-	-	2	2	3	
		CO-3	Make use of design principles of normalization to translate conceptual model into relational database model.		2	2	3	2	2	-	-	-	-	-	2	2	3	
		CO-4	Illustrate different transaction processing and distributed database concept.		2	2	1	2	1	-	-	-	-	-	3	2	3	
		CO-5	Outline various concurrency control and deadlock handling techniques during concurrent transaction processing.		2	2	2	2	1	-	-	-	-	-	3	2	3	
		CO-6	Demonstrate Recovery mechanism from transaction failures.		2	2	2	2	2	-	-	-	-	-	3	2	3	
RCS 501					1.83	1.83	2	2	2	-	-	-	-	-	2.5	2	3	

21	RCS 502	CO-1	Remember the complexity of sorting, searching and specific algorithms {Based on Divide and Conquer, Greedy, Dynamic, Backtracking, Branch and Bound, Randomization and Approximation	1	-	-	-	-	-	-	-	-	-	-	-	-	-		
		CO-2	Understand the complexity of these algorithms	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
		CO-3	Solve problems based on discussed algorithms	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO-4	Analyse complexity of these algorithms	3	3	2	3	-	-	-	-	-	-	-	-	-	-	1	3
		CO-5	Determine or compare the proper use of these algorithms	3	3	3	2	-	-	-	-	-	-	-	-	-	-	1	3
		CO-6	Design or create new efficient algorithm	3	3	3	3	-	-	-	-	-	-	-	-	3	1	3	3
		RCS 502				2.16	3	2.66	2.66	-	-	-	-	-	-	-	-	3	1
22	RCS 503	CO-1	Introduce the principles and techniques involved in design and implementation of programming languages	3	-	-	-	-	-	-	-	-	-	-	-	-	3	-	
		CO-2	Understand basic syntax related concepts and analyse semantic behaviour of programs.	2	2	2	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO-3	Familiarization with the sub-programming, variable binding, scoping rules and parameter passing.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO-4	Analyze the features of object- oriented programming, concurrency control and Event Handling.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-	-
		CO-5	Implement object oriented and functional programming concepts for large scale software development.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO-6	Overall advancement toward creation of new modern programming languages.	3	-	-	2	-	-	-	-	-	-	-	-	2	2	-	-
		RCS 503				2.7	2	2	2	-	-	-	-	-	-	-	-	2	2.16
23	RCS 052	CO-1	Remember the basics behind various Web Technologies and core Java.	2	2	2	2	2	-	-	-	-	-	-	2	2	3	-	
		CO-2	Understand the concept of web page designing through HTML, CSS and XML languages.	2	2	3	2	2	-	-	-	-	-	-	2	2	3	-	
		CO-3	Understand the concept and need of Java scripting, Networking using Java in Web page designing.	2	2	3	2	2	-	-	-	-	-	-	2	2	3	-	
		CO-4	Analyze and apply the concept of OOP, Web Page Designing, Scripting, Networking, Servlet's & JSP for designing a dynamic web page.	2	3	3	3	3	-	-	-	3	-	-	3	2	3	-	
		CO-5	Analyze and apply the concept of EJB, JDBC for designing a dynamic web page.	2	2	3	2	2	-	-	-	3	-	-	2	2	3	-	
		CO-6	Implement a web solution for a scenario.	3	2	3	3	3	-	-	-	3	-	-	3	2	3	-	
		RCS 052				2.16	2.16	2.83	2.33	2.33	-	-	-	-	3	-	-	2.33	2
24	RUC 501	CO-1	Understand about the core of Information System (IS), principles and its security	2	3	-	-	-	3	-	-	-	1	-	1	-	-		
		CO-2	Analyze system and applications for Cyber Security threats, vulnerabilities and also different classes of attack and their counter measures.	2	3	-	-	-	2	-	-	-	1	-	1	-	-		
		CO-3	Identify the key components of Physical Security and Network Architecture for Secure Information System.	-	-	-	-	-	3	2	-	-	1	-	1	-	-		
		CO-4	Understand the development of Policies, Procedures, and Guidelines for implementing Security.	1	-	-	-	-	-	-	3	-	1	-	1	-	-		
		CO-5	Illustrate Current Trends in information Security in areas of Cloud Computing, Supply Chain Management and Outsourcing	1	-	-	-	-	2	-	-	-	1	-	1	-	-		
		CO-6	Learn about Cyber Security Policies, Information Security Standards -ISO, IT Act, Copy rights, Cyber Laws to make our system secure.	1	-	-	-	-	3	2	3	-	1	-	1	-	-		
		RUC 501				1.4	3	-	-	-	2.6	2	3	-	1	-	1	-	-
25	RCS 551	CO-1	Understand the basic concepts of Database and ER-Modelling.	1	1	2	-	2	1	-	-	2	-	2	-	2	-		
		CO-2	Define and apply various types of SQL queries.	1	1	2	1	-	-	-	-	-	-	-	2	2	-		
		CO-3	To manage database tables, implement and execute - cursor, procedure, functions and triggers in oracle.	1	1	2	2	2	1	-	-	2	-	2	2	2	-		
		RCS 551				1	1	2	1.5	2	1	-	-	2	-	2	2	2	
26	RCS 552	CO-1	To understand and remember certain algorithms approaches.	2	1	2	-	2	-	-	-	2	-	2	-	3	3		
		CO-2	To analyse and apply these algorithms.	3	3	3	3	-	-	-	-	-	-	-	2	3	3		
		CO-3	To implementation and execute these algorithms.	3	3	3	3	2	-	-	-	2	-	2	2	3	3		
		RCS 552				2.6	2.3	2.6	3	2	-	-	-	2	-	2	2	3	
27	RCS 553	CO-1	State the importance of PPL and describe fundamental elements of PPL.	2	2	1	-	2	-	-	-	3	-	-	2	3	3		
		CO-2	Able to understand the fundamental concepts of most programming languages & the trade-off between language design and implementation.	3	3	3	-	2	-	-	-	3	-	-	2	3	3		
		CO-3	Able to compare programming languages, assess programming languages critically and scientifically.	3	3	3	-	2	-	-	-	3	-	-	2	3	3		
		RCS 553				2.6	2.6	2.3	-	2	-	-	-	3	-	-	2	3	3
28	RCS 554	CO-1	Understand and remember basic concepts related to various web technologies.	3	3	3	3	2	-	-	-	-	-	-	2	2	3		
		CO-2	Analyze and choose the appropriate web technology for its problem domain and be able to write code in HTML, XML, Javascript, JSP, Servlets for web page designing	3	2	2	2	2	-	-	-	-	-	-	3	2	3		
		CO-3	Implement complete end to end web solution.	3	3	3	3	3	-	-	-	3	-	-	2	2	3		
		RCS 554				3	2.6	2.6	2.6	2.33	-	-	-	3	-	-	2.3	2	3

29	RAS 601	CO-1	Student will be able to understand the concept of industrial management.	-	3	3	3	2	-	-	-	-	-	-	-	-	-	
		CO-2	Student will be able to understand the functions & principles of management and basic concept of HRM.	3	-	3	3	-	-	-	-	-	-	-	-	-	-	-
		CO-3	Student will be able to understand the process of work study and inventory control techniques	-	-	3	3	3	-	-	-	-	-	-	-	-	-	-
		CO-4	Student will be able to apply various quality control techniques for process control & product control.	3	3	-	2	-	2	-	-	-	-	-	-	-	-	-
		CO-5	Student will be able to understand basic concepts related to project management and control techniques.	-	-	-	2	-	-	-	-	-	3	3	2	-	-	-
RAS 601				3	3	3	2.6	2.5	2	-	-	3	3	2	-	-	-	
30	RAS 602	CO-1	Comprehend social relations in industry/organization and correlate the dynamics of diverse context of Indian society.	-	-	-	-	-	3	2	-	1	-	-	2	-	-	
		CO-2	Understand the global rise and development of industry and empower themselves to analyze and evaluate different aspects of industrialization.	-	-	2	-	-	3	2	-	-	-	-	2	-	-	
		CO-3	Demonstrate the implications of policies and its consequences in the context of industrialization and its growth in India.	-	-	2	-	-	2	3	-	-	-	-	-	-	-	
		CO-4	Evaluate the social consequences of modernization, automation and industrial activities on the ecosystem thereby, sensitizing the engineers on public health and safety issues which shall serve as cornerstone for cultural, societal and environmental considerations.	-	-	3	-	-	3	2	-	-	-	-	2	-	-	
		CO-5	Envisage prospective models of industrialization across the globe to understand the consumer society and the sociological concerns of industrial development in the present world.	-	-	2	-	-	2	3	-	-	-	-	-	-	-	
		CO-6	Gain and recognize the need for bridging the implications of sociological theories with engineering sciences and encourage themselves for lifelong learning.	-	-	1	-	-	3	1	-	-	-	-	2	-	-	
RAS 602				-	-	2.25	-	-	2.6	2.4	-	1	-	-	2	-	-	
31	RCS 061	CO-1	Remember the basic concepts of Internet of Things (IoT)	2	1	-	-	-	-	-	-	-	-	-	3	2	3	
		CO-2	Understand the hardware concepts of IoT, Arduino, Raspberry pi and Intel boards.	3	2	1	1	3	-	-	-	-	-	-	3	3	3	
		CO-3	Understand digital sensors, actuators Radio-Frequency Identification (RFID) and wireless sensor networks in IoT.	3	2	1	1	3	-	-	-	-	-	-	3	3	3	
		CO-4	Analyse the Network & Communication aspects in IoT for design and development.	3	3	2	2	-	-	-	-	-	-	-	3	3	3	
		CO-5	Understand the better design principles, Hardware and Communication aspects for IoT.	3	3	3	2	-	-	-	-	-	-	-	3	3	3	
		CO-6	Understand and analyze the development of IoT applications such as Smart metering, e-health, automotive applications, home automation, smart cards, designing of smart street lights in smart city.	3	3	3	2	3	-	-	-	-	-	-	3	3	3	
RCS 061				2.83	2.33	2	1.6	3	-	-	-	-	-	3	2.83	3		
32	RCS 601	CO-1	Remember the functions of each and every layer in OSI and TCP/IP model as well as the application layer protocols.	2	1	2	-	-	-	-	-	-	-	2	-	-		
		CO-2	Explain the types of transmission media with real time uses.	2	2	3	-	1	1	-	-	-	-	2	1	1		
		CO-3	Classify the functions of data link layer and apply it on networking paradigms.	2	2	2	-	1	1	-	-	-	-	3	1	1		
		CO-4	Explain the routing protocols and analyze how to assign the IP addresses for the given network.	2	2	2	-	1	1	-	-	-	-	2	2	1		
		CO-5	Explain the services and design issues of Transport layer, Session layer and Presentation layer and able to Compare and contrast TCP and UDP protocol.	3	3	3	-	2	1	1	-	-	-	-	3	2	1	
		CO-6	Analyze the requirements for a given organizational structure and adopt the most appropriate networking architecture and technologies.	2	2	2	1	1	1	2	-	-	-	-	2	2	1	
RCS 601				2.17	2	2.33	1	1.2	1	1.5	-	-	-	2.33	1.6	1		
33	RCS 602	CO-1	Remember the functionality of each phases of compiler and the language processing system.	2	1	2	-	-	-	-	-	-	-	2	1	-		
		CO-2	Understand various Parsing techniques and its implementation on ambiguous grammar.	2	2	3	-	1	-	-	-	-	-	2	3	1		
		CO-3	Apply syntax directed translation scheme and implement it using intermediate code and postfix notation.	2	2	2	-	1	-	-	-	-	-	3	3	1		
		CO-4	Explain the symbol table and their implementation with stack allocation scheme.	2	2	2	-	1	-	-	-	-	-	2	3	2		
		CO-5	Apply design issues of Target Language for generation of "if target code", "basic blocks" and "flow graph".	3	3	3	-	2	-	-	-	-	-	3	3	2		
		CO-6	Analyze various optimization techniques with Directed Acyclic Graph representation of basic blocks and algebraic law.	2	2	2	2	1	-	-	-	-	-	2	3	2		
RCS 602				2.17	2	2.33	2	1.2	-	-	-	-	2.33	2.67	1.6			
34	RCS 603	CO-1	Understand the basics of computer graphics and geometrical primitives.	2	2	2	-	2	-	-	-	-	-	3	2	2		
		CO-2	Demonstrate representation of quadric surface and curves.	2	2	3	-	3	-	-	-	-	-	3	2	2		
		CO-3	Translate algorithm to draw geometrical primitives and demonstrating transformations in 2D and 3D.	3	2	3	-	3	-	-	-	-	-	3	2	2		
		CO-4	Apply different clipping methods on graphical primitives in 2-D and 3D.	3	3	2	-	3	-	-	-	-	-	2	3	3		
		CO-5	Compare various projections for display of 3D graphic representation on 2D screen.	3	3	2	-	3	-	-	-	-	-	2	3	3		
		CO-6	Interpret the natural scene to render it in 2D view using visible surface detection techniques and illumination models.	3	3	3	2	3	-	-	-	-	-	3	3	3		
RCS 603				2.67	2.5	2.5	2	2.83	-	-	-	-	2.67	2.5	2.5			

35	RIT 062	CO-1	Identify the scope and necessity of Data Mining & Warehousing for the society.	3	2	3	2	2	-	-	-	-	-	3	3	3	
		CO-2	Describe the design of data warehousing so that it can be able to solve the root problem.	3	2	3	2	3	-	-	-	-	-	-	3	3	3
		CO-3	Understand the importance of data mining and the principles of business intelligence	3	3	3	3	3	-	-	-	-	-	-	3	3	3
		CO-4	Explain the techniques of clustering, classification, association finding and feature selection on real world data	3	3	3	3	3	-	-	-	-	-	-	3	3	3
		CO-5	Describe data visualization, web mining, spatial mining and temporal mining.	3	3	3	3	3	-	-	-	-	-	-	3	3	3
			Design a data mining process for an application, including data preparation, modelling and evaluation	3	3	2	3	3	-	-	-	-	-	-	3	3	3
RIT 062				3	2.67	2.83	2.67	2.3	-	-	-	-	-	3	3	3	
36	RCS 651	CO-1	To understand the working principle of various communication protocols.	2	2	1	1	-	-	-	-	-	-	1	3	3	
		CO-2	Formulate the algorithms to implement various routing algorithms.	2	3	3	2	-	-	-	-	-	-	-	2	3	3
		CO-3	To know the concept of data transfer between nodes.	3	3	3	2	-	-	-	-	-	-	-	2	2	3
RCS 651				2.3	2.6	2.3	1.7	-	-	-	-	-	-	1.7	2.7	3	
37	RCS 652	CO-1	Remember and implement the functionality of each phase of compiler in C language.	2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO-2	Implement the parsing techniques of compilation process in C language.	2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO-3	Implement the various optimization techniques in C language.	2	3	3	3	3	2	-	-	-	2	-	2	3	3
RCS 652				2	3	3	3	3	2	-	-	-	2	-	2	3	3
38	RCS 653	CO-1	Understand the basic principles of implementing computer graphics primitives	2	3	3	3	-	-	-	-	-	-	1	3	3	
		CO-2	Implementing key algorithms for modeling and rendering graphical data.	2	3	3	3	-	-	-	-	-	-	-	3	3	3
		CO-3	Develop design and problem-solving skills with application to computer graphics	2	3	3	3	-	-	-	-	-	-	-	2	3	3
RCS 653				2	3	3	3	-	-	-	-	-	-	2	3	3	
39	RCS 654	CO-1	Understand the mining techniques for realistic data, and also to conceptualize Data Mining and the need for pre-processing.	2	2	2	-	2	1	-	-	2	-	2	-	3	3
		CO-2	Develop the algorithms used for various types of Data Mining Problem.	3	3	3	3	-	-	-	-	-	-	-	2	3	3
		CO-3	Create algorithms to solve data mining problems using weka tool.	3	3	3	3	2	1	-	-	2	-	2	2	3	3
RCS 654				2.6	2.6	2.6	3	2	1	-	-	2	-	2	2	3	3
40	RCS 701	CO-1	Define the characterization of Distributed Systems, Theoretical Foundation for Distributed System and Concepts in Message Passing Systems.	1	1	1	-	2	-	-	-	-	-	1	-	-	
		CO-2	Explain the Distributed Mutual Exclusion and Distributed Deadlock Detection.	2	3	2	-	-	-	-	-	-	-	-	2	1	1
		CO-3	Apply the Agreement Protocols and Distributed Resource Management.	2	3	3	-	-	-	-	-	-	-	-	2	3	-
		CO-4	Analyze the Failure Recovery in Distributed Systems and Fault Tolerance.	2	2	2	-	3	1	-	-	-	-	-	2	-	-
		CO-5	Evaluate the Transactions and Concurrency Control, Distributed Transactions and replication.	2	2	3	-	2	1	-	-	-	-	-	2	2	3
		CO-6	Design the distributed systems.	2	2	3	1	2	1	-	-	-	-	-	2	2	3
RCS 701				1.8	2.2	2.3	1	2.25	1	-	-	-	-	1.8	2	2.33	
41	RCS 751	CO-1	Understand and remember fundamentals of distributed networking approaches.	2	2	2	2	-	-	-	-	-	-	2	-	-	
		CO-2	Understand and remember the certain algorithms approaches in distributed computing.	3	3	3	3	-	-	-	-	-	-	-	2	-	-
		CO-3	Implementation of these advance computing algorithms and execute.	3	3	3	3	2	1	-	-	2	-	2	2	-	-
RCS 751				2.6	2.6	2.6	2.6	2	1	-	-	2	-	2	2	-	-
42	RCS 702	CO-1	Recall the fundamental concepts of Intelligence, knowledge representation and Artificial Intelligence.	0.3	-	-	-	-	-	-	-	-	-	2	3	3	
		CO-2	Understand what intelligent drives are and where to use AI concept.	3	2	2	1	-	-	-	-	-	-	-	2	3	3
		CO-3	Apply the AI methodology to create an intelligent agent and explore the area of AI and their applications.	3	3	2	2	-	2	-	-	-	-	-	3	3	3
		CO-4	Analyse the concept of reasoning and machine learning of AI in real world and analyse their impacts.	3	3	3	3	2	-	-	-	-	-	-	3	3	3
		CO-5	Evaluate the AI impacts on Pattern recognition and perform statistical analysis for measuring outcome of the system.	3	2	3	3	2	-	-	-	-	-	-	2	3	3
		CO-6	Analyse the impact of AI based applications.	3	2	3	-	3	2	-	-	-	-	-	3	3	3
RCS 702				3	2.4	2.6	2.25	2.3	2	-	-	-	-	2.5	3	3	
43	RCS 071	CO-1	Explain the concepts and architecture of Neural Networks.	3	2	1	1	-	-	-	-	-	-	3	3	-	
		CO-2	Explain and apply Back Propagation Neural Network Architectures and Algorithms	3	3	1	1	-	-	-	-	-	-	-	3	3	-
		CO-3	Explain and apply the concepts of fuzzy sets, theory, operations and properties.	3	2	1	1	-	-	-	-	-	-	-	3	3	-
		CO-4	Explain and apply Fuzzy Membership and fuzzy Rules	3	3	1	1	-	-	-	-	-	-	-	3	3	-
		CO-5	Demonstrate fuzzy controllers and its industrial applications.	3	3	2	1	-	-	-	-	-	-	-	3	3	-
		CO-6	Describe the basic concepts and apply working principles of Genetic Algorithm	3	3	1	1	-	-	-	-	-	-	-	3	3	-
RCS 071				3	2.6	1.16	1	-	-	-	-	-	-	3	3	-	
44	RCS 075	CO-1	Demonstrate the fundamental of cloud and their computation over parallel and distributed computing.	3	2	2	1	-	-	-	-	-	-	3	2	2	
		CO-2	Understand the concept of virtualization and their mechanism with service-oriented architecture.	3	3	2	2	2	-	-	-	-	-	-	3	2	2
		CO-3	Organize the cloud data in Public, Private and Hybrid Clouds on cloud storage.	2	3	3	3	2	2	-	-	2	2	-	3	3	3
		CO-4	Examine the cloud data by Resource provisioning methods and implement global security on it.	3	3	3	3	3	2	-	-	3	3	2	2	3	3
		CO-5	Analyze the virtual box and programming environment can be applied over Google app engine.	3	3	3	3	3	2	-	-	3	3	3	3	3	3
RCS 075				2.8	2.8	2.6	2.4	2.5	2	-	-	2.66	2.66	2.5	2.8	2.6	2.6

45	RCS 080	CO-1	Describe and explain the concept machine learning.	3	3	2	3	2	1	-	-	-	1	-	2	-	3
		CO-2	Describe and explain decision tree and artificial Neural Network.	3	3	2	3	2	1	-	-	-	1	-	2	-	3
		CO-3	Explain hypothesis and Bayesian network in machine learning	3	3	2	3	2	1	-	-	-	1	-	2	-	3
		CO-4	Explain and apply computational learning and instance-based learning.	3	3	2	3	2	1	-	-	-	1	-	2	-	3
		CO-5	Illustrate the genetic algorithm.	3	3	2	3	2	1	-	-	-	1	-	2	-	3
		CO-6	Explain and illustrate the reinforcement learning.	3	3	2	3	2	1	-	-	-	1	-	2	-	3
RCS 080				3	3	2	3	2	1	-	-	-	1	-	2	-	3
46	RCS 086	CO-1	Define and explain Machine Learning, Linear Models and Training networks	3	3	3	1	-	-	-	-	-	-	2	1	-	
		CO-2	Illustrate different operations and architectures of Deep Network	3	3	3	2	-	-	-	-	-	-	2	2	-	
		CO-3	Apply Dimensionality Reduction in Deep Networks	3	3	3	2	-	-	-	-	-	-	2	2	-	
		CO-4	Explain and apply Optimization in Deep Networks	3	3	3	2	-	-	-	-	-	-	2	2	-	
		CO-5	Explain and apply Generalization in Deep Networks	3	3	3	2	-	-	-	-	-	-	2	2	-	
		CO-6	Analyse and determine different case studies of Deep Learning applications	3	3	3	3	3	-	-	-	-	-	3	3	3	
RCS 086				3	3	3	2	3	-	-	-	-	-	2.16	2	3	
47	ROE 074	CO-1	Students having the clarity about human aspirations, goal, activities and purpose of life.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-2	Students understand Human being (the knower,the experiencer, the doer) and its expansion, its interconnectedness & co-existence.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-3	Students develop the competence of realization about co-existence through self exploration, self awareness& self evaluation.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-4	Students analyze that the process of inner evolution is particularly awakening to activities of self realization, understanding & contemplation in the self.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-5	Students appreciate comprehensive knowledge about the co-existence & participate in the larger order through realization,thought, behavior & work.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
ROE 074				-	-	-	-	-	3	3	3	3	2	-	3	-	-
48	ROE 088	CO-1	The students learn about different type of relations with expression & human conduct to attain comprehensive human goals.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-2	Students understand about the conceptual frame work of undivided society as well as undivided human order.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-3	Student develop the exposure for transition from current state to the undivided society & universal human order.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-4	Students appreciate universal human order as continuity & expanse of order in living from family order to world family order.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-5	Students analyse current state & possibilities of participation in this direction to undivided society as well as universal human order.	-	-	-	-	-	3	3	3	3	2	-	3	-	-
ROE 088				-	-	-	-	-	3	3	3	3	2	-	3	-	-
49	RCS 851	CO-1	To identify and understand the latest technology and research fields	1	2	2	2	3	2	-	2	2	3	-	-	1	2
		CO-2	To develop efficient presentation skills and effective communication skills	1	2	2	2	3	2	-	2	2	3	-	-	1	2
		CO-3	To understand and promote the use of ICT and develop document preparing skills	1	2	2	-	3	2	-	2	2	3	-	-	1	2
RCS 851				1	2	2	2	3	2	-	2	2	3	-	-	1	2
50	KNC 402	CO-1	To read and write simple Python programs.	2	3	3	-	3	-	3	2	2	-	-	3	2	2
		CO-2	To develop Python programs with conditionals and loops.	3	3	3	2	3	2	2	2	3	-	-	2	3	3
		CO-3	To define Python functions and to use Python data structures – lists, tuples, dictionaries	3	3	2	3	3	3	3	2	3	-	-	3	3	3
		CO-4	To do input/output with files in Python	3	3	3	3	3	3	2	2	3	-	-	2	3	3
		CO-5	To do searching,sorting and merging in Python	3	3	3	3	3	3	2	2	3	-	-	3	3	3
KNC 402				2.8	3	2.8	2.75	3	2.75	2.4	2	2.8	-	-	2.6	2.8	2.8
51	RCS 754/852	CO-1	Able to develop a design solution, test and validate the conformance of the developed prototype against the original requirements of the problem	2	3	2	1	2	1	2	2	3	3	1	3	3	3
		CO-2	Work as a responsible member and possibly a leader of a team in developing software solutions	3	3	3	3	3	2	1	1	3	3	3	2	3	3
		CO-3	Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project	3	3	3	3	3	2	1	1	3	3	2	2	3	3
RCS 754/852				2.6	3	2.6	2.3	2.6	1.6	1.3	1.3	3	3	2	2.6	3	3
52	RCS 753	CO-1	An ability to work in actual working environment.	3	3	3	-	2	-	-	-	3	-	-	2	3	3
		CO-2	An ability to utilize technical resources	3	3	2	-	2	-	-	-	3	-	-	2	3	3
		CO-3	An ability to write technical documents and give oral presentations related to the work completed	2	2	2	-	2	-	-	-	3	-	-	2	3	3
RCS 753				2.6	2.6	2.33	-	2	-	-	-	3	-	-	2	3	3
53	RCS 752	CO-1	To Understand and remember the basic concepts of prolog programming.	3	3	3	3	2	1	-	-	1	-	-	3	3	3
		CO-2	To Implement the recursion and sequences using prolog programming	3	3	3	3	2	1	-	-	1	-	-	3	3	3
		CO-3	To Implement the various applications of Artificial Intelligence using prolog	2	2	2	3	2	1	-	-	1	-	-	3	3	3
RCS 752				2.6	2.6	2.6	3	2	1	-	-	1	-	-	3	3	3