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 : 2017-18

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	Design, develop and test software for different applications
1	RAS 301	CO-1	Understand the concept of numerical techniques in finding solution of linear system of equations.		3	3	1	2	1	-	-	-	-	-	-	1	-	-
		CO-2	Analyze the problems, which are used in engineering and how to solve these problemsusing different transforms.		3	2	2	3	1	-	-	-	-	-	-		-	-
		CO-3	Comprehend the meaning of analytic function, singularities and Laurent series in evaluating real integral.		3	2	1	1	1	-	-	-	-	-	-	-	-	-
		CO-4	Construct, analyze and evaluate the solution of differential equation by using numerical methods.		3	3	3	2	3	-	-	-	-	-	-	-	-	-
		CO-5	Evaluate the root of the algebraic and transcendental equation by using numerical method.		3	3	2	3	2	-	-	-	-	-	-	-	-	-
		CO-6	Analyze the behavior of statistical data by using testing of hypothesis and different probability distributions.		3	3	2	3	2	-	-	-	-	-	-	-	-	-
		RAS 301			3	2.67	1.83	2.33	1.67	-	-	-	-	-	-	1	-	-
2	RCS 301	CO-1	Define the basic mathematical objects and algebraic structures with its properties.		3	2	3	-	2	-	-	-	-	-	-	3	2	-
		CO-2	Illustrate simple proofs for mathematical objects, algebraic structures and possess the ability to verify it.		3	3	3	-	2	-	-	-	-	-	-	3	2	-
		CO-3	Illustrate the concept of partial order sets and Lattices.		3	3	3	-	2	-	-	-	-	-	-	3	2	-
		CO-4	Construct the K-map by simplifying the Boolean expressions and functions.		3	3	3	-	2	-	-	-	-	-	-	3	2	-
		CO-5	Identifythe formal logical arguments using propositional and predicate logic		3	3	3	1	2	-	-	-	-	-	-	3	2	-
		CO-6	Apply counting and discrete structural techniques to solve multidisciplinary applications.		3	3	3	1	2	-	-	-	-	-	-	3	2	-
		RCS 301			3	2.83	3	1	2	-	-	-	-	-	-	3	2	-
3	RCS 302	CO-1	Understand the fundamentals of Computer Organization and Architecture.		1	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO-2	Analyze the working of Control unit over computer system.		2	2	2	1	-	-	-	-	-	-	-	2	3	-
		CO-3	Identify the application role of various types of computer instructions and use them for solving problems.		2	2	2	2	-	-	-	-	-	-	-	2	3	-
		CO-4	Illustrate the working principles of memory organization of computer system.		2	2	2	2	-	-	-	-	-	-	-	2	3	-
		CO-5	Evaluate the various mapping scheme in computer system.		2	2	2	2	-	-	-	-	-	-	-	2	3	-
			Design and assemble the typical I/O interface and apply a combination of hardware and software to address a problem.		3	2	2	3	2	-	-	-	-	-	-	2	3	-
		RCS 302			2	2	2	2	2	-	-	-	-	-	-	2	3	-
4	RCS 305	CO-1	Understand and apply the concept of arrays, linked lists, stacks, queues, trees, and graphs.		3	2	-	-	-	-	-	-	-	-	-	-	3	-
		CO-2	Demonstrate the operations of linear and nonlinear Data Structures.		3	2	-	-	-	-	-	-	-	-	-	-	3	-
		CO-3	Implementation of Trees and Graphs and perform various operations on these data structure.		3	2	2	-	-	-	-	-	-	-	-	-	3	-
		CO-4	Understand the concept of recursion, application of recursion and its implementation.		3	3	2	-	-	-	-	-	-	-	-	2	3	2
		CO-5	Analyse time and space complexity of different data structure techniques.		3	3	2	-	-	-	-	-	-	-	-	-	3	2
		CO-6	Discuss and apply the concept of insertion, deletion, searching and sorting for problemsolving.		2	2	2	2	-	-	-	-	-	-	-	2	2	2
		RCS 305			2.83	2.33	2	2	-	-	-	-	-	-	-	2	2.83	2
5	REC 301	CO-1	Understand fundamental concepts and techniques used in digital electronics		2	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO-2	Examine the structure of various number system and their application in digital design		2	2	2	-	-	-	-	-	-	-	-	-	-	-
		CO-3	Understand, analyze and design various combinational and sequential circuit		2	2	2	-	-	-	-	-	-	-	-	-	2	-
		CO-4	Design optimise solution for digital applications.		2	2	3	-	-	-	-	-	-	-	2	-	2	-
		CO-5	Identify and prevent various hazards and timings problems in a digital design		-	2	1	-	-	-	-	-	-	-	-	-	-	-
		CO-6	Build and troubleshoot digital circuits		2	2	2	3	2	-	-	-	-	-		1	2	3
		REC 301			2	2	2	3	2	-	-	-	-	-	2	1	2	3

6	RVE 301	CO-1	Understand the need, concept and content of value-education in individual's life and modifies their aspirations for happiness & prosperity.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-2	Comprehend the term self-exploration and its application for self-evaluation and development.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-3	Reconstruct the concepts about different values & discriminate between them.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-4	Analyze the concept of co-existence & evaluate the program to ensure self regulation.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-5	Identify the holistic perception of harmony at level of self, family, society, nature and explain it by various examples.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		CO-6	Apply professional ethics in their future profession & contribute for making a value based society.		-	-	-	-	-	3	3	3	3	2	-	3	-	-
		RVE 301			-	-	-	-	-	3	3	3	3	2	-	3	-	-
7	RCS 351	CO-1	Understand and remember the basic concepts of prolog programming.		3	3	3	-	2	-	-	-	-	-	-	3	2	2
		CO-2	Implement the concept of set theory, recursive functions and combinatorics.		3	3	3	-	2	-	-	-	-	-	-	3	2	2
		CO-3	Implement state of art problems using the concepts of discrete structures.		3	3	3	2	2	-	-	-	-	-	-	3	2	2
		RCS 351			3	3	3	2	2	-	-	-	-	-	-	3	2	2
8	RCS 352	CO-1	Understand the fundamentals of Computer Organization and Architecture.		1	2	2	1	3	-	-	-	-	-	-	2	3	3
		CO-2	Describe the working of Control unit of computer system.		1	2	2	1	3	-	-	-	-	-	-	2	3	3
		CO-3	Understand the role of various types of computer instructions and use them for solving problems.		1	2	2	1	3	-	-	-	-	-	-	2	3	3
		RCS 352			1	2	2	1	3	-	-	-	-	-	-	2	3	3
9	RCS 355	CO-1	Apply the knowledge of data structure concepts		2	2	2	2	2	-	-	-	-	-	-	3	3	3
		CO-2	Choose the appropriate data structure for algorithm design.		3	3	3	3	2	-	-	-	-	-	-	3	3	3
		CO-3	Apply fundamental of data structure for Sorting, Searching, Stack& Queues.		3	3	3	3	2	-	-	-	-	-	-	3	3	3
		RCS 355			3	2.8	2.8	2.8	2	-	-	-	-	-	-	3	3	3
10	REC 351	CO-1	Understand, analyze, construct and troubleshoot simple combinational and sequential circuits.		2	2	2	-	2	-	-	-	2	-	-	2	2	-
		CO-2	Design and troubleshoot a different logic circuits		3	3	3	3	2	-	-	-	2	-	-	2	2	-
		CO-3	Measure and record the experimental data, analyze the results, and prepare a formal laboratory report		3	3	3	3	2	-	-	-	2	-	-	2	2	-
		KCS 354			2.6	2.6	2.6	3	2	-	-	-	2	-	-	2	2	-
11	RAS 402	CO-1	Recall an understanding of the basic concepts of ecology and environment. (K1)		2	-	2	-	-	-	3	-	-	-	-	2	-	-
		CO-2	Relate the human needs and activities to their impact on environment and ways to achieve environment conservation. (K3)		-	-	2	-	-	-	3	-	-	-	-	2	-	-
		CO-3	Identify the need for finding substitutes and conservation of scarce natural resources. (K2)		-	-	2	-	2	2	3	-	-	-	-	2	-	-
		CO-4	Evaluate the applicability and relative importance of different types of energy sources. (K5)		3	-	2	-	-	-	3	-	2	-	-	-	-	-
		CO-5	Analyze existing environmental problems for designing suitable measures to control it. (K4)		-	3	3	-	2	2	3	2	-	-	-	2	-	-
		CO-6	Extend the educational components of environment to individual, social, national and legal variable for problem solving. (K4)			-	2	-	3	3	2	2	-	2	-	3	-	-
		RAS 402			2.5	3	2.16	-	2.33	2.33	2.83	2	2	2	-	2.2	-	-
12	RCS 401	CO-1	Understand the structure, types and functions of modern Operating Systems.	K2	3	2	2	2	2	1	-	-	-	-	-	2	3	3
		CO-2	Identify and apply knowledge of various software and hardware synchronization tools and algorithms for solving critical section problem in concurrent processes.	K3	3	2	2	2	2	1	-	-	-	-	-	2	3	3
		CO-3	Apply and analyze process management and memory management concepts to solve various software problems.	K3	3	2	3	2	2	1	-	-	-	-	-	3	3	3
		CO-4	Understand, review and analyze different file handling, I/O and disk management strategies with various access control techniques.		3	3	3	2	2	1	-	-	-	-	-	3	3	3
		CO-5	Analyze the concepts of deadlock in operating systems and apply the deadlock handling techniques in multiprogramming system.		3	3	3	3	2	1	-	-	-	-	-	3	3	3
		CO-6	Apply and relate the concepts of process, memory and file management, concurrency control, deadlock handling with various modern operating systems like Linux, Windows, Mac etc		3	3	3	3	2	1	-	-	-	-	-	3	3	3
		RCS 401			3	2.5	2.67	2.33	2	1	-	-	-	-	-	2.67	3	3

13	RCS 402	CO-1	Learn the basic concepts of Software Engineering and know classical and evolving software engineering SDLC models		1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO-2	Understand the process of gathering and identifying the requirements for the software development and Quality Standards.		2	-	-	-	2	-	-	-	1	1	-	-	-	-	1
		CO-3	Demonstrate use of various design techniques and principlestosolve software engineering problems and meet desired needs within realistic constraints.		2	-	2	-	2	-	-	-	-	2	-	-	-	-	2
		CO-4	Summarisesoftware testing methods to verify, validate software systems and evaluate software quality and correctness.		2	-	2	-	2	-	-	-	2	2	-	-	-	-	2
		CO-5	Outline Software maintenance approaches and processes for management of software development projects.		2	-	-	-	2	2	-	-	2	2	2	-	-	-	2
		CO-6	Apply basic software quality assurance practices to ensure that software designs, development, and maintenance meet or exceed applicable standards.		2	-	2	-	2	2	-	-	2	2	-	2	2	2	3
		RCS 402			1.8	-	2	-	2	2	-	-	1.75	1.8	2	2	2	2	1.83
14	RCS 403	CO-1	Recall and identify different concepts of set theory, proving techniques and also be able to explain the language classifications.		3	3	3	3	-	-	-	-	-	-	-	3	3	2	
		CO-2	Analyse and prove the equivalence of languages and illustrate how to design finite state machines and convert regular expressions to Finite State Automata.		3	3	3	2	-	-	-	-	-	-	-	3	3	2	
		CO-3	Construct pushdown automata and demonstrate the construction of context free grammars.		3	3	2	2	-	-	-	-	-	-	-	3	3	2	
		CO-4	Demonstrate the construction of a Turing Machine.		3	2	2	2	-	-	-	-	-	-	-	2	3	2	
		CO-5	Classify the problems based on their complexity.		2	2	3	2	-	-	-	-	-	-	-	2	3	2	
		CO-6	Perform adder, subtraction, multiplication, division by using Turing Machines.		2	2	3	3	-	-	-	-	-	-	-	3	3	2	
		RCS 403			2.67	2.5	2.67	2.33	-	-	-	-	-	-	-	2.67	3	2	
15	REC 405	CO-1	Understand the fundamentals of microprocessor systems		2				2	-	-	-	-	-	-	-	-	-	
		CO-2	Describe the instruction set of microprocessor system.		2				2	-	-	-	-	-	-	-	-	-	
		CO-3	Design simple assembly language programs for particular applications.		2	2	2	2	-	-	-	-	-	-	-	-	3	3	
		CO-4	Understand various types of interrupts in 8085.		2				-	-	-	-	-	-	-	-	3	-	
		CO-5	Understand the various data transfer schemes in 8085.		2				-	-	-	-	-	-	-	2	3	-	
		CO-6	Interface programmable peripheral devices with 8085 microprocessor for particular application.		2	2	2		-	-	-	-	-	-	-	2	3	3	
		REC 405			2	2	2	2	2	-	-	-	-	-	-	2	3	3	
16	ROE 044	CO-1	Recall the various contributions of scientists and research organizations in astrophysical activities.		3	2	1	2	2	-	2	-	-	1	-	3	-	-	
		CO-2	Illustrate the problems of eye related to atmosphere, compare non optical telescopic with optical telescopic techniques and measurement techniques in astrophysics (SPACE).		3	2	1	2	3	-	2	-	-	1	-	3	-	-	
		CO-3	Apply physics principles to the interpretation of a broad range of astrophysical observations like solar system.		3	3	1	2	2	-	2	-	-	1	-	3	-	-	
		CO-4	Discover the origin of stars, comets, asteroids and satellites in SPACE.		3	3	1	2	2	-	2	-	-	1	-	3	-	-	
		CO-5	Analyse the importance of galaxy origin and its types.		3	3	1	2	3	-	2	-	-	1	-	3	-	-	
		CO-6	Deduce the laws and principles of cosmology concepts in universe.		3	3	1	2	3	-	2	-	-	1	-	3	-	-	
		ROE 044			3	2.3	1	2	2.5	-	2	-	-	1	-	3	-	-	
17	RCS 451	CO-1	Remember and understand basic concepts of operating system.		2	2	2	-	2	1	-	-	2	-	2	-	3	3	
		CO-2	Apply the acquired knowledge to analyze the different approaches for the allocation of system resources by operating System.		3	3	3	3	-	-	-	-	-	-	-	2	3	3	
		CO-3	Examine and propose new / alternate solutions for different operating system tasks.		3	3	3	3	2	1	-	-	2	-	2	2	3	3	
		RCS 451			2.6	2.6	2.6	3	2	1	-	-	2	-	2	2	3	3	
18	RCS 452	CO-1	Understands software engineering practices used over entire system development lifecycle.		3	2	2	2	2	-	-	-	3	3	-	3	3	3	
		CO-2	An ability to analyze and design software based on the requirement specification using UML tools.		3	3	3	3	3	-	-	-	3	3	-	3	3	3	
		CO-3	Implement a new software engineering project by effectively applying software engineering practices.		3	3	3	3	3	-	-	-	3	3	-	3	3	3	
		RCS 452			3	2.6	2.6	2.6	2.6	-	-	-	3	3	-	3	3	3	
19	RCS 453	CO-1	Master Regular languages and finite automata, Master Context -Free languages, push-Down automata, and Turing Recognizable Languages.		3	3	2	2	1	-	-	-	-	-	-	2	1	1	
		CO-2	Exposed to A broad overview of the theoretical foundations of computer science		3	3	-	2	1	-	-	-	-	-	-	2	2	2	
		CO-3	Familiar with thinking analytically and intuitively for problem- Solving situations in related areas of theory in computer science.		3	3	3	3	1	-	-	-	-	-	-	2	2	2	
		RCS 453			3	3	2.5	2.33	1	-	-	-	-	-	-	2	1.67	1.67	

20	RCS 454	CO-1	Learn and understand the basic concepts and constructs of Python programming.		2	1	2	1	2	-	-	-	2	-	-	-	-	3
		CO-2	Analyze and apply the appropriate programming constructs for problem solving.		3	2	3	1	2	-	-	-	2	-	-	2	-	3
		CO-3	Implement projects using Python programming skills.		3	-	3	-	2	1	-	-	2	-	2	2	3	3
		RCS 454			2.6	1.5	2.6	1	2	1	-	-	2	-	2	2	3	3
21	NHU-501	CO1	Understand the basic concepts of Engineering Economics & theory of demand.		2		3	-	-	3	3	3	-	3	-	3	-	-
		CO2	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	-	-
		CO3	Explain basic concepts related to production and cost.		-	-	2	-	-	3	3	3	2	3	3	3	-	-
		CO4	Outline of various market structures.		-	-	2	-	-	3	3	2	2	2	2	3	-	-
		CO5	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	-	-
		NHU-501			2	-	2.2	2	-	3	3	2.4	2.25	2.6	2.33	3	-	-
22	NCS-501	CO1	Remember the complexity of certain sorting, searching and specific algorithms		1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Understand the complexity of these algorithms		1	-	-	-	-	-	-	-	-	-	-	-	-	1
		CO3	Solve problems based on discussed algorithms		2	3	-	-	-	-	-	-	-	-	-	-	-	2
		CO4	Analyse complexity of these algorithms		3	3	2	3	-	-	-	-	-	-	-	-	1	3
		CO5	Determine or compare the proper use of these algorithms		3	3	3	2	-	-	-	-	-	-	-	-	1	3
		CO6	Design or create new efficient algorithm		3	3	3	3	-	-	-	-	-	-	-	3	1	3
					2.16	**3**	**2.66**	**2.66**	-	-	-	-	-	-	-	**3**	**1**	**2.4**
23	NCS-502	CO1	Define the fundamental elements of database management system.		1	1	3	-	2	-	-	-	-	-	-	1	1	3
		CO2	Understand the concept of relational data model and master the basics of SQL and construct queries using SQL, Relational Algebra and Calculus and apply query processing and optimization.		1	2	1	-	2	-	-	-	-	-	-	1	1	3
		CO3	Apply design principles for logical design of databases, including normalization approach.		1	2	2	-	3	-	-	-	-	-	-	2	1	3
		CO4	Analyse the basic issues of transaction processing system and distributed database system.		1	3	1	-	2	-	-	-	-	-	-	3	1	3
		CO5	Evaluate the role of concurrency control techniques in DBMS and deadlock concepts.		1	2	2	-	1	-	-	-	-	-	-	3	1	3
		CO6	Discuss the mechanism for Recovery with concurrent transaction.		1	2	3	-	2	-	-	-	-	-	-	2	1	3
		NCS-502			**1**	**2**	**2**	-	**2**	-	-	-	-	-	-	**2**	**1**	**3**
24	NCS-503	CO1	Recall the structure and design principles of programming languages.		1	-	1	1	1	-	-	-	1	1	-	1	-	1
		CO2	Understand the variable declarations in programming languages.		1	1	2	2	2	-	-	-	2	1	1	1	1	1
		CO3	Explain the data types of different programming languages.		1	-	2	2	2	-	-	-	2	1	1	1	1	1
		CO4	Compare various logic programming and functional programming languages features.		-	1	2	2	2	-	-	-	2	1	2	2	1	1
		CO5	Analyze the features of programming languages.		2	-	2	2	2	-	-	-	2	1	-	2	1	1
		CO6	Importance the various programming environments.		1	-	2	2	2	-	-	-	2	2	-	2	2	1
		NCS-503			**1.2**	**1**	**1.83**	**1.83**	**1.83**	-	-	-	**1.83**	**1.17**	**1.33**	**1.5**	**1.2**	**1**
25	NCS-504	CO1	Understand general purpose programmable predefined functions		3	3	3	3	2	1	-	-	-	-	-	1	1	3
		CO2	Apply validation-using JavaScript.		3	3	3	3	2	1	-	-	-	-	-	3	1	3
		CO3	Develop a dynamic webpage by the use of javascript and DHTML		3	3	2	2	3	1	-	-	-	-	-	3	1	3
		CO4	Write a server side java application called Servlet to catch form data sent from client, process it and store it on database.		3	3	3	2	2	1	-	-	-	-	-	3	1	3
		CO5	Connect a java program to a DBMS and perform insert, update and delete operations on DBMS table		3	3	3	2	1	1	-	-	-	-	-	3	1	3
		CO6	Develop a webpage by the use of server side scripting like PHP		3	3	3	3	2	1	-	-	-	-	-	3	1	3
		NCS-504			**3**	**3**	**2.8**	**2.5**	**2**	**1**	-	-	-	-	-	**2.67**	**1**	**3**
26	NCS-505	CO-1	Understand the fundamentals of Computer Organization and Architecture.		3	3	3	3	3	-	-	-	-	-	-	1	3	1
		CO-2	Analyze the working of Control unit over computer system.		3	3	3	2	3	-	-	-	-	-	-	1	3	1
		CO-3	Identify the application role of various types of computer instructions and use them for solving problems.		2	2	3	2	3	-	-	-	-	-	-	1	3	1
		CO-4	Illustrate the working principles of memory organization of computer system.		2	2	3	2	3	-	-	-	-	-	-	1	3	1
		CO-5	Evaluate the various mapping scheme in computer system.		3	3	2	2	2	-	-	-	-	-	-	1	3	1
		CO-6	Design and assemble the typical I/O interface and apply a combination of hardware and software to address a problem.		2	3	3	2	2	1	-	-	-	-	-	1	3	1
		NCS-505			**2.5**	**2.67**	**2.83**	**2.17**	**2.67**	**1**	-	-	-	-	-	**1**	**3**	**1**
27	NCS-551	CO1	Understand and remember certain algorithms approaches.		2	2	2	-	-	-	-	-	-	-	-	3	3	3
		CO2	Analyse and apply these algorithms.		3	3	3	3	-	-	-	-	-	-	-	3	3	3
		CO3	Implementation and execute these algorithms.		3	3	3	3	2	1	-	-	1	-	-	3	3	3
		NCS-551			**2.6**	**2.6**	**2.6**	**3**	**2**	**1**	-	-	**1**	-	-	**3**	**3**	**3**
28	NCS-552	CO1	Understand and remember certain features of Oracle, Entity relationship and		2	2	2	-	2	1	-	-	2	-	2	-	3	3
		CO2	Analyse Normalization and SQL/PL-SQL queries.		3	3	3	3	-	-	-	-	-	-	-	2	3	3
		CO3	Implement and execute cursor, procedure, functions, packages and triggers in oracle.		3	3	3	3	2	1	-	-	2	-	2	2	3	3
		NCS-552			**2.6**	**2.6**	**2.6**	**3**	**2**	**1**	-	-	**2**	-	**2**	**2**	**3**	**3**

29	NCS-553	CO1	State the importance of PPL and describe fundamental elements of PPL.		2	2	1	-	2	-	-	-	3	-	-	2	3	3
		CO2	Understand the fundamental concepts of most programming languages & the tradeoffbetween language design and implementation.		3	3	3	-	2	-	-	-	3	-	-	2	3	3
		CO3	Compare programming languages, assess programming languages critically and scientifically.		3	3	3	-	2	-	-	-	3	-	-	2	3	3
			NCS-553		**2.6**	**2.6**	**2.33**	**-**	**2**	**-**	**-**	**-**	**3**	**-**	**-**	**2**	**3**	**3**
30	NCS-554	CO1	Understand and remember basic concepts related to various web technologies.		3	3	3	3	2	-	-	-	-	-	-	2	3	3
		CO2	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	3	2
		CO3	Implement complete end-to-end web solution.		3	3	3	3	2	-	-	-	-	-	-	2	3	3
			NCS-554		**3**	**2.6**	**2.6**	**2.6**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2.3**	**3**	**2.6**
31	NHU-601	CO1	Understand the concept of industrial management.		2	-	2	1	-	1	3	2	3	1	3	3	-	-
		CO2	Understand the functions & principles of management and basic concept of HRM.		3	-	2	-	-	2	2	3	3	2	3	3	-	-
		CO3	Understand the process of work study and inventory control techniques		3	-	2	-	-	1	2	3	2	2	3	3	-	-
		CO4	Apply various quality control techniques for process control & product control.		3	-	3	-	-	2	2	2	1	1	1	3	-	-
		CO5	Understand basic concepts related to project management and control techniques.		2	-	2	-	-	1	2	3	3	1	2	3	-	-
			NHU-601		**2.6**	**-**	**2.2**	**1**	**-**	**1.4**	**2.2**	**2.6**	**2.4**	**1.4**	**2.4**	**3**	**-**	**-**
32	NCS-601	CO1	Remember the functions of OSI and TCP/IP layers.		2	1	2	-	-	-	-	-	-	-	-	2	-	-
		CO2	Explain the types of transmission media with real time uses.		2	2	3	-	1	1	-	-	-	-	-	2	1	1
		CO3	Classify the functions of data link layer and apply it on networking paradigms.		2	2	2	-	1	1	-	-	-	-	-	3	1	1
		CO4	Explain the routing protocols and analyze the concept of addressing.		2	2	2	-	1	1	-	-	-	-	-	2	2	1
		CO5	Explain the services and design issues of Transport layer, Session layer and Presentation layer.		3	3	3	-	2	1	1	-	-	-	-	3	2	1
		CO6	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
			NCS-601		**2.17**	**2**	**2.33**	**1**	**1.2**	**1**	**1.5**	**-**	**-**	**-**	**-**	**2.33**	**1.6**	**1**
33	NCS-603	CO1	Understand the fundamentals of Compilation Process		2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO2	Specify and identify the parsing Techniques to parse the given string		2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO3	Apply knowledge of Syntax directed translation techniques and symbol table to model, analyse translation scheme and run time storage management.		2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO4	Explain of different types of errors in compilation process.		2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO5	Explain the concepts and theories of loop optimization		2	3	3	3	3	2	-	-	-	2	-	2	3	3
		CO6	Design and describe a global data flow analysis		2	3	3	3	3	2	-	-	-	2	-	2	3	3
			NCS-603		**2**	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**
34	NCS-066	CO1	Explain various Data Warehousing architectures.		3	2	1	1	3	-	-	-	-	-	-	3	3	3
		CO2	Explain various Data Warehouse Process and Technologies		3	3	3	2	3	-	-	-	-	-	-	3	3	3
		CO3	Compare different design of Data Warehousing techniques		3	3	3	3	3	-	-	-	-	-	-	2	3	3
		CO4	Understand and apply different Data Mining techniques for data pre-processing, integration and transformation		3	3	3	3	3	-	-	-	-	-	-	3	3	3
		CO5	Understand various classification and clustering algorithms		3	3	2	3	3	-	-	-	-	-	-	3	3	3
		CO6	Explain various OLAP servers , Warehousing applications and recent trends		2	2	2	3	2	-	-	-	-	-	-	3	3	3
			NCS-066		**2.83**	**2.67**	**2.33**	**2.33**	**2.83**	**-**	**-**	**-**	**-**	**-**	**-**	**2.83**	**3**	**3**
35	NCS-063	CO-1	Analyze the requirements for parallel programming systems.		3	3	3	3	-	-	-	-	-	-	-	2	3	2
		CO-2	Illustrate the programming of concurrent systems.		3	3	3	3	-	-	-	-	-	-	-	2	3	2
		CO-3	Discuss the difference between the major classes of parallel processing systems		3	3	3	3	-	-	-	-	-	-	-	2	3	2
		CO-4	Design software solutions for a number of parallel processing model		3	3	3	3	-	-	-	-	-	-	-	2	3	2
		CO-5	Design and implement a SIMD and MIMD parallel processing solution		3	3	3	3	-	-	-	-	-	-	-	2	3	2
		CO-6	Analyze the efficiency of a parallel processing system and evaluate the types of application for which parallel programming is useful		3	3	3	3	-	-	-	-	-	-	-	2	3	2
			RCS 602		3	3	3	3	-	-	-	-	-	-	-	2	3	2
36	NCS- 602	CO-1	To understand the basic concept of Software Engineering and life cycle of software development process and to apply new software models, techniques and technologies to bring out innovative and novelistic solutions.		3	3	3	3	3							3	1	3
		CO-2	To identify and analysis the requirements for the software development process and various types of Software Engineering Applications to perform the documentation and design.		2	3	3	3	3							1	1	3
		CO-3	To Design, implement, and evaluate software-based systems, components, or programs of varying complexity that meet desired needs, satisfy realistic constraints, and demonstrate accepted design and development principles.		1	3	3	3	3							2	1	3
		CO-4	Apply software testing plan and its related activities.		2	3	3	3	3							3	1	3
		CO-5	Use current techniques, skills, and tools necessary for professional practice to manage software configuration process.		3	3	3	3	3							1	1	3
		CO-6	Understand ability to engage in life-long maintenance and continuing Software development.		1	3	3	3	3							2	1	3
			NCS 602		2	3	3	3	3							2	1	3

37	NCS-651	CO1	Familiarization with transmission media, connector, Hubs, Switches and installation of NIC.		2	2	2	-	2	1	-	-	2	-		2	-		3	3
		CO2	Implementation of error detection and correction methods and routing protocol in client server applications.		3	3	3	3	-	-	-	-	-	-	-	-		2	3	3
		CO3	Implementation of client server applications with TCP/UDP Socket Programming in a network.		3	3	3	3	2	1	-	-	2	-		2	2	2	3	3
			NCS-651		**2.6**	**2.6**	**2.6**	**3**	**2**	**1**	**-**	**-**	**2**	**-**		**2**	**2**	**2**	**3**	**3**
38	NCS 652	CO-1	Understand software engineering practices used over entire system development lifecycle.		3	2	2	2	-	-	-	-	3	2	-	2	3	3		
		CO-2	Analyse and design software based on the requirement specification using UML tools		2	3	3	3	-	-	-	-	3	2	-	2	3	3		
		CO-3	To implement a new software engineering project by effectively applying software engineering practices.		2	3	3	3	-	-	-	-	3	2	-	2	3	3		
			NCS 652		2.33	2.67	3	2.67	-	-	-	-	3	2	-	2	3	3		
39	NCS-653	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	
			NCS-653		**2**	**3**	**3**	**3**	**3**	**2**	**-**	**-**	**-**	**2**	**-**		**2**	**3**	**3**	
40	NCS 654	CO-1	Understand and remember a programming approach and basic computer science.		1	2	2	2	3	2	-	2	2	3	-	-		1	2	
		CO-2	Understand and bridge the curriculum gap with latest research.		1	2	2	2	3	2	-	2	2	3	-	-		1	2	
		CO-3	Analyze and observe the latest research in computer science.		1	2	2	2	3	2	-	2	2	3	-	-		1	2	
			NCS 654		**1**	**2**	**2**	**2**	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**		**1**	**2**	
41	NCS 071	CO-1	Define the basic terminologies of the testing and role of testing.		2	2	2	2	2	-	-	-	-	2	-	2	3	3-		
		CO-2	Understand the different types of testing and define the test cases.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-3	Prepare the testing plan and test suite based upon risk analysis.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-4	Generate the test data for all possible scenarios and perform exploratory testing.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-5	Compare system testing with the post deployment testing.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-6	Develop effective testing strategies for the web applications.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
			NCS 071		**2**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**		
42	NCS 701	CO-1	Understand knowledge of Distributed Systems.		1	1	1	-	2	-	-	-	-	-	-	1	-	-		
		CO-2	Learn limitations and solutions of distributed system.		2	3	2	-	-	-	-	-	-	-	-	2	1	1		
		CO-3	Understand as well as develop a new computing environment		2	3	3	-	-	-	-	-	-	-	-	2	3	-		
		CO-4	Learn about distributed mutual exclusion and distributed deadlock deduction.		2	2	2	-	3	1	-	-	-	-	-	2	-	-		
		CO-5	Understand overall advancement in computing using Distributed Systems.		2	2	3	-	2	1	-	-	-	-	-	2	2	3		
		CO-6	Explain the available commercial distributed operating systems.		2	2	3	1	2	1	-	-	-	-	-	2	2	3		
			NCS 701		**1.8**	**2.2**	**2.3**	**1**	**2.25**	**1**	**-**	**-**	**-**	**-**	**-**	**1.8**	**2**	**2.33**		
43	NCS 702	CO-1	Recall the fundamental concepts of Intelligence, knowledge representation and Artificial Intelligence.		3	-	-	-	-	-	-	-	-	-	-	2	3	3		
		CO-2	Understand what are intelligent drives and where to use AI concept.		3	2	2	1	-	-	-	-	-	-	-	2	3	3		
		CO-3	Apply the AI methodology to create an intelligent agents 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		
			NCS 702		**3**	**2.4**	**2.6**	**2.25**	**2.3**	**2**	**-**	**-**	**-**	**-**	**-**	**2.5**	**3**	**3**		
44	NIT 701	CO-1	Understand classical encryption techniques and modern block ciphers.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-2	Illustrate encryption algorithm based on mathematical terminology associated with it.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-3	Write and implement message authentication codes, digital signatures for enhancing the security.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-4	Apply the key management and distribution schemes for authentication application.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-5	Demonstrate IP security features for secure transmission.		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
		CO-6	Define basic concepts related to intrusion detection, viruses, threats, firewalls, SSL, etc.,		2	2	2	2	2	-	-	-	-	2	-	2	3	3		
			NIT 701		**2**	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**3**	**3**		
45	NOE 071	CO-1	Understand the role and functions of entrepreneur.		-	-	2	-	1	3	1	2	2	-	3	3	-	-		
		CO-2	Formulate and evaluate the project.		2	-	2	-	-	-	-	2	2	-	3	3	-	-		
		CO-3	Understand the concept of NPV & IRR, accountancy, PPC and decision making.		2	-	-	-	-	1	-	2	-	-	2	3	-	-		
		CO-4	Determine process quality, understand marketing, IR, advertising, wages & incentive and inventory control.		2	-	-	-	-	3	-	2	2	-	-	3	-	-		
		CO-5	Understand various aspects of financial management of a project ,		2	-	-	-	-	-	-	2	2	-	3	3	-	-		
		CO-6	Understand legal provisions and assistance provided by various agencies to SSIs		2	-	-	-	-	3	-	2	-	-	-	3	-	-		
			NOE 071		**2**	**-**	**2**	**-**	**1**	**2.5**	**1**	**2**	**2**	**-**	**2.75**	**3**	**-**	**-**		

46	NCS 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.		2	2	2	2	-	-	-	-	-	-	-	2	-	-
		CO-3	Implementation of these advance computing algorithms and execute.		3	3	3	3	2	1	-	-	2	-	2	2	-	-
		NCS 751			**2.6**	**2.6**	**2.6**	**2.6**	**2**	**1**	**-**	**-**	**2**	**-**	**2**	**2**	**-**	**-**
47	NCS 752	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
		NCS 752			**2.6**	**3**	**2.6**	**2.3**	**2.6**	**1.6**	**1.3**	**1.3**	**3**	**3**	**2**	**2.6**	**3**	**3**
48	NCS 753	CO-1	An ability to work in actual working environment.		3	3	3	-	2	-	-	-	3	-	-	2	-	-
		CO-2	An ability to utilize technical resources		3	3	2	-	2	-	-	-	3	-	-	2	-	-
		CO-3	An ability to write technical documents and give oral presentations related to the work completed		2	2	2	-	2	-	-	-	3	-	-	2	-	-
		NCS 753			**2.6**	**2.6**	**2.3**	**-**	**2**	**-**	**-**	**-**	**3**	**-**	**-**	**2**	**-**	**-**
49	NCS 080	CO-1	Provide knowledge of models, methods and tools used to solve regression, classification, feature selection and density estimation problems		3	2	3	3	2	2	-	-	-	-	-	1	2	2
		CO-2	Provide knowledge of learning and adaptation in supervised modes of learning		3	2	3	3	2	2	-	-	-	-	-	1	2	2
		CO-3	Provide knowledge of recognition, decision making and statistical learning problems.		3	2	3	3	2	2	-	-	-	-	-	1	2	2
		CO-4	Provide knowledge of current research topics and issues in Pattern Recognition and Machine Learning		2	2	3	3	2	2	-	-	-	-	-	1	2	2
		CO-5	Provide experience in conducting and presenting a literature review on a research topic		2	2	3	3	2	2	-	-	-	-	-	1	2	2
		CO-6	Provide hands-on experience in analyzing and developing solutions/algorithms capable of learning		3	2	3	3	2	2	-	-	-	-	-	1	2	2
		NCS 080			**2.6**	**2**	**3**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**1**	**2**	**2**
50	NCS 085	CO-1	Understand how to analyze compression algorithms and compare performance on large inputs.		3	2	2	-	-	2	1	1	-	-	-	-	-	-
		CO-2	Understand the statistical basis for and performance metrics for lossless compression.		2	2	2	1	-	2	1	1	-	-	-	-	-	-
		CO-3	Understand the conceptual basis for commonly used lossless compression techniques.		3	2	2	2	2	-	-	1	-	-	-	-	2	-
		CO-4	Understand how to use and evaluate several readily available implementations of those techniques.		2	2	3	2	2	-	-	1	-	-	-	1	-	3
		CO-5	Understand the principles of data compression. And Implement and analyse basic coding and compression algorithms.		3	3	2	2	-	-	-	2	2	1	-	-	2	-
		CO-6	Understand the conceptual basis for commonly used lossy compression techniques.		2	2	2	2	2	-	-	1	2	-	-	-	-	3
		NCS 085			**2.5**	**2.1**	**2.1**	**1.8**	**2**	**2**	**1**	**1.1**	**2**	**1**	**-**	**1**	**2**	**3**
51	NCS 801	CO-1	Understand and review the fundamental concepts of digital image processing and its applications in real world.		3	2	2	1	-	-	-	-	-	-	-	2	2	1
		CO-2	Analyze the image enhancement in spatial domain as well as frequency domain.		2	3	2	2	1	-	-	-	-	-	-	2	2	2
		CO-3	Evaluate the techniques for noise distribution models, sources of noise, types of noises and different restoration methods.		3	2	2	2	1	-	-	-	-	-	-	2	2	2
		CO-4	Implement the various morphological operations and analyze their effect on input image.		2	1	2	2	-	-	-	-	-	-	-	2	2	2
		CO-5	Identify different objects in input images using digital image processing concepts		3	2	2	2	2	-	-	-	-	-	-	-	3	3
		CO-6	Understand the professionals and ethical engineering of pattern recognization using digital image processing.		2	1	2	1	-	1	1	-	-	-	-	2	2	2
		NCS 801			**2.3**	**1.8**	**2**	**1.8**	**1.5**	**1**	**1**	**-**	**-**	**-**	**-**	**2**	**2.1**	**2**
52	NCS 851	CO-1	Understand and remember a programming approach and basic computer		1	2	2	3	3	3	-	2	2	3	-	-	1	2
		CO-2	Understand and bridge the curriculum gap with latest research.		1	2	2	3	3	3	-	2	2	3	-	-	1	2
		CO-3	Analyze and observe the latest research in computer science.		1	2	2	-	3	2	-	2	2	3	-	-	1	2
		NCS 851			**1**	**2**	**2**	**2**	**3**	**2**	**-**	**2**	**2**	**3**	**-**	**-**	**1**	**2**

53	NOE 081	CO-1	Distinguish various conventional & non-conventional energy resources and its applications in various fields to minimize energy use in devices and buildings.		2	2	2	-	-	1	-	-	-	-	-	2	-	-
		CO-2	Comprehend the overall solar energy and power plants based on it, Their application, performance & limitations.		2	2	2	-	-	1	-	-	-	-	-	3	-	-
		CO-3	Develop an ability to understand resources of Geothermal energy, About MHD and Fuel cells, based plants with their performance and limitations.		2	2	2	-	-	2	-	-	-	-	-	3	-	-
		CO-4	Analyze principle of working of Thermo-electrical , thermionic conversion and Wind power and its sources with an assessment skill of the relative costs of energy conservation and energy production in various applications.		2	2	2	-	-	-	-	-	-	-	-	2	-	-
		CO-5	Describe the availability & working of bio-mass, OTEC, wave & Tidal wave, Waste Recycling plants.		2	2	2	-	-	-	-	-	-	-	-	3	-	-
		NOE 081			**2**	**2**	**2**	**-**	**-**	**1.33**	**-**	**-**	**-**	**-**	**-**	**2.6**	**-**	**-**
54	NCS 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
		NCS 852			**2.6**	**3**	**2.6**	**2.3**	**2.6**	**1.6**	**1.3**	**1.3**	**3**	**3**	**2**	**2.6**	**3**	**3**