ADITYA ENGINEERING COLLEGE

An Autonomous Institutuion

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Department of Computer Science and Engineering

B.Tech AR17 Course Articulation Matrix

Note: Correlation Levels are 1 or 2 or 3. Where 1 Slight(Low), 2 Moderate(Medium), 3 Substantial (High).

	CO Statements	POs												PSOs	
I SEM															
Course Code	**171HS1T01 - ENGLISH – I**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Improve the language proficiency of the students in English with focus on LSRW skills	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO2	Develop communicative competency in the students to speak and write in formal and informal situations.	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO3	Ensure theoretical and practical knowledge of the students about coping with life.	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO4	Interpret things from a scientific perspective without being biased by emotions.	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO5	Inspire, inculcate and inform the stakeholders that inventions and contributions of great men are valuable and motivation	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Course Code	**171BS1T01- MATHEMATICS-I**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Associate linear differential equations of first order to various physical problems involving differential equations of first order	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Solve linear differential equations of higher order.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Solve linear systems of equations using the concept of rank, Gauss elimination, Gauss seidal method.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Find the eigen values and eigen vectors.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Associate the concepts of Partial Differentiation to maxima and minima of functions of several variables and to Partial differential equations.	3	2	-	-	-	-	-	-	-	-	-	-	-	-

	CO Statements	POs												PSOs	
Course Code	**171BS1T02 - MATHEMATICS - II**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply various numerical methods to find roots of equations and interpolating polynomials.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Apply numerical methods to initial value problems and problems involving integration.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Find the Fourier series of a given function and study the convergence of the series.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Find the Fourier transforms for given functions.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Apply method of separation of variables to solve one dimensional heat equation and wave equation and two dimensional laplace equations.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Course Code	**171BS1T04 - APPLIED PHYSICS**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make use of the basic concepts of interference and relate to the principle of interferometer.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Relate the basic concepts of diffraction to illustrate the principle of optical instruments like Telescope & microscope.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Explain the basic concepts of polarization, principle of polarimeter and the method of producing high intensity light beams.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Interpret the wave nature of microscopic particles by using quantum mechanics and explain the electrical conductivity of materials.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Explain the behaviour of materials and be able to classify them using the band theory of solids and the basic concepts of semiconductors.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Course Code	**171ES1T03 - ENGINEERING DRAWING**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Sketch the polygons, conics and scales by using the principles of drawing.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Draw Orthographic projections of points and lines.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Draw Orthographic projections of planes in various positions.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Draw Orthographic projections of solids in various positions.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Construct isometric scale and isometric projections.	**3**	**2**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**
CO6	Convert isometric view in to orthographic views.	**3**	**2**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**3**	**-**	**-**		

	CO Statements	POs												PSOs	
Course Code	**171ES1T01 -COMPUTER PROGRAMMING**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply Fundamental concepts of C for mathematical and scientific problems	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
CO2	Use Control Structures and Arrays in solving complex problems.	**1**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
CO3	Develop modular programs to solve problems using control structures, Arrays and strings.	**1**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
CO4	Demonstrate the pointers concept for allocating and deallocating memory dynamically.	**1**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
CO5	Solve real world problems using the concept of file, structures and unions.	**1**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
Course Code	**171HS1L01 - ENGLISH COMMUNICATION SKILLS LAB-I**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Enable students to learn Basic /Simple English in different contexts and situations.	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**3**	**-**	**1**	**-**	**-**
CO2	Enhance the knowledge of Phonetic sounds and symbols to improve accent and pronunciation	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
CO3	Evolve creative skills in the students to construct dialogues/conversations in spoken and written forms.	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
CO4	improve effective use of aspects of pronunciation like stress, pitch, intonation, rhythm, etc	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**3**	**-**	**1**	**-**	**-**
CO5	inculcate in the students the significance of English in all walks of life and make them well-versed in LSRW skills.	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**3**	**-**	**1**	**-**	**-**
Course Code	**171BS1L04- APPLIED PHYSICS LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Use spectrometer, polarimeter, travelling microscope for making measurements.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**	**-**	**-**
CO2	Determine energy gap of a semiconductor, draw characteristic curves to estimate thermal coefficient of a thermsitor, zener diode.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**	**-**	**-**
CO3	Determine the rigidity and determine frequency of an unknown electric vibrator.	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**	**-**	**-**
CO4	Determine wavelength of unknown source, the width of narrow slits, spacing Between close rulings using lasers and appreciate the accuracy in measurements.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**	**-**	**-**
CO5	Verify magnetic field along the axis of a circular coil.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**	**-**	**-**

	CO Statements	POs												PSOs	
Course Code	**171ES1L01 - COMPUTER PROGRAMMING LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Implement basic programs in C.	-	2			2	-	-	-	-	-	-	-	-	-
CO2	Use Conditional and Iterative statements to solve real time scenarios in C.	-	2	2	3	2	-	-	-	-	-	-	-	-	-
CO3	Implement the concept of Arrays and Modularity.	-	3	2	2	2	-	-	-	-	-	-	-	-	-
CO4	Apply the Dynamic Memory Allocation functions using pointers.	-	2	2	3	2	-	-	-	-	-	-	-	-	-
CO5	Develop programs using structures, and Files.	-	2	2	2	2	-	-	-	-	-	-	-	-	-
II SEM															
Course Code	**171HS2T03 - ENGLISH – II**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Improve the language proficiency of the students in English with focus on LSRW skills	-	-	-	-	1	-	-	-	-	3	-	-	-	-
CO2	Develop communicative competency in the students to speak and write in formal and informal situations.	-	-	-	-	-	-	-	-	-	3	-	-	-	-
CO3	Create a better understanding in the stakeholders about the impact of technology on human life.	-	-	-	-	-	-	1	-	-	3	-	-	-	-
CO4	Foster understanding of the essence of hard work and dignity of labour.	-	-	-	-	-	-	1	-	-	3	-	-	-	-
CO5	Instil human values in the students and mould them to a disciplined life.	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Course Code	**171BS2T06- MATHEMATICS-III**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Compute Laplace transform of various functions.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Apply Laplace transform to solve initial value problems.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Discuss about beta and gamma function, double integral over a region and triple integral over a volume.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Find the gradient of a scalar function, divergence and curl of a vector function.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Apply line, surface and volume integrals to find work done by a force, flux.	3	2	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**171HS2T02- ENVIRONMENTAL STUDIES**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify the need for protecting the producers and consumers in various ecosystems and their role in the food web.	-	-	-	-	-	1	3	-	-	-	-	-	-	-
CO2	Outline the natural resources and their importance for the sustenance of the life.	-	-	-	-	-	2	3	-	-	-	-	-	-	-

	CO Statements	POs												PSOs	
CO3	List out the biodiversity of India, threats and its conservation methods	-	-	-	-	-	1	3	-	-	-	-	-	-	-
CO4	Explain the different types of pollutions and their control technologies, Waste water treatment, Bio medical waste management etc.	-	-	2	1	-	2	3	-	-	-	-	-	-	-
CO5	Explain EIA- Environmental Impact Assessment, Sustainable developmental activities, environmental policies and regulations.	-	-	2	-	-	2	3	-	-	3	-	-	-	-
Course Code	**171BS2T05 -APPLIED CHEMISTRY**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain polymeric materials their uses and moulding techniques of plastics.	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Classify solid, liquid and gaseous fuels.	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Explain about batteries, corrosion and their control methods.	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Explain Nano materials, Super Conductors, Semi Conductors and Liquid Crystals.	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	Summarize non-conventional energy sources and their applications.	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Course Code	**171ES2T02 -ENGINEERING MECHANICS**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Determine the resultant force and moment for a given force system.	3	2	1	-	-	-	-	-	-	-	-	-	-	-
CO2	Explain the concept of friction.	2	1	1	-	-	-	-	-	-	-	-	-	-	-
CO3	Calculate the forces in planar and spatial systems.	3	2	1	-	-	-	-	-	-	-	-	-	-	-
CO4	Locate centroid of composite areas and centre of gravity of composite bodies.	1	1	1	-	-	-	-	-	-	-	-	-	-	-
CO5	Calculate the moment of inertia of composite areas and rigid bodies.	3	2	1	-	-	-	-	-	-	-	-	-	-	-
CO6	Apply the concepts of kinematics, kinetics, work - energy and impulse - momentum methods to particle motion.	3	2	1	-	-	-	-	-	-	-	-	-		
Course Code	**171CS2T01- DATA STRUCTURES THROUGH C**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the the fundamental concepts of data structure and algorithms,	2	3	1	-	-	-	-	-	-	-	-	-	2	
CO2	Analyze the time and space complexity of an algorithm using various notations.	2	3	1		-	-	-	-	-	-	-	-	2	
CO3	Apply various searching and sorting techniques to solve computing problems.	2	2	3		-	-	-	-	-	-	-	-	2	

	CO Statements	POs												PSOs	
CO4	Explain various operations and applications of Linear Data Structure.	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
CO5	Apply various tree , graph traversing techniques and spanning trees in solving complex problem.	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	
Course Code	**171HS2L02 - ENGLISH COMMUNICATION SKILLS LAB-II**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Illustrate interpersonal skills using language confidently and effectively for personal and profession growth.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
CO2	Enable students to learn Basic /Simple English in different contexts and situations.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
CO3	Enhance the knowledge of Phonetic sounds and symbols to improve accent and pronunciation.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
CO4	Evolve creative skills in the students to construct dialogues/conversations in spoken and written forms.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**		**2**		
CO5	inculcate in the students the significance of English in all walks of life and make them well-versed in LSRW skills.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**2**	**-**	**-**
Course Code	**171BS2L03 - APPLIED CHEMISTRY LAB**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Analyze & generate experimental skills	**2**	**-**	**-**	**-**		**-**	**-**	**-**	**1**	**1**	**-**	**1**	**-**	**-**
CO2	Demonstrate Acid – Base Redox & Complexometric titrations by Volumetric analysis.	**2**	**-**	**-**	**-**		**-**	**-**	**-**	**1**	**1**	**-**	**1**	**-**	**-**
CO3	Demonstrate Acid – Base titrations by instrumental analysis.	**2**	**-**	**-**	**-**		**-**	**-**	**-**	**1**	**1**	**-**	**1**	**-**	**-**
CO4	Prepare polymer like Bakelite.	**2**								**1**	**1**		**1**		
CO5	Prepare alternative fuel like Bio-Diesel.	**2**	**-**	**-**	**-**		**-**	**1**	**-**	**1**	**1**	**-**	**1**	**-**	**-**
Course Code	**171ES2L02 - ENGINEERING WORKSHOP AND IT WORKSHOP(ENGINEERING WORKSHOP)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Construct the various wooden joints.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Prepare the various fitting joints.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Experiment with different shapes by black smithy.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Develop components for making the various sheet metal models.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Experiment with the various house wiring connections.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	
III SEM															
Course Code	**171BS3T08 - Mathematical Foundations of Computer Science**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply the principles of mathematical logic to statement calculus and predicate calculus.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**

	CO Statements	POs												PSOs	
CO2	Compute Transitive closure, equivalence classes of binary relations.	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Apply the principles of number theory and group theory.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Solve recurrence relations by various methods.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Apply the concepts of graph theory to find euler paths, Hamiltonian paths, Spanning trees, minimal spanning trees and chromatic number.	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171ES3T23 - Digital Logic Design**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Interpret numeric information in different bases, signed integers.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**-**
CO2	Classify Boolean expressions using postulates of Boolean algebra.	**1**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Simplify the given Switching functions in SOP and POS forms using Karnaugh-Map.	**1**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Analyze basic combinational and sequential logic circuits with simplified logical functions.	**2**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Develop sequential logic circuits with sequential building blocks.	**2**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
Course Code	**171CS3T02 - Statistics with R Programming**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify discrete and continuous random variables and data structures in R.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Apply discrete and continuous probability distributions to the given data and execute R-functions for probability distributions.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Explain sampling distribution, estimation and R-functions for constructing confidence intervals.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Write R program for standard statistical test.	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Apply the concepts of correlation and regression to the given statistical data using R-function and making use of R-graphic functions to visualize the data.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS3T03 - Object Oriented Programming Through C++**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Compare and contrast object oriented programming and procedural oriented programming.	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Summarize the OOPS concepts.	**3**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Make use of constructor and destructor to initialize and destroy class objects.	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**

	CO Statements	POs												PSOs	
CO4	Develop programs using virtual functions and Polymorphism.	**1**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Apply inheritance to build real time applications, Exception handling mechanism to handle runtime errors.	**1**	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Develop C++ classes with templates and STL.	**3**	**1**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171HS3T04 - Managerial Economics & Financial Analysis**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the Managerial Economic concepts for decision making and forward planning.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**
CO2	Illustrate the law of demand and its exceptions, to use different forecasting methods for predicting demand for various products and services.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**
CO3	Identify the cost behavior, costs useful for managerial decision making and Break Even Point (BEP) of an enterprise.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**
CO4	Outline the different types of business organizations along with basic knowledge on business cycle.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**
CO5	Make use of the process & principles of accounting and prepare Journal, Ledger, Trial Balance, Trading A/c., Profit & Loss A/c. and Balance Sheet of an enterprise.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**
CO6	Utilize various techniques on investment project proposals with the help of capital budgeting techniques for decision making.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**3**	**-**	**-**	**-**
s	**171CS3T04 - Advanced Data Structures**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the working principles of K-way Merge Sort.	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Apply Hashing Techniques to solve data integrity problems.	**1**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Explain the various techniques to implement Priority Queues.	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Compare various balanced search Trees.	**3**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Compare and contrast B and B+ trees.	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Construct various kinds of Tries.	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
Course Code	**171CS3L01 - Object Oriented Programming Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make Use of Control Structures and modular programming in solving complex problems.	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**3**	**1**	**-**	**-**	**2**	**-**
CO2	Apply object oriented techniques to solve computing problems.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**1**	**-**	**-**	**1**	**-**

	CO Statements	POs												PSOs	
CO3	Experiment with the key features of object-oriented programming language.	-	3	2	-	-	-	-	-	2	1	-	-	2	-
CO4	Develop C++ classes for code reuse through inheritance.	-	2	3	-	-	-	-	-	2	1	-	-	2	-
CO5	Apply exception handling technique to handle various errors.	-	2	3	-	-	-	-	-	2	1	-	-	3	-
CO6	Develop C++ programs using Inline, friend functions, Reference variable, this pointer, operator Overloading, static and dynamic binding, template and STL.	-	3	3	-	-	-	-	-	2	1	-	-	1	-
Course Code	**171CS3L02 - Advanced Data Structures Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Construct the graph traversals and minimum spanning tree for a given graph.	-	2	3	-	-	-	-	-	2	-	-	-	-	2
CO2	Develop program to implement lossless data compression algorithm.	-	-	1	-	-	-	-	-	2	3	-	-	-	-
CO3	Apply the hashing techniques to implement Dictionary.	-	2	-	-	-	-	-	-	3	-	-	-	-	3
CO4	Build a Binary Heap using Priority queues.	-	1	3	-	-	-	-	-	1	-	-	-	-	-
CO5	Analyze various basic operations of AVL tree, Red-Black tree, B-Tree to improve the efficiency.	-	2	2	-	-	-	-	-	3	2	-	-	-	2
CO6	Identify the appropriate data structure for a given problem.	-	-	2	-	-	-	-	-	3	1	-	-	-	-
Course Code	**171HS3A10 - Employability Skills – I (2017 Batch)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the number and letter series and analogies in different models.	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Demonstrate processes of coding & decoding and direction test.	1	-	-	-	-	-	-	-	-	1	-	1	-	-
CO3	Demonstrate the basic grammatical skills using articles and prepositions.	-	-	-	-	-	-	-	-	-	1	-	1	-	-
CO4	Use tenses, voice types and conversion rules to deliver an effective speech.	-	-	-	-	-	-	-	-	-	1	-	1	-	-
CO5	Demonstrate creative speaking abilities using all forms of sentences.	-	-	-	-	-	-	-	-	-	1	-	1	-	-
Course Code	**171HS3A10 - Employability Skills – I (2018 Batch)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Solve problems of Series & Analogy for Numbers and Letters	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Solve problems on Coding & Decoding and Divisibility rules.	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO3	Solve problems on LCM & HCF and Simple Equations.	1	-	-	-	-	-	-	-	-	-	-	1	-	-

	CO Statements	POs												PSOs	
CO4	Demonstrate Attitude, self-confidence and decision making in different situations.	-	-	-	-	-	-	-	-	-	1	-	1	-	-
CO5	Develop out of box and lateral thinking, better goal setting and time management.	-	-	-	-	-	-	-	-	-	1	-	1	-	-
Course Code	**171HS3A09 - Professional Ethics and Human Values**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make use of values, morals and ethics in their day to day life.	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO2	Identify what is right and wrong through moral ethics.	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO3	Analyze experimental learning while developing the society with ethics.	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO4	Apply ethical principles to resolve the problems that arise in work place.	-	-	-	-	-	-	-	2	-	-	-	-	-	-
CO5	Apply adequate knowledge on global code of conduct.	-	-	-	-	-	-	-	2	-	-	-	-	-	-
IV SEM															
Course Code	**171CS4T05 - Software Engineering**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Demonstrate an understanding of the key facts, concepts, principles and theories of software engineering.	3	1	1	-	-	-	-	-	-	-	-	-	2	-
CO2	Analyze the effective software engineering process, based on knowledge of widely used development lifecycle models.	2	2	3	2	-	-	-	-	-	-	-	-	3	-
CO3	Explain the various responsibilities and activities of project management.	3	-	1	-	-	-	-	-	-	-	-	-	1	-
CO4	Translate a requirements specification into an implementable design, following a structured and organized process.	1	2	2	3	-	-	-	-	-	-	-	-	2	-
CO5	Examine a testing strategy for a software system using different testing techniques.	2	2	3	-	-	-	-	-	-	-	-	-	1	-
CO6	Discuss about software reliability, quality management, software maintenance and reusability.	3	1	-	1	-	-	-	-	-	-	-	-	1	-
Course Code	**171CS4T06 - Formal Languages and Automata Theory**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe types of Finite Automaton.	1	3	1	2	-	-	-	-	-	-	-	-	1	-
CO2	Discuss the need and use of Regular expressions.	1	2	1	3	-	-	-	-	-	-	-	-	1	-
CO3	Summarize Chomsky Hierarchy of languages.	1	3	-	-	-	-	-	-	-	-	-	-	1	-
CO4	Compare the powers of different kinds of automaton.	-	2	-	3	-	-	-	-	-	-	-	-	1	-
CO5	Summarize decidability and undecidability concepts.	1	2	-	1	-	-	-	-	-	-	-	-	1	-
CO6	Apply automaton for solving problems in computing.	1	3	2	1	-	-	-	-	-	-	-	-	1	-

	CO Statements	POs												PSOs	
Course Code	**171CS4T07 - Java Programming**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the basic concepts and building blocks of java.	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Solve complex problems using the concepts of class, inheritance, interface and packages.	2	1	3	-	2	-	-	-	-	-	-	-	2	-
CO3	Test for runtime exceptions arise in java applications.	2	1	3	-	2	-	-	-	-	-	-	-	2	-
CO4	Develop real time applications using multithreading and I/O streams.	2	1	1	-	3	-	-	-	-	-	-	-	2	-
CO5	Apply java applets to standalone applications.	3	1	1	-	2	-	-	-	-	-	-	-	2	-
CO6	Develop GUI applications using event handlers, adapter classes, AWT and Swing components.	3	1	1	-	2	-	-	-	-	-	-	-	2	-
Course Code	**171CS4T08 - Database Management Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Summarize the database characteristics.	2	-	-	-	1	-	-	-	-	-	-	-	1	-
CO2	Identify various database architectures.	2	-	1	-	1	-	-	-	-	-	-	-	1	-
CO3	Interpret relational database using SQL.	1	-	1	-	2	-	-	-	-	-	-	-	2	-
CO4	Examine issues in data storage and query processing for appropriate solutions.	1	2	1	-	2	-	-	-	-	-	-	-	2	-
CO5	Make use of normalization techniques for real world database design.	2	2	1	-	3	-	-	-	-	-	-	-	1	-
CO6	Illustrate the mechanisms of transaction management.	2	2	-	-	1	-	-	-	-	-	-	-	1	-
Course Code	**171CS4T09 - Principles of Programming Languages**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Summarize the programming language evaluation.	2	1	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Describe syntax and semantics of programming languages.	1	2	-	1	-	-	-	-	-	-	-	-	1	-
CO3	Explain binding and control structures of various programming languages.	1	1	1	3	-	-	-	-	-	-	-	-	1	-
CO4	Apply subprogram constructs for optimization in programming.	-	1	2	2	-	-	-	-	-	-	-	-	1	-
CO5	Demonstrate concurrency levels, objects and their design issues.	-	1	3	1	-	-	-	-	-	-	-	-	1	-
CO6	Develop small programs using Scheme, ML, and Prolog languages.	-	1	2	3	-	-	-	-	-	-	-	-	1	-
Course Code	**171CS4T10 - Computer Organization**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the structure and various types of instructions in the computer system.	2	2	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Demonstrate the working of CPU, RISC and CISC architecture.	2	2	1	2	-	-	-	-	-	-	-	-	2	-

	CO Statements	POs												PSOs	
CO3	Summarize the computer arithmetic.	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Demonstrate the use of pipeline and vector processing.	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Exemplify I/O and Memory organization.	**1**	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS4L03 - Java Programming Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply OOP concepts to solve real time problems.	**-**	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**1**	**-**
CO2	Make use of class, inheritance, interface and packages to develop solutions for complex problems.	**-**	**1**	**3**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**1**	**-**
CO3	Develop a solution for a real time problem using Exception handling.	**-**	**1**	**3**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**1**	**-**
CO4	Build java applications using Threads.	**-**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**-**
CO5	Apply applets and event handling to create interactive applications.	**-**	**1**	**3**	**-**	**2**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**-**
CO6	Design GUI using AWT and Swing Components.	**-**	**1**	**1**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS4L04 - Database Management Systems Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make use of the concepts of relational model techniques for database design.	**-**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CO2	Construct a database schema for a given problem-domain.	**-**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
CO3	Apply Normalization techniques on a database to avoid anomalies.	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**2**	**-**
CO4	Build queries on a database using SQL DDL/DML commands.	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**2**	**-**
CO5	Apply integrity constraints on a database using RDBMS.	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**1**	**-**
CO6	Develop PL/SQL stored procedures, stored functions, cursors and packages.	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**2**	**-**
Course Code	**171HS4A11 - Employability Skills – II (2017 Batch)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Examine the symbols, notations and venn diagrams.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO2	Use verbal adjectives, degree of comparisons in personality development.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO3	Solve problems of time & date and puzzles.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Solve problems of cubes & dice and seating arrangements.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
CO5	Use word analogy & paragraph writing for effective communication.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
Course Code	**171HS4A11 - Employability Skills – II (2018 Batch)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Examine the symbols, notations and Venn -diagrams.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO2	Solve different types of number systems problems	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**

	CO Statements	POs												PSOs	
CO3	Solve ratio & proportion, ages and averages by using simple logic.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Apply negotiation skills and leadership skills in a team.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
CO5	Apply listening skills and verbal skills of communication in a team.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
Course Code	**171HS4A08 - Intellectual Property Right and Patent**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Compare various types of Intellectual Property rights.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**
CO2	Discuss on Intellectual Property and infer rights on such Intellectual Property owners.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**
CO3	Explain the process of patenting.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**
CO4	Apply for trade mark, copyrights and patents.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**
CO5	Intrepret the legal Issues on Intellectual Proporty Cyber Laws.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**	**-**
V SEM															
Course Code	**171CS5T11 - Compiler Design**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Analyze the different phases and passes of Compiler.	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Classify different types of parsers.	**1**	**2**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Construct different Types of parsing tables (LL, SLR, CLR and LALR).	**2**	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Design Syntax Directed translations for various language constructs.	**2**	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Construct the various forms of Intermediate Codes.	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO6	Explain various run time environment techniques, code optimization techniques, code generation algorithm.	**2**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
Course Code	**171CS5T12 - Python Programming**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain fundamental concepts of Python programming language.	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Develop programs using control statements.	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Make use of data structures in Python to solve various problems.	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO4	Develop programs using functions, strings and files.	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Make Use of Standard libraries like math, turtle, tkinter, re etc. in building real time applications.	**2**	**1**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Explain Object Oriented Programming concepts, Exceptions and applications using DB connectivity.	**1**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS5T13 - Design And Analysis Of Algorithms**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Develop algorithms for various computational problems.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Analyze time and space complexities of an algorithm.	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Construct sorting and searching algorithms using Divide and Conquer approach.	**1**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Apply Greedy method with heuristic approach in tracing the global optimal solution from local optimal solutions.	**3**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Compare the benefits of using Dynamic programming over Greedy method.	**-**	**3**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Solve problems using Backtracking strategy and exploit problems using Branch and Bound strategy.	**2**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS5T14 - Operating Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Interpret the basic structure, services, system calls and architectural components of Operating Systems.	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Solve problems related to process scheduling, synchronization in unit and multi-processing systems.	**2**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Explain the deadlock handling Mechanism in the processing System.	**2**	**2**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Summarize the concepts of Memory Management, Virtual Memory Management and Thrashing.	**3**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Describe the concepts of file system and mass storage structure.	**2**	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS5E01 - Unix And Shell Programming**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe UNIX Operating System Architecture and Command Structure.	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Make use of various commands in UNIX to control the resources like disk, file and network.	**-**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Apply GREP and EGREP Commands with wild card and regular expressions to perform Data Manipulation Tasks.	**-**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO4	Develop Shell Script using Shell commands.	**-**	**1**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Utilize Filter commands to work on files and documents.	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Apply AWK Scripts, shell programming and system calls for file management tasks.	**-**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS5E02 - Advanced Computer Architecture**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Summarize classes of computers, new trends and developments in computer architecture.	-	3	-	1	-	-	-	-	-	-	-	-	1	-
CO2	Compare several advanced optimizations to achieve cache performance, virtual memory and virtual machines to achieve memory consistency.	2	3	-	2	1	-	-	-	-	-	-	-	1	-
CO3	Distinguish CISC & RISC instructions in high performance computing.	2	2	-	3	-	-	-	-	-	-	-	-	1	-
CO4	Evaluate various multiprocessing configurations.	-	2	-	3	-	-	-	-	-	-	-	-	2	-
CO5	Examine performance benefits of integrating message passing in cache coherent multiprocessor.	1	2	-	3	-	-	-	-	-	-	-	-	3	-
Course Code	**171CS5E03 - Computer Graphics**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify the applications of computer graphics and video display devices for implementing graphical user interface.	3	2	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Anlayse output primitives and filled area primitives in implementing various algorithms.	2	3	2	-	-	-	-	-	-	-	-	-	2	-
CO3	Make use of geometric tranformations , viewing and clipping in 2D and 3D graphics.	2	2	-	-	-	-	-	-	-	-	-	-	2	-
CO4	Illustrate the various visual sirface detection methods in 3D graphics.	2	1	2	-	-	-	-	-	-	-	-	-	2	-
CO5	Apply openGL for grnrral computer animations.	3	2	2	-	3	-	-	-	-	-	-	-	1	-
CO6	Analyse different object and color modelling techniques, fractals and ray tracing classifications.	2	2	-	-	-	-	-	-	-	-	-	-	1	-
Course Code	**171CS5E04 - Software Testing Methodologies**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the fundamentals of software testing.	2	2	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Compare SDLC with STLC.	1	3	-	-	-	-	-	-	-	-	-	-	1	-
CO3	Summarize verification and validation activities.	2	2	-	-	-	-	-	-	-	-	-	-	2	-
CO4	Design the test cases using different testing strategies.	2	-	3	-	-	-	-	-	-	-	-	-	1	-
CO5	Outline the importance of static testing and various levels of software testing.	2	2	-	-	-	-	-	-	-	-	-	-	1	-
CO6	Discuss about various Automation Testing tools.	1	2	-	-	3	-	-	-	-	-	-	-	1	-
Course Code	**171HS5T06 - Employability Skills - III**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Calculate the L.C.M and H.C.F of numbers.	1	-	-	-	-	-	-	-	-	-	-	1	-	-
CO2	Solve problems on Numbers & Simple equations	1	-	-	-	-	-	-	-	-	-	-	1	-	-

	CO Statements	POs												PSOs	
CO3	Apply different types of models on ratio & proportion, average, ages and percentages.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Apply interviewing skills, Group discussion skills and personal priorities.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
CO5	Apply resume writing skills, e-mail writing & business etiquette.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
Course Code	**171HS5T06 - Employability Skills - III**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain different types of puzzels,Group reasoning , Clock and Calender Problems.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO2	Solve Problems on cubes&Dies,Patnership, Persentages.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO3	Solve Problems on Profit And Loss, Simple Intrest and Compound Intrest.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Apply Interviewing Skills , Group discussion skills and Personal priorities.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
CO5	Apply Resume Writing Skills, Email Writing &Business etiquetted.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**1**	**-**	**-**
Course Code	**171CS5L05 - Operating System and Linux Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make use of unix utilities and perform basic shell control operation on the unix utilities.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**	**-**	**2**	**-**
CO2	Summarize various process scheduling algorithms.	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**3**	**-**
CO3	Demonstrate the working of various system calls ,dead locks avoidance and memory and management algorithms.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**-**	**-**	**2**	**-**
CO4	Make use of various commands in unix to control various resources like file,network,dick,etc.	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
CO5	Develop shell script using shell command .	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
CO6	Apply AWK script using AWK commands, system calls for file management, process management and IPC.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
Course Code	**171CS5L06 - Python Programming Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Build basic programs in Python.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**
CO2	Develop programs using conditional and iterative statements.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**
CO3	Make use of different data structures in solving complex problems.	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**
CO4	Apply standard libraries in building real time applications.	**-**	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
CO5	Analyze the Object Oriented concepts in Python.	-	3	2	-	-	-	-	-	-	-	-	-	2	-
CO6	Solve real world problems using database connectivity, GUI and files.	-	2	2	-	3	-	-	-	2	-	-	-	3	-
Course Code	**171CS5L07 - Software Testing Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Experiment with various java programs for writing test cases.	-	3	-	-	-	-	-	-	-	-	-	-	1	-
CO2	Construct Manual Test Cases for different software modules.	-	3	2	2	-	-	-	-	-	-	-	-	1	-
CO3	Develop test cases for various case studies.	-	3	-	2	-	-	-	-	-	-	-	-	2	-
CO4	Apply any testing tools for implementing automation testing.	-	2	-	2	3	-	-	-	-	-	-	-	3	-
CO5	Design the test case for checking GUI objects.	-	2	2	2	3	-	-	-	-	-	-	-	3	-
Course Code	**171CS5L08 - Compiler Design Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Make use of LEX tools to simulate various operations of compilers.	-	1	1	2	3	-	-	-	-	-	-	-	2	-
CO2	Make use of YACC tools to simulate various operations of compilers.	-	1	1	2	2	-	-	-	-	-	-	-	3	-
CO3	Construct top down parsing tables.	-	2	2	2	1	-	-	-	-	-	-	-	2	-
CO4	Construct bottom up parsing table.	-	2	3	-	1	-	-	-	-	-	-	-	3	-
CO5	Develop various Optimization techniques.	-	1	2	-	3	-	-	-	-	-	-	-	2	-
VI SEM															
Course Code	**171CS6T15 - Computer Networks**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the computer network fundamentals and various topologies.	2	3	1	-	-	-	-	-	-	-	-	-	2	-
CO2	Compare the OSI with TCP/IP reference model.	1	-	3	-	-	-	-	-	-	-	-	-	3	-
CO3	Summarize the concepts of physical layer and switching techniques.	3	1	1	-	-	-	-	-	-	-	-	-	2	-
CO4	Discuss the design issues of data link layer services.	2	3	2	-	-	-	-	-	-	-	-	-	1	-
CO5	Demonstrate the concept of MAC and Channelization.	1	1	3	-	-	-	-	-	-	-	-	-	2	-
CO6	Apply various routing algorithms and Congestion control techniques and describe services provided by the transport layer and application layer.	2	1	-	-	-	-	-	-	-	-	-	-	2	-
Course Code	**171CS6T16 - Web Technologies**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Develop web pages using HTML, CSS and JavaScript.	2	1	2	-	-	-	-	-	-	-	-	-	2	-
CO2	Summarize DTD, Schema and Parsing tools of XML documents.	2	-	2	-	-	-	-	-	-	-	-	-	2	-

	CO Statements	POs												PSOs	
CO3	Build web applications using PHP and MySQL database.	**3**	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO4	Discuss the integration of PHP with AJAX.	**2**	**-**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Develop simple applications using PERL.	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Apply basic features of Ruby in various applications.	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS6T17 - Data Ware Housing And Data Mining**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Analyze OLTP and OLAP.	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	Illustrate the Database technologies useful for data mining.	**1**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	Make use of data pre processing techniques in KDD Process.	**2**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO4	Apply decision tree algorithm for classification problems and association rule mining for predicting patterns.	**2**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**
CO5	Develop classification model for a given dataset.	**2**	**1**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO6	Compare different types of clustering algorithms.	**2**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
Course Code	**171CS6E05 - Software Quality Assurance**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain various components of Quality assurance system.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Summarize various Testing Strategies.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Demonstrate various components of Quality assurance Infrastructure.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Classify Software Quality Metrics.	**2**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Analyze various Standards in software quality assurance.	**-**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Outline the role of Management in software quality assurance.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
Course Code	**171CS6E06 - Bio -Informatics**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the basic concepts of biology and Database Technology.	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Identify the various Communication Models, Transmission Technologies, and Protocols.	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Make use ofData Visualization Techniques to display biological data in various forms.	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Apply Statistical Methods to solve complex biological problems.	**3**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Utilize Pattern Matching Techniques to represent Protein and DNA Sequence data.	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Illustrate simulation tools to predict the secondary and tertiary structures of protein.	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS6E07 - Human Computer Interaction**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Outline the importance of human computer interaction for a good design.	**2**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Develop a GUI application for Understanding of Users.	**2**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Distinguish Online Vs Paper documentation in various development processes and social networking.	**3**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Analyze screen design of various applications in GUI and Web.	**3**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Compare Device based and Screen based controls.	**2**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Summarize effective feedback guidance and assistance.	**3**	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS6E08 - Social Networks And Semantic Web**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Summarize the concepts of semantic web and social network analysis.	**-**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	Describe the knowledge representation on the Semantic web.	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	Make use of ontology engineering in social networks.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	Identify the architectures and challenges in building social networks.	**-**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO5	Compare various survey methods of social networks.	**1**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO6	Analyze the performance of social networks using electronic sources.	**-**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
Course Code	**171CS6E09 - Pattern Recognition**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Interpret the fundamental concepts of machine perception and Bayesian decision theory in machine learning.	**3**	**1**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Inspect parameter estimation in relatively complex probabilistic models using Maximum likelihood and Bayesian approaches.	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Apply unsupervised and supervised leaning in simple pattern matching problems.	**-**	**2**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO4	Summarize the principles of pattern recognition using Hidden Markov Models.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Examine the benefits of Decision Trees in Pattern construction and classification.	**1**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS6E10 - Parallel Computing**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the need of parallel processing and parallel approaches.	**1**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Make use of PRAM algorithms to solve various applications.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Demonstrate different networks of processor organizations.	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Discuss on elementary parallel algorithms.	**1**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Compare Matrix multiplication using different models.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO6	Interpret sorting, dictionary operations, and graph search algorithms.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
Course Code	**171CS6E11 - Storage Area Networks**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Summarize the data storage and data management.	**-**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Discuss on storage system environment.	**-**	**1**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Compare various RAID levels.	**-**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Describe Intelligent storage system.	**-**	**1**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Choose appropriate storage network and virtualization techniques for real time applications.	**-**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO6	Identify business continuity methods.	**-**	**2**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS6E12 - E-Commerce**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the fundamentals of E-Commerce and its applications in different orientations.	**-**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Compare mercantile process models of different perspectives.	**-**	**1**	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Contrast on different payment models in E-Commerce applications.	**-**	**2**	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Discuss on design issues of Intra-Organizational E-Commerce and Inter-Organizational E-Commerce.	**-**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Identify different types of digital documents and their features, advantages and disadvantages.	**-**	**2**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO6	Summarize the concepts of digital document management, concepts of marketing strategies in E-Commerce, information search and discovery, different services offered by multimedia to E-Commerce firms.	**-**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**

	CO Statements	POs												PSOs	
Course Code	**171HS6T07 - Employability Skills - IV**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Solve problems on Profit & Loss, Simple Interest & Compound Interest, Time & Work.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO2	Solve problems on Pipes & Cisterns, Time & Distance, Boats & Streams.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO3	Interpret the data collected for effective presentation.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Apply processes of Group discussion, Phonetics, Leadership skills in real world.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**-**
CO5	Apply principles of Group Dynamics, Interview Skills & Evaluation criteria in organizations.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**-**
Course Code	**171HS6T07 - Employability Skills - IV**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Solve problems of seating arrangements ,syllogism.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO2	Solve problems of Time and Work, Pipes and Cisterns, Time and Distance, Races and trains.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO3	Solve Problems on Boats and Streams, Permutation and Combination, Probability and Data Interpretation.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**
CO4	Apply processes of Group discussion ,Phonetics, Leadership skills in real world.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**-**
CO5	Apply principles of Group Dynamics, Interview Skills & Evaluation criteria in organizations.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**1**	**-**	**-**
Course Code	**171CS6L09 - Computer Networks Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain about fundamental concepts of computer networks.	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
CO2	Develop data link layer services of dynamic framing.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
CO3	Demonstrate the working of various routing algorithms, error detection and correction techniques.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**-**	**-**	**2**	**-**
CO4	Discuss on various protocols for network security to protect against the threats in the networks.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**3**	**-**
CO5	Make use of ARP/RARP protocols.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**	**-**	**2**	**-**
Course Code	**171CS6L10 - Data Warehousing And Data Mining Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Determine different steps for pre-processing in Data mining.	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Use data mining software system for solving data mining problems.	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**1**	**-**	**-**	**1**	**-**
CO3	Test real data sets using popular data mining tools such as WEKA.	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**3**	**-**
CO4	Apply algorithms for Association rule mining.	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**3**	**3**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
CO5	Apply Classification methods for data mining.	-	2	-	-	3	-	-	-	3	3	-	-	2	-
CO6	Demonstrate the Clustering basics and approaches in data mining.	-	2	-	-	3	-	-	-	3	3	-	-	2	-
Course Code	**171CS6L11 - WebTechnologies Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Develop web pages using HTML, CSS and JavaScript.	-	1	3	-	2	-	-	-	2	-	-	-	2	-
CO2	Apply DTD to validate the XML Document.	-	2	3	-	2	-	-	-	3	-	-	-	2	-
CO3	Build real time applications using PHP and MySQL.	-	2	3	-	2	-	-	-	3	-	-	-	2	-
CO4	Construct basic programs using Perl.	-	3	2	-	2	-	-	-	2	-	-	-	2	-
CO5	Construct basic programs using Ruby.	-	3	2	-	2	-	-	-	2	-	-	-	2	-
VI SEM															
Course Code	**171CS7T18 - Cryptography and Network Security**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the network security fundamentals and various public key cryptographic algorithms.	2	1	2	3	-	-	-	-	-	-	-	-	2	-
CO2	Compare various symmetric encryption techniques.	2	2	2	3	-	-	-	-	-	-	-	-	2	-
CO3	Summarize the concepts of asymmetric encryption techniques.	3	1	2	2	-	-	-	-	-	-	-	-	2	-
CO4	Discuss the functioning of digital signature standards and data integrity.	2	1	3	2	-	-	-	-	-	-	-	-	2	-
CO5	Utilize the services provided by thePGP, S/MIME & SSL, TLS.	1	3	1	2	-	-	-	-	-	-	-	-	2	-
CO6	Demonstrate the concept of IP Security.	2	3	2	2	-	-	-	-	-	-	-	-	2	-
Course Code	**171CS7T19 - UML and Design Patterns**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify the purpose and methods of use of common object-oriented design patterns.	-	2	3	2	1	-	-	-	-	-	-	-	1	-
CO2	Compose documents for the purpose of capturing software requirements and specification.	-	3	2	2	2	-	-	-	-	-	-	-	1	-
CO3	Illustrate the data dependencies of a simple program, user and programmatic interactions using UML.	-	2	1	3	2	-	-	-	-	-	-	-	1	-
CO4	Choose the documentation designing by outlining the testable and complete the design of a simple program.	-	2	2	2	3	-	-	-	-	-	-	-	1	-
CO5	Select and apply these patterns in their own designs for simple programs.	-	2	3	2	2	-	-	-	-	-	-	-	2	-
CO6	Construct plans to limit risks specific to software designed for use in a particular social context.	-	3	1	2	2	-	-	-	-	-	-	-	2	-

	CO Statements	POs												PSOs	
Course Code	**171CS7T20 - Cloud Computing**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the fundamentals of computing paradigm and cloud computing.	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Demonstrate the basic concepts of virtualization and implementation.levels of Virtualization	**3**	**1**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Illustrate the architecture of cloud computing.	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Apply the Cloud programming and software environments on any real cloud service.	**1**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO5	Analyze the Cloud Security risks and Mechanisms.	**1**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171HS7T05 - Management Science**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply management and motivation theories to renovate the practice of management.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**
CO2	Explain concepts of quality management and use process control charts, concepts and tools of quality engineering in the design of products and process controls.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**1**
CO3	Appraise the functional management challenges associated with high levels of change in the organizations.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**1**
CO4	Identify activities with their interdependency and use scheduling techniques of project management PERT/CPM.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**1**
CO5	Develop global vision and management skills both at strategic level and interpersonal level.	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**1**
Course Code	**171CS7E13 - Software Project Management**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain Software Project Management fundamentals and Planning activities.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**	**-**
CO2	Compare SDLC models in project framework.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**3**	**-**	**2**	**-**
CO3	Apply various Effort estimation techniques and tools in real time applications.	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**	**-**
CO4	Discuss various Risk categories, Project Monitoring Control and Resource Allocation.	**-**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**2**	**-**	**2**	**-**
CO5	Demonstrate the concept Software Quality.	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**3**	**-**	**2**	**-**
Course Code	**171CS7E14 - Big Data Analytics**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Develop various data structures using java collection framework.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**2**	**-**
CO2	Demonstrate Building blocks of Hadoop.	**2**	**3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**
CO3	Choose map reduce approach to solve big data Problems.	**3**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**

	CO Statements	POs												PSOs	
CO4	Make use of Pig Framework to work with big data.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**
CO5	Utilize Hive to Structure the Data.	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**2**	**-**
Course Code	**171CS7E15 - Image Processing**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Discuss the steps and components of image processing system.	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Demonstrate the fundamentals of digital images.	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Illustrate the basic properties of digital images	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Outline different colour image processing techniques.	**2**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Apply morphological image processing operations to process an image.	**2**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Interpret an image using different segmentation techniques, use different types of compression techniques in image data compression.	**1**	**3**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS7E16 - Cyber Laws**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify the need for IT acts.	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**2**	**-**
CO2	Summarize IT act 2000 and its relevance.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**2**	**-**
CO3	Discuss cyber crimes.	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**2**	**2**	**-**
CO4	Apply existing tools to counter cyber crimes.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**2**	**-**
CO5	Demonstrate hacking and identity thefting happens.	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**3**	**2**	**-**
CO6	Describe cyber crimes handled in India.	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**2**	**1**	**-**
Course Code	**171CS7E17 - Middleware Technologies**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Demonstrate the basic concepts of middleware elements.	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Develop the middleware application using C#.NET.	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Make use of ASP.NET to implement database access.	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Compare different web services.	**1**	**2**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO5	Summarize the concepts of EJB.	**2**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS7E18 - Artificial Intelligence and Machine Learning**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the fundamentals of Artificial Intelligence and its applications.	**3**	**2**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	Analyze the time and space complexities of searching techniques.	**2**	**2**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	Apply various logical systems to inference the different logical problems.	**2**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	Identify the machine learning techniques.	**2**	**2**	**-**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	Employ the reduction techniques.	**2**	**1**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**

	CO Statements	POs												PSOs	
Course Code	**171CS7E19 - Information Retrieval Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply Information Retrieval principles to locate relevant information in large collections of data.	**3**	**2**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Summarize the functions in Information system.	**2**	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Make use of Inverted file data structure in IR process.	**3**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Analyze the different signature based text retrieval methods.	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Explain various algorithms for text searching in PAT tree.	**2**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Utilize different stemming algorithms in Information Retrieval, various techniques to create Thesaurus clusters.	**2**	**3**	**1**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS7E20 - Mobile Computing**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Describe the basic concepts and principles in mobile computing.	**3**	**2**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Identify the various subsystems in GSM and GPRS architecture.	**2**	**3**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Illustrate the concept of Medium Access Control Mechanisms.	**-**	**1**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	ApplyMobile IP in Wireless environment to handle packet delivery during mobility.	**-**	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Compare Traditional TCP and Modified TCP.	**1**	**2**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO6	Discuss various database issues and data delivery mechanisms in mobile environment, Data Synchronization Protocols, Routing Techniques in MANET, Protocols and Platforms for Mobile Computing.	**3**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS7L12 - UML and Design Patterns Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Show the importance of system analysis and design in solving complex problems.	**-**	**1**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**1**	**-**
CO2	Compare object-oriented approach with traditional approach in system analysis and design.	**-**	**1**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**1**	**-**
CO3	Analyze the importance of modeling and design of various applications.	**-**	**2**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**1**	**-**
CO4	Construct various UML models using appropriate notations.	**-**	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**2**	**-**
CO5	Show the role and function of each UML model in developing object-oriented software.	**-**	**2**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**2**	**-**
CO6	Apply the Rational Software Suit for the construction of UML models.	**-**	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**2**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS7L13 - Big Data Analytics Lab**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Develop linear and nonlinear data structures using Java Collection framework.	-	2	-	-	2	-	-	-	2	-	-	2	1	-
CO2	Build the Hadoop Cluster using various installation modes.	-	2	-	-	2	-	-	-	2	-	-	2	2	-
CO3	Apply hadoop commands to interact with HDFS.	-	2	-	-	2	-	-	-	2	-	-	2	2	-
CO4	Solve Big Data Problems using Map Reduce approach.	-	1	-	-	2	-	-	-	2	-	-	2	1	-
CO5	Analyse the big data using Pig Latin.	-	2	-	-	2	-	-	-	2	-	-	1	2	-
CO6	Build queries using Hive Query Language.	-	1	-	-	2	-	-	-	2	-	-	2	2	-
Course Code	**171CS7P01 - Industry Oriented (Internship) Minor Project**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Relate the domain knowledge to solve a real world problem.	1	3	3	-	1	1	-	-	2	2	2	2	2	-
CO2	Apply tools/techniques/programming languages used in software industry.	1	3	3	-	1	1	-	-	2	2	2	2	2	-
CO3	Make use of real time tools, software practices and upcoming technologies with a broader pursuit of knowledge.	1	3	3	2	1	1	-	-	2	2	2	2	2	-
CO4	Compare and contrast the gap between industry and academic institution level.	1	3	3	1	-	-	1	1	2	2	2	2	2	-
CO5	Adapt the technical expertise and skills in the working environment towards the academic progression.	1	3	3	1	-	-	-	-	2	2	2	2	2	-
CO6	Adapt to work as a team, gaining leadership and adhering professional ethics in presenting the results in written and oral formats.	1	2	3	1	1	1	-	1	1	2	1	1	2	-
VIII SEM															
Course Code	**171CS8E21 - Agile Methodologies**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Compare the Agile Model with Traditional Models.	3	1	-	-	-	-	-	-	-	-	-	-	2	-
CO2	Summarize the Agile Manifesto.	2	1	-	-	-	-	-	-	-	-	-	-	3	-
CO3	Demonstrate the various Agile Software Development Process Models.	2	3	-	-	-	-	-	-	-	-	-	-	2	-
CO4	Model the Sprint framework in Agile environment.	3	2	1	1	-	-	-	-	-	-	-	-	1	-
CO5	Create User Stories for software requirements in Agile Software Development.	2	2	3	3	-	-	-	-	-	-	-	-	1	-
CO6	Identify the role of Product Backlog and Estimations for each Sprint and plans for each Sprint in the Scrum Framework.	2	3	1	1	-	-	-	-	-	-	-	-	2	-

	CO Statements	POs												PSOs	
Course Code	**171CS8E22 - Cyber Security**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Illustrate cybercrime fundamentals.	**3**	**1**	**-**	**-**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**-**
CO2	Analyze cyber offence planning.	**2**	**3**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO3	Interpret cybercrime on mobile and wireless devices.	**1**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Distinguish type of tools and methods used in cyber crimes.	**1**	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Explain the importance of cyber security.	**2**	**1**	**-**	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**2**	**-**
Course Code	**171CS8E23 - Distributed Databases**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Outline the features and principles Develop system architecture based on distributed databases.	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Solve transforming a global query into local query using optimizing techniques.	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO3	Summarize the distributed transaction management principles.	**3**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Explain various distributed concurrency control techniques.	**1**	**3**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Evaluate the Non-blocking Commitment Protocols.	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
Course Code	**171CS8E24 - Distributed Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Demonstrate the basic concepts of distributed systems.	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Analyze the Various System Models in distributed systems.	**1**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Illustrate the Inter process Communication used in TCP and UDP.	**3**	**1**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO4	Apply RMI with RPC in the implementation of Remote Invocations.	**1**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO5	Summarize Operating System support and Distributed File Systems.	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO6	Organize the processes to coordinate their actions and agree on shared values in distributed systems and relate the Transactions and Replications with real time examples.	**2**	**3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
Course Code	**171CS8O01 - Microprocessor and Multi Core Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Analize the generalized concepts of basic Micro Processors.	**2**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Develop the basic concepts of Programming 8086 Microprocessors.	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Costruct the different styles of Programming 8086 Microprocessor.	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

	CO Statements	POs												PSOs	
CO4	Classify the advanced Microprocessors based on their features and Architecture.	**2**	**2**	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Apply the Knowledge of Multi core Architecture in parallel Programming Environment.	**2**	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Course Code	**171CS8O02 - Embedded Systems**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Illustrate the basic concepts of an embedded systems with hardware components.	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO2	Categorize the microcontrollers required to design an embedded systems.	**1**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**	**-**
CO3	Identify the different RTOSs for various embedded and real time applications.	**2**	**1**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**
CO4	Examine the different issues RTOS objects in embedded systems.	**1**	**3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
CO5	Assess the embedded systems by various implementation and development tools.	**1**	**2**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**-**
Course Code	**171CS8O03 - Soft Computing**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Identify the fundamentals and types of neural networks.	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	Apply knowledge in developing the different algorithms for neural networks.	**2**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	Analyze Fuzzy set and Fuzzy logic principles.	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	Compare genetic algorithms and their applications.	**2**	**2**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	Identify the efficiency of a hybrid system.	**3**	**2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
Course Code	**171EE8O05 - Robotics**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Demonstrate the basic concepts, parts of robots and types of robots.	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**
CO2	Identify various robot configuration and components.	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**
CO3	Select appropriate actuators and sensors for a robot based on specific application.	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Analyze the simple serial kinematic chains.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Analyze the trajectory planning for a manipulator by avoiding obstacles.	**2**	**2**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**

	CO Statements	POs												PSOs	
Course Code	**171CS8O04 - Operations Research**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Apply Mathematical modeling to formulate and solve real World Problems Involving Decission making as linear Programming problem using Graphical and Simplex Methods.	**2**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
CO2	Find the optimal perameters in Transportation problem,Assignment Problem and Replacement Problem.	**2**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
CO3	Find the optimal Quantities in Inventary Control Proble and job Sequencing Problems.	**2**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Apply Game theory Queuing Theory in decission making Problems.	**2**	**2**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
CO5	Apply dynamic Programming and simmulation techniques in Real world problems.	**1**	**1**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**
Course Code	**171CS8O05 - Optical Communications**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Discover various properties of ray theory transmission and mode theory.	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO2	Analyze various attenuation mechanisms that affect the optical transmission link.	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO3	Apply different types of fiber joints for single and multimode fibers.	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO4	Utilize optical sources and detectors based on their properties (emission wavelength, spectral widths, quantum efficiency, response time etc).	**2**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
CO5	Interpret source to fiber power launching, link power and rise time budgeting, WDM system.	**1**	**1**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Course Code	**171EE8O07 - Internet of Things**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Demonstrate the need of IoT in the computing world.	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	Identify the Business Process models of IoT.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO3	Develop the communication protocols and communication technologies.	**2**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	Analyze the data storage and acquisition mechanisms for real time applications.	**2**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	Describe the involvement of cloud service model platforms in IoT.	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO6	Design an IoT application for complex problems.	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**

	CO Statements	POs												PSOs	
Course Code	**171EC8O02 - Disaster Management**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the basics of disaster Management and their migitation messures.	2	-	-	-	-	-	-	-	3	-	-	3	-	-
CO2	Interpret the disaster vulnerability condition s of India.	-	-	-	-	-	-	3	-	3	-	-	-	-	-
CO3	Choose the means of preparedness measures against disaster.	3	-	-	-	-	-	2	-	2	-	-	3	-	-
CO4	Illustrate the imapact of Hazards on Structures.	-	-	-	-	-	-	-	-	3	-	-	-	-	-
CO5	Outline the various rehabillitation programs to be adapted.	3	-	-	-	-	-	2	-	2	-	-	3	-	-
Course Code	**171CS8O06 - Renewable Energy sources**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Analyze solar radiation Data, Extraterrestrial radiation ,The radiation on Earths surface .	1	1	2	2	1	-	-	-	-	-	-	-	-	-
CO2	Examine the solar photo voltait systems.	2	2	1	2	2	-	-	-	-	-	-	-	-	-
CO3	Develop maximum power point techniques in solar PV and Wind Energy system.	2	1	1	2	2	-	-	-	-	-	-	-	-	-
CO4	Illustrate the Wind energy convertion system, Wind generators and Power generation.	2	2	1	2	2	-	-	-	-	-	-	-	-	-
CO5	Explain basic principle and working of tidal,biomas,fual cell and Geo thermal systems.	1	2	2	1	-	-	-	-	-	-	-	-	-	-
Course Code	**171CS8O07 - Nano Technology and its Applications**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Explain the structure and properties of Nano materials.	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO2	Summerize the importence of development and abrication of different types of Nano materials.	2	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	Illustrate various Methods of Synthasizing Different Nano materials.	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CO4	Analyze the Nano structure of materials using various charecterization techniques.	2	2	-	2	-	-	-	-	-	-	-	-	-	-
CO5	Make use of differnet advanced Nano materials for Engineering and Technological Applications.	2	2	-	-	-	2	-	-	-	-	-	-	-	-
Course Code	**171CS8P02 - Major Project**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	Perceive, leadership and management skills required for project development and product delivery.	1	3	2	2	1	-	-	-	2	2	2	3	2	2
CO2	Build a model/idea/method/algorithm for societal problems.	1	3	2	-	1	1	-	-	2	2	2	2	2	2
CO3	Develop inventive or innovative thought making process using software engineering principles.	1	3	3	2	-	-	1	1	2	2	2	2	2	2
CO4	Apply relevant tools for collecting /processing/Analyze the required information for a project completion.	1	3	2	1	-	-	-	-	2	2	2	2	2	2
CO5	Adapt to work as a team and adhering professional ethics in presenting the results in written and oral formats.	1	3	2	1	1	1	-	1	1	2	1	1	2	2