

2.6.1. Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.

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**DEPARTMENT
OF APPLIED
SCIENCES AND
HUMANITIES**

Course Outcomes-2020-21

COURSE	COURSE OUTCOME NO.	COURSE OUTCOMES
Engineering Mathematics-I (AAS0103)	AAS0103.1	Apply the concept of matrices to solve linear simultaneous equations
	AAS0103.2	Apply the concept of successive differentiation and partial differentiation to solve problems of Leibnitz theorems and total derivatives .
	AAS0103.3	Apply partial differentiation for evaluating maxima, minima, Taylor's series and Jacobians.
	AAS0103.4	Illustrate multiple integral to find area, volume, centre of mass and centre of gravity.
	AAS0103.5	Demonstrate the basic concept of Profit, Loss, Number & Series, Coding & decoding.
Basic Electrical and Electronics Engineering (AEC0101)	AEC0101.1	Apply the principle of KVL/KCL and network theorems for analysis of D.C circuit.
	AEC0101.2	Analyze the steady state behavior of single phase and three phase AC electrical circuits.
	AEC0101.3	Illustrate and analyze the working principles of a single phase transformer, efficiency, and components of Power system, Earthing, and energy calculation.
	AEC0101.4	Explain the construction, working principle, and application of PN junction diode, Zener diode and Display devices.
	AEC0101.5	Explain the concept of Op-Amp, Digital multimeter, Sensors, IoT and its applications.
Problem Solving using Python (ACSE0101)	ACSE0101.1	To impart knowledge of basic building blocks of Python programming
	ACSE0101.2	To provide skills to design algorithms for problem solving
	ACSE0101.3	To impart the knowledge of implementation and debugging of basic programs in python
	ACSE0101.4	To disseminate the knowledge of basic data structures
	ACSE0101.5	To provide the knowledge of file system concepts and its application in data handling.
Professional Communication (AASL0101)	AASL0101.1	Students will be able to comprehend texts for professional reading tasks in preparation for an International Certification in Business English.
	AASL0101.2	Students will be able to write professionally in simple and correct English.
	AASL0101.3	Students will be able to interpret listening tasks for better professional competence.
	AASL0101.4	Students will recognize the elements of effective speaking with emphasis on applied phonetics
	AASL0101.5	Students will apply the skill of speaking at the workplace.
Basic Electrical and Electronics Engineering Lab (AEC0151)	AEC0151.1	Apply the principle of KVL/KCL and theorem to analysis DC Electric circuits.
	AEC0151.2	Demonstrate the behavior of AC circuits connected to single phase AC supply and measure power in single phase as well as three phase electrical circuits.
	AEC0151.3	Calculate efficiency of a single phase transformer and energy consumption.

	AEC0151.4	Understand the concept and applications of diode, Op-Amp,sensors and IoT.
	AEC0151.5	
Problem Solving using Python Lab (ACSE0151)	ACSE0151.1	Write simple python programs.
	ACSE0151.2	Implement python programs using decision control statements
	ACSE0151.3	Writing python programs using user defined functions and modules.
	ACSE0151.4	Implement programs using python data structures –lists, tuples, set, dictionaries
	ACSE0151.5	Write programs to perform input/output operations on files
Professional Communication Lab (AASL0151)	AASL0151.1	Learn to use English language for communicating ideas.
	AASL0151.2	Develop interpersonal skills and leadership abilities.
	AASL0151.3	Practice their public speaking skills and gain confidence in it.
	AASL0151.4	Realize the importance of analytical listening during communication.
	AASL0151.5	Apply critical thinking skills in interpreting texts and discourses.
Digital Manufacturing Practices (AME0151)	AME0151.1	Understand various manufacturing process which are applied in the industry.
	AME0151.2	Demonstrate the construction and working of conventional machine tools and computer controlled machine tools.
	AME0151.3	Understand the programming techniques of CNC machines and Robotic arms.
	AME0151.4	Use the different 3D printing techniques.
	AME0151.5	
Engineering Mathematics-II (AAS0203)	AAS0203.1	Understand the concept of differentiation and apply for solving differential equations
	AAS0203.2	Understand the concept of convergence of sequence and series. Also evaluate Fourier series
	AAS0203.3	Understand the basic idea of Laplace transform and apply for ordinary differential equations.
	AAS0203.4	Remember the concept of vector and apply for directional derivatives, tangent and normal planes. Also evaluate line, surface and volume integrals
	AAS0203.5	Understand the basic concept Proportion & Partnership, Problem of ages, Allegation & Mixture, Direction, Blood relation , Simple & Compound interest
Design Thinking-I (ACSE0203)	ACSE0203.1	Develop a strong understanding of the design process and apply it in a variety of business settings
	ACSE0203.2	Analyze self, culture, teamwork to work in a multidisciplinary environment and exhibit empathetic behavior
	ACSE0203.3	Formulate specific problem statements of real time issues and generate innovative ideas using design tools
	ACSE0203.4	Apply critical thinking skills in order to arrive at the root cause from a set of likely causes
	ACSE0203.5	Demonstrate an enhanced ability to apply design thinking skills for evaluation of claims and arguments
Engineering Physics (AAS0201A)	AAS0201A.1	Able to solve the relativistic mechanics problems
	AAS0201A.2	Able to apply the concept of quantum mechanics
	AAS0201A.3	Able to apply the laws of optics and their application in various processes
	AAS0201A.4	Able to define the laws of semiconductors.

	AAS0201A.5	Able to explain the working of modern engineering tools and techniques of optical fiber and laser.
Problem Solving using Advanced Python (ACSE0202)	ACSE0202.1	To learn the Object Oriented Concepts in Python
	ACSE0202.2	To learn the concept of reusability through inheritance and polymorphism
	ACSE0202.3	To impart the knowledge of functional programming
	ACSE0202.4	To learn the concepts of designing graphical user interfaces
	ACSE0202.5	To explore the knowledge of standard Python libraries
Foreign Language* French(AASL0202)	AASL0202.1	Recognize the basic sounds, letters, numbers, words and phrases of french.
	AASL0202.2	Develop basic French vocabulary
	AASL0202.3	Use simple phrases in real life conversations
	AASL0202.4	Read simple sentences
	AASL0202.5	Write simple sentences and fill in a form
Foreign Language* German(AASL0203)	AASL0203.1	Understand and be familiar with basic German and Culture.
	AASL0203.2	Recognise the foundational vocabulary.
	AASL0203.3	Use simple phrases in everyday conversations.
	AASL0203.4	Read simple sentences.
	AASL0203.5	Write simple sentences.
Foreign Language* Japanese(AASL0204)	AASL0204.1	understand the basics of Japanese Language and its script.
	AASL0204.2	recognise the foundational vocabulary.
	AASL0204.3	use simple phrases in everyday conversations.
	AASL0204.4	read simple sentences.
	AASL0204.5	write simple sentences and fill in the forms.
Engineering Physics Lab (AAS0251A)	AAS0251A.1	Apply the practical knowledge of the phenomenon of interference, diffraction and polarization
	AAS0251A.2	Understand energy band gap and resistivity
	AAS0251A.3	Develop the measurement techniques of magnetism
	AAS0251A.4	Analyze the flow of liquids
	AAS0251A.5	
Problem Solving using Advanced Python Lab (ACSE0252)	ACSE0252.1	Write programs to create classes and instances in python
	ACSE0252.2	Write programs to implement concept of inheritance and polymorphism using python
	ACSE0252.3	Write programs using functional programming in python
	ACSE0252.4	write programs to create GUI based Python application
	ACSE0252.5	Developing real life applications using python libraries to solve real world problems
Engineering Graphics & Solid Modelling (AME0252)	AME0252.1	Apply the basic principles of engineering graphics to draw various types of Scales, Cycloidal and involutes curves.
	AME0252.2	Draw and develop the projections of points lines and planes.
	AME0252.3	Draw orthographic projection of solids and their sections and draw the lateral surfaces.
	AME0252.4	Apply CAD software to draw 2D and 3D drawing.
	AME0252.5	Apply CREO software to draw 2D and 3D drawing.
Data Structures and Algorithms Lab (ACBS0253)	ACBS0253.1	Write programs for solving mathematical problems using array and linked
	ACBS0253.2	Implement concept of recursion to solve complex problem.
	ACBS0253.3	Implement various operations of stack and queue data structure.
	ACBS0253.4	Write efficient sorting, searching programs.
	ACBS0253.5	Implement program to solve real world problem using tree and graph data structure.
Programming for	ACSE0251.1	Write programs for arithmetic and logical problems.
	ACSE0251.2	write programs for conditional branching, iteration and recursion

Programming for problem solving using C Lab(ACSE0251)	ACSE0251.3	Write programs using functions and synthesizes a complete program using divide and conquers approach
	ACSE0251.4	write programs using arrays, pointers and structures
	ACSE0251.5	Write programs to perform input/output operations on files
Engineering Chemistry Lab (AAS0152/AAS0252)	AAS0152.1	Use of different analytical instruments.
	AAS0152.2	Measure molecular/system properties such as surface tension, viscosity, conductance of solution, chloride and iron content in water.
	AAS0152.3	Calculate flash point of fuel and lubricants.
	AAS0152.4	Estimate the rate constant of reaction.
Physics For Computing Science Lab (AC SBS0151)	AC SBS0151.1	Develop the measurement techniques of magnetism
	AC SBS0151.2	Calculate the charge mobility, carrier concentration and Hall coefficient of semiconductor.
	AC SBS0151.3	Apply the practical knowledge of the phenomenon of interference, diffraction and polarization
	AC SBS0151.4	Calculate Stefan's and Plank's constant.
Business Communication & Value Science – II (AC SBS0204)	AC SBS0204.1	Understand tools of structured written communication
	AC SBS0204.2	Apply effective techniques to make presentations.
	AC SBS0204.3	Identify individual personality types and role in a team.
	AC SBS0204.4	Understand the basic concepts of Morality and Diversity
Business Communication & Value Science – I (AC SBS0104)	AC SBS0104.1	Recognize the need for life skills and values.
	AC SBS0104.2	Recognize own strengths and opportunities.
	AC SBS0104.3	Apply the life skills to different situations.
	AC SBS0104.4	Understand the basic tenets of communication.
	AC SBS0104.5	Apply the basic communication practices in different types of communication.
Principles of Electrical Engineering Lab (AC SBS0152)	AC SBS0152.1	Demonstrate the working of various electrical elements, measuring instruments and sensors.
	AC SBS0152.2	Conduct experiments illustrating the application of KVL/KCL and Network theorems to DC electrical circuits.
	AC SBS0152.3	Conduct experiments illustrating the steady state behaviour of single phase and three phase AC electrical circuits. Working behaviour of transformer.
	AC SBS0152.4	Explain different types of safety devices, working and application of batteries.
Principles of Electronics Lab (AC SBS0252)	AC SBS0252.1	Demonstrate the diode V-I characteristics and input/output waveforms of rectifier circuits.
	AC SBS0252.2	Demonstrate the input and output characteristics of BJT and BJT as a switch.
	AC SBS0252.3	Draw the transfer and drain characteristics of FET and demonstrate BJT/FET as an Oscillator.
	AC SBS0252.4	Explain the operational amplifier and demonstrate op-amp as adder and subtractor.
Principles of Electrical Engineering	AC SBS0102.1	Describe the basics of electrical parameters and apply concept of KVL/KCL in solving DC circuits.
	AC SBS0102.2	Apply the concepts of theorems in solving DC circuits.
	AC SBS0102.3	Analyze the steady state behavior of single phase and three phase AC electrical circuits

Engineering (ACSBS0102)	ACSBS0102.4	Explain the concept of Electrostatics, Magnetic Circuit and calculate efficiency and voltage regulation of transformer.
	ACSBS0102.5	Describe concept of sensor/transducer, Components of distribution system, earthing and wiring
Principles of Electronics (ACSBS0202)	ACSBS0202.1	Explain and analyze the structure of crystalline materials and semiconductors.
	ACSBS0202.2	Analyze the diodes and their applications.
	ACSBS0202.3	Explain the characteristics of BJT and analyze different amplifier circuits.
	ACSBS0202.4	Explain the operation and characteristics of FET and fundamental of digital electronics.
	ACSBS0202.5	Explain and analyze the types of feedback amplifier and op-amp circuits.
Elementary Mathematics (ABT-0101)	ABT0101.1	Concept of equation and apply it for solving quadratic equations and system of linear inequality in two variables.
	ABT0101.2	Apply the concept of differentiation to find the derivative of different type functions, rate of change and maxima and minima.
	ABT0101.3	Apply concept of integration to evaluate integrals and definite integrals.
	ABT0101.4	Apply the concept of differentiation and integration to find the solution of differential equations.
	ABT0101.5	Understand the basic concept of Profit, Loss, Number & Series, Coding & decoding
Introduction to Biotechnology (ABT0251)	ABT0251.1	Estimation of reducing sugar by DNS method
	ABT0251.2	Conduct experiments illustrating the different stages of cell division.
	ABT0251.3	Understand the sterilisation techniques of culture media and equipments
	ABT0251.4	Understand the preparation of gel electrophoresis.
	ABT0251.5	Understand the different types of databases.
Introduction to Biotechnology (ABT0201)	ABT0201.1	Understand the concept of cell structure and microbiology.
	ABT0201.2	Acquire the basic knowledge of bio molecules and their functions
	ABT0201.3	Understand the concept of nucleic acids and their key functions
	ABT0201.4	Understand the concept of immune system and various components involved in it.
	ABT0201.5	Describe the wide applications of biotechnology and concept of bioinformatics.
Data Structures and Algorithms (ACSBS0203)	ACSBS0203.1	Analyze and implement arrays, linked lists, stacks, queues to solve complex problems.
	ACSBS0203.2	Compare the computational efficiency of the sorting and searching algorithms.
	ACSBS0203.3	Assess the memory representation of tree and perform various operations on these data structure.
	ACSBS0203.4	Apply the concept of recursion to solve the real-world problems.
	ACSBS0203.5	Develop the algorithms using graph data structures.
Fundamentals of Computer Science Lab (ACSBS0153)	ACSBS0153.1	Read, understand and trace the execution of programs written in C language.
	ACSBS0153.2	Write the C code for a given algorithm.
	ACSBS0153.3	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.
	ACSBS0153.4	Write programs that perform operations using derived data types

	ACBS0153.5	Implement String Handling
Mathematical Foundation -I (AAS0104)	AAS0104.1	Apply the concept of matrices to solve linear simultaneous equations and linear transformation.
	AAS0104.2	Explain the concept of vector space, linear transformation and orthogonalization.
	AAS0104.3	Apply the concept of successive differentiation and partial differentiation to solve problems of Leibnitz theorems and total derivatives.
	AAS0104.4	Apply partial differentiation for evaluating maxima, minima, series and Jacobians.
	AAS0104.5	Solve the problems of Profit, Loss, Number & Series, Coding & decoding.
Mathematical Foundation -II (AAS0204)	AAS0204.1	Apply multiple integral to find area and volume.
	AAS0204.2	Apply the concept of differentiation to solve differential equations.
	AAS0204.3	Illustrate the solution of partial differential equation of second order
	AAS0204.4	Apply the Laplace transform to solve ordinary differential equations
	AAS0204.5	Solve the problems of Proportion & Partnership, Problem of ages, Allegation & Mixture, Direction, Blood relation, Simple & Compound interest
EVS (ANC0201)	ANC0201.1	Understand the basic principles of ecology and environment. Ecosystem: Basic concepts, components of ecosystem., food chains and food webs. Ecological pyramids.
	ANC0201.2	Understand the different types of natural resources like food, forest, minerals and energy and their conservation.
	ANC0201.3	Understand the importance of biodiversity, Threats of biodiversity and different methods of biodiversity conservation.
	ANC0201.4	Understand the different types of pollution, pollutants, their sources, effects and their control methods.
	ANC0201.5	Understand the basic concepts of sustainable development, Environmental Impact Assessment (EIA) and different acts related to environment.
Fundamentals of Computer Science (ACBS0103)	ACBS0103.1	Acquire a broad perspective about the uses of computers in engineering industry.
	ACBS0103.2	Understand the concept of computers, algorithm and algorithmic thinking.
	ACBS0103.3	Apply conditional statements and looping constructs.
	ACBS0103.4	Implement array and perform operations on it.
	ACBS0103.5	Understand the more advanced features of the C language
Introductory Topics in Statistics, Probability and Calculus (ACBS0105)	ACBS0105.1	Explain types of statistical data, population and sample.
	ACBS0105.2	Apply the concept of measures of central tendency and dispersion to solve statistical problems.
	ACBS0105.3	Explain the concept of combinatorial and conditional probability and Baye's theorem.
	ACBS0105.4	Apply the concept of probability distribution and its properties to solve statistical problems.
	ACBS0105.5	Apply the concept of differential and integral calculus to evaluate double and triple integral.
Discrete Mathematics	ACBS0106.1	Apply the basic principles of Boolean algebra and implementation of K Map.
	ACBS0106.2	Define the algebraic structure of a system.
	ACBS0106.3	Solve counting problem using recursive function theory.

(ACBSBS0106)	ACBSBS0106.4	Design and use non-linear data structure like trees and graph for circuit and network designing.
	ACBSBS0106.5	Infer the validity of statements and construct proofs using predicate logic formulas.
Physics For Computing Science (ACBSBS0101)	ACBSBS0101.1	Understand the different types of wave motions and their uses in engineering applications.
	ACBSBS0101.2	Apply the laws of optics.
	ACBSBS0101.3	Apply the concept of quantum mechanics.
	ACBSBS0101.4	Define the phenomenon of crystallography & to apply the ideas in engineering applications.
	ACBSBS0101.5	Predict the working of modern engineering tools and techniques of optical fiber and laser.
Linear Algebra (ACBSBS0205)	ACBSBS0205.1	Apply the concept of matrices and determinants to solve linear system of equations.
	ACBSBS0205.2	Apply the concept of rank and LU decomposition to solve linear system of equation.
	ACBSBS0205.3	Explain the concept of vector space, orthogonalization and QR decomposition.
	ACBSBS0205.4	Explain the concept of Eigenvalues and Eigenvectors, linear transformation and complex matrices.
	ACBSBS0205.5	Apply the concept of singular value decomposition and principal component analysis in image processing and machine learning.
Statistical methods (ACBSBS0201)	ACBSBS0201.1	Explain the concept of sampling and sampling distribution.
	ACBSBS0201.2	Apply the concept of correlation, regression and ANOVA to statistical data.
	ACBSBS0201.3	Apply the concept of estimation theory to evaluate statistical parameters.
	ACBSBS0201.4	Apply the concept of hypothesis testing to statistical problems.
	ACBSBS0201.5	Explain the concept of time series and forecasting.
Fundamentals of Economics (ACBSBS0206)	ACBSBS0206.1	Students will be able to remember the concepts of micro economics and also able to understand the various micro economic principles to make effective economic decisions under conditions of risk and uncertainty.
	ACBSBS0206.2	The students would be able to understand the law of demand & supply & their elasticities, evaluate & analyze these concepts and apply them in various changing situations in industry. Students would be able to apply various techniques to forecast demand for better utilization of resources.
	ACBSBS0206.3	The students would be able to understand the production concept and how the production output changes with the change in inputs and able to analyze the effect of cost to business and their relation to analyze the volatility in the business world
	ACBSBS0206.4	The students would be able to understand & evaluate the different market structure and their different equilibriums for industry as well as for consumers for the survival in the industry by the application of various pricing strategic
	ACBSBS0206.5	The students would be able to analyze the macroeconomic concepts & their relation to micro economic concept & how they affect the business & economy.
	AAS0102.1	Understand the concept of fuel, their calorific value and its usage
	AAS0102.2	Develop the understanding to apply the principles of water chemistry to the water treatment

Engineering Chemistry (AAS0102)/(AAS0202)	AAS0102.3	Apply concepts of Electrochemistry, corrosion and their prevention methods with cement manufacturing
	AAS0102.4	Understand elementary preparation and application of polymers and Organometallic compounds.
	AAS0102.5	Understand Molecular orbital theory and simplified concepts of spectroscopic techniques
Engineering Physics (AAS0201B)	AAS0201B.1	Solve the relativistic mechanics problems
	AAS0201B.2	Apply the concept of quantum mechanics
	AAS0201B.3	Apply the laws of optics and their application in various processes
	AAS0201B.4	Calculate the various parameters of crystal structures.
	AAS0201B.5	Explain the basic phenomena of superconductivity and nanotechnology.
Engineering Physics (AAS0101C)	AAS0101C.1	Solve the relativistic mechanics problems
	AAS0101C.2	Apply the concept of quantum mechanics
	AAS0101C.3	Apply the laws of optics and their application in various processes
	AAS0101C.4	Apply the concept of electromagnetics.
	AAS0101C.5	Discuss the dielectric properties of material and their possible engineering applications.
Programming for problem solving using C (ACSE0201)	ACSE0201.1	Develop simple algorithms for arithmetic and logical problems.
	ACSE0201.2	Implement and trace the execution of programs written in C language.
	ACSE0201.3	Implement conditional branching and iteration
	ACSE0201.4	Use function, arrays and structures to develop algorithms and programs.
	ACSE0201.5	Use searching and sorting algorithm to arrange data and use file handling for developing real life projects
Statistical Methods Lab (ACBS0251)	ACBS0251.1	Implement Statistical analysis techniques on variety of data for solving practical problems.
	ACBS0251.2	Explore different types of data and file formats.
	ACBS0251.3	Analyse and prepare raw data for processing.
	ACBS0251.4	Perform exploratory data analysis using R and effectively visualize the outcome.
	ACBS0251.5	Effectively visualize the outcome using various chart and plots.

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First Year CO-PO_2020-21

COURSE	COURSE OUTCOME NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Engineering Mathematics-I (AAS0103)	AAS0103.1	3	2	1	1	3	2	-	-	-	2	2	3
	AAS0103.2	3	3	2	3	3	-	-	-	-	2	3	3
	AAS0103.3	3	2	3	3	3	2	-	-	-	2	3	3
	AAS0103.4	3	2	3	3	2	2	-	-	-	2	2	3
	AAS0103.5	1	1	1	1	1	-	-	-	-	2	-	3
	AVERAGE	2.6	2	2	2.2	2.4	2	-	-	-	2	2.5	3
Basic Electrical and Electronics Engineering (AEC0101)	AEC0101.1	3	2	1	-	1	1	2	-	-	-	-	2
	AEC0101.2	3	2	1	-	1	2	2	-	-	-	-	2
	AEC0101.3	3	3	2	-	2	2	2	-	-	-	-	2
	AEC0101.4	3	3	2	-	2	3	2	-	-	-	-	2
	AEC0101.5	3	3	2	-	3	3	2	-	-	-	-	2
	AVERAGE	3	2.5	1.5	-	1.5	2	2	-	-	-	-	2
Problem Solving using Python (ACSE0101)	ACSE0101.1	3	3	3	3	2	2	1	-	1	3	2	2
	ACSE0101.2	3	3	3	3	2	2	1	-	1	1	2	2
	ACSE0101.3	3	3	3	3	3	2	2	-	2	1	2	3
	ACSE0101.4	3	3	3	3	3	2	2	1	2	1	2	3
	ACSE0101.5	3	3	3	3	3	2	2	1	2	1	2	2
	AVERAGE	3	3	3	3	2.6	2	1.6	0.4	1.6	1.4	2	2.4
Professional Communication (AASL0101)	AASL0101.1	2	2	1	2	1	2	1	1	2	2	2	2
	AASL0101.2	2	2	2	3	-	-	-	-	2	3	2	2
	AASL0101.3	1	-	-	2	-	-	-	-	3	3	-	3
	AASL0101.4	-	-	-	1	-	1	-	-	3	3	1	3
	AASL0101.5	1	-	-	1	-	1	-	-	3	3	1	3
	AVERAGE	1.2	0.8	0.6	1.8	0.2	0.8	0.2	0.2	2.6	2.8	1.2	2.6
Basic Electrical and Electronics Engineering Lab (AEC0151)	AEC0151.1	3	-	-	-	2	2	1	1	2	1	1	2
	AEC0151.2	3	-	-	-	2	2	1	1	2	1	1	2
	AEC0151.3	3	-	-	-	2	2	1	1	2	1	1	2
	AEC0151.4	3	-	-	-	2	2	1	1	2	1	1	2
	AVERAGE	3	-	-	-	2	2	1	1	2	1	1	2
Problem Solving using Python Lab (ACSE0151)	ACSE0151.1	2	2	2	2	1	1	1	2	1	2	1	1
	ACSE0151.2	2	2	2	2	1	1	1	2	2	2	1	1
	ACSE0151.3	2	2	3	2	1	1	1	2	2	2	2	2
	ACSE0151.4	2	2	2	3	2	1	2	2	2	2	2	2
	ACSE0151.5	2	2	2	2	2	1	2	2	2	2	2	2
	AVERAGE	2	2	2.2	2.2	1.4	1	1.4	2	1.8	2	1.6	1.6
Professional Communication Lab (AASL0151)	AASL0151.1	2	2	1	2	1	2	1	1	2	2	2	2
	AASL0151.2	2	2	2	3	-	-	-	-	2	3	2	2
	AASL0151.3	1	-	-	2	-	-	-	-	3	3	-	3
	AASL0151.4	-	-	-	1	-	1	-	-	3	3	1	3
	AASL0151.5	1	-	-	1	-	1	-	-	3	3	1	3
	AVERAGE	1.2	0.8	0.6	1.8	0.2	0.8	0.2	0.2	2.6	2.8	1.2	2.6
Digital Manufacturing Practices (AME0151)	AME0151.1	3	1	1	2	2	2	1	1	3	2	1	2
	AME0151.2	3	1	1	1	1	2	1	1	2	1	1	3
	AME0151.3	3	1	1	1	2	2	1	1	2	1	1	2
	AME0151.4	3	1	1	2	1	2	1	1	2	1	1	2
	AME0151.5												
	AVERAGE	3	1	1	1.5	1.5	2	1	1	2.25	1.25	1	2.25
	AAS0203.1	3	3	3	3	3	1	2	-	-	2	2	3

Engineering Mathematics-II (AAS0203)	AAS0203.2	3	3	3	2	2	-	-	-	-	2	2	1
	AAS0203.3	3	2	3	2	3	1	-	-	-	2	2	2
	AAS0203.4	3	2	3	2	3	1	1	-	-	2	-	3
	AAS0203.5	1	1	1	1	1	-	-	-	-	2	-	2
	AVERAGE	2.6	2.2	2.6	2	2.4	1	1.5	-	-	2	2	2.2
Design Thinking-I (ACSE0203)	ACSE0203.1	1	2	2	1	1	1	2	1	2	2	2	2
	ACSE0203.2	1	2	1	1	1	2	1	2	2	2	1	2
	ACSE0203.3	1	2	1	2	2	1	2	1	2	2	1	2
	ACSE0203.4	1	2	1	-	-	1	1	-	1	1	-	2
	ACSE0203.5	1	2	1	-	-	1	1	-	1	1	-	2
	AVERAGE	1	2	1.2	1.333	1.333	1.2	1.4	1.333	1.6	1.6	1.333	2
Engineering Physics (AAS0201A)	AAS0201A.1	3	2	1	-	2	2	2	-	-	-	-	2
	AAS0201A.2	3	2	1	-	1	2	2	-	-	-	-	2
	AAS0201A.3	3	3	1	-	2	2	2	-	-	-	-	2
	AAS0201A.4	3	2	2	-	2	3	2	-	-	-	-	2
	AAS0201A.5	3	2	2	-	2	2	2	-	-	-	-	2
	AVERAGE	3	2.2	1.4	-	1.8	2.2	2	-	-	-	-	2
Problem Solving using Advanced Python (ACSE0202)	ACSE0202.1	3	2	3	2	3	2	1	-	2	1	2	2
	ACSE0202.2	3	2	3	2	3	2	1	-	2	1	2	2
	ACSE0202.3	3	2	3	2	3	2	1	-	2	1	2	3
	ACSE0202.4	3	2	3	2	3	2	1	1	2	1	2	3
	ACSE0202.5	3	3	3	3	3	2	2	1	2	2	2	3
	AVERAGE	3	2.2	3	2.2	3	2	1.2	0.4	2	1.2	2	2.6
Foreign Language* French(AASL0202)	AASL0202.1	-	1	2	1	-	3	1	2	1	3	-	3
	AASL0202.2	-	1	2	1	-	1	2	2	2	3	1	2
	AASL0202.3	-	1	2	1	-	1	1	2	2	3	1	2
	AASL0202.4	-	1	2	2	-	1	1	2	3	2	1	3
	AASL0202.5	-	1	2	1	-	1	1	3	3	3	1	3
	AVERAGE	0	1	2	1.2	0	1.4	1.2	1.5	2.2	2.8	1	2.6
Foreign Language* German(AASL0203)	AASL0203.1	-	1	1	-	-	-	1	1	2	3	1	3
	AASL0203.2	-	1	1	-	-	-	1	1	2	3	2	3
	AASL0203.3	-	2	2	1	-	1	1	1	3	3	2	3
	AASL0203.4	-	2	2	1	-	1	1	1	3	3	2	3
	AASL0203.5	-	2	2	1	-	1	1	1	3	3	2	3
	AVERAGE	0	1.6	1.6	1	0	1	1	1	2.6	3	1.8	3
Foreign Language* Japanese(AASL0204)	AASL0204.1	2	3	1	2	3	2	-	-	-	-	-	-
	AASL0204.2	3	2	2	3	1	2	-	-	-	-	-	-
	AASL0204.3	2	3	3	2	3	3	-	-	-	-	-	-
	AASL0204.4	3	2	2	3	2	3	-	-	-	-	-	-
	AASL0204.5	3	2	3	2	3	3	-	-	-	-	-	-
	AVERAGE	2.6	2.4	2.2	2.4	2.4	2.6	-	-	-	-	-	-
Engineering Physics Lab (AAS0251A)	AAS0251A.1	3	-	-	-	3	-	1	1	2	1	1	1
	AAS0251A.2	3	-	-	-	2	-	1	1	2	1	1	1
	AAS0251A.3	2	-	-	-	2	-	2	1	2	1	1	1
	AAS0251A.4	2	-	-	-	2	-	1	1	2	1	1	1
	AAS0251A.5												
	AVERAGE	2.5	-	-	-	2.25	-	1.25	1	2	1	1	1

Problem Solving using Advanced Python Lab (ACSE0252)	ACSE0252.1	3	3	2	2	2	1	1	2	2	2	2	2
	ACSE0252.2	3	3	2	2	2	1	1	2	2	2	2	2
	ACSE0252.3	2	2	3	2	2	2	1	2	2	2	2	3
	ACSE0252.4	2	2	2	3	2	2	2	2	2	2	2	1
	ACSE0252.5	2	2	2	3	3	3	2	2	3	3	3	2
	AVERAGE	2.4	2.4	2.2	2.4	2.2	1.8	1.4	2	2.2	2.2	2.2	2
Engineering Graphics & Solid Modelling (AME0252)	AME0252.1	3	2	1	1	1	1	1	2	2	3	1	3
	AME0252.2	3	2	1	1	1	2	2	1	2	2	1	2
	AME0252.3	3	3	1	1	1	2	2	1	2	2	1	2
	AME0252.4	3	1	2	1	3	2	2	1	2	3	1	3
	AME0252.5	3	1	2	1	3	2	2	1	2	3	1	3
	AVERAGE	3	1.8	1.4	1	1.8	1.8	1.8	1.2	2	2.6	1	2.6
EVS(ANC0201)	ANC0201.1	2	2	1	1	-	2	3	2	2	2	-	2
	ANC0201.2	2	2	1	1	-	2	3	2	2	2	-	2
	ANC0201.3	2	2	1	1	-	2	3	2	2	2	-	2
	ANC0201.4	2	2	1	1	-	2	3	2	2	2	-	2
	ANC0201.5	2	2	1	1	-	2	3	2	2	2	-	2
	AVERAGE	2	2	1	-	-	1	3	2	2	2	-	2
Introductory topics in Statistics, Probability and Calculus(ACSBS01 05)	ACSBS0105.1	3	3	3	3	1	1	1	1	1	1	1	2
	ACSBS0105.2	3	3	3	3	1	1	1	1	1	1	2	2
	ACSBS0105.3	3	3	3	3	1	1	1	1	1	1	2	2
	ACSBS0105.4	3	3	3	3	1	1	1	1	1	1	1	2
	ACSBS0105.5	3	3	3	3	1	1	1	1	1	1	2	2
	AVERAGE	3	3	3	3	1	1	1	1	1	1	1.6	2
PHYsics(CSBS)(ACS BS0101)	ACSBS0101.1	3	2	1	-	2	2	2	-	-	-	-	2
	ACSBS0101.2	3	2	1	-	1	2	2	-	-	-	-	2
	ACSBS0101.3	3	3	1	-	2	2	2	-	-	-	-	2
	ACSBS0101.4	3	2	2	-	2	3	2	-	-	-	-	2
	ACSBS0101.5	3	2	2	-	2	2	2	-	-	-	-	2
	AVERAGE	3	2.2	1.4	-	1.8	2.2	2	-	-	-	-	2
PHYsics(ECE) (AAS0101C)	AAS0101C.1	3	2	1	-	2	2	2	-	-	-	-	2
	AAS0101C.2	3	2	1	-	1	2	2	-	-	-	-	2
	AAS0101C.3	3	3	1	-	2	2	2	-	-	-	-	2
	AAS0101C.4	3	2	2	-	2	3	2	-	-	-	-	2
	AAS0101C.5	3	2	2	-	2	2	2	-	-	-	-	2
	AVERAGE	3	2.2	1.4	-	1.8	2.2	2	-	-	-	-	2
PHYSICS(ME,BT)	AAS0201B.1	3	2	1	-	2	2	2	-	-	-	-	2
	AAS0201B.2	3	2	1	-	1	2	2	-	-	-	-	2
	AAS0201B.3	3	3	1	-	2	2	2	-	-	-	-	2

(AAS0201B)	AAS0201B.4	3	2	2	-	2	3	2	-	-	-	-	2
	AAS0201B.5	3	2	2	-	2	2	2	-	-	-	-	2
	AVERAGE	3	2.2	1.4	-	1.8	2.2	2	-	-	-	-	2
Fundamental of Computer Science(ACSBS0103)	ACSBS0103.1	3	3	2	2	2	1	-	1	2	2	2	3
	ACSBS0103.2	3	3	2	2	2	1	-	1	2	2	2	3
	ACSBS0103.3	3	3	3	2	3	1	-	1	2	2	2	3
	ACSBS0103.4	3	3	3	2	3	1	-	1	2	2	2	3
	ACSBS0103.5	3	3	3	3	3	2	2	2	3	3	3	3
	AVERAGE	3.0	3.0	2.6	2.2	2.6	1.2	0.4	1.2	2.2	2.2	2.2	3.0
Discrete Mathematics(ACSBS0106)	ACSBS0106	3	3	2	1	-	-	-	-	2	-	-	2
	ACSBS0106.2	3	3	2	2	-	-	-	-	-	-	-	1
	ACSBS0106.3	3	3	2	1	-	-	3	-	-	1	-	1
	ACSBS0106.4	3	3	2	1	-	-	3	-	-	1	-	3
	ACSBS0106.5	3	3	2	1	-	-	1	-	-	1	-	2
	AVERAGE	3.00	3.00	2.00	1.20	-	-	2.33	-	2.00	1.00	0.00	1.80
Elementary Mathematics(ABT-0101)	ABT0101.1	3	3	3	1	1	1	1	-	-	1	1	1
	ABT0101.2	3	3	3	1	1	-	-	-	-	-	-	1
	ABT0101.3	3	3	3	1	1	-	-	-	-	-	-	1
	ABT0101.4	3	3	3	1	1	1	1	-	-	1	1	1
	ABT0101.5	1	1	1	1	1	-	-	-	-	2	-	3
	AVERAGE	2.6	2.6	2.6	1	1	1	1	-	-	1.333	1	1.4
Fundamentals of Economics(ACSBS0206)	ACSBS206.1	2	3	3	2	2	1	1	2	2	2	1	2
	ACSBS206.2	2	3	1	2	2	2	1	1	1	-	-	2
	ACSBS206.3	1	2	-	-	2	2	2	2	2	-	-	1
	ACSBS206.4	2	3	-	2	2	2	1	2	2	-	2	2
	ACSBS206.5	2	3	2	-	1	1	2	2	1	1	2	1
	AVERAGE	1.8	2.8	2	2	1.8	1.6	1.4	1.8	1.6	1.5	1.6	1.6
Engg. Chemistry (AAS0102/202)	AAS0102.1	3	2	1	-	-	1	1	-	1	1	-	1
	AAS0102.2	3	2	1	-	-	1	1	-	1	1	-	1
	AAS0102.3	3	2	1	-	-	1	1	-	1	1	-	1
	AAS0102.4	2	2	1	-	-	1	1	-	1	1	-	1
	AAS0102.5	3	2	1	-	2	-	-	-	1	1	-	1
	AVERAGE	2.8	2	1	-	2	1	1	-	1	1	-	1
Linear Algebra(ACSBS0205)	ACSBS205.1	3	3	3	3	3	1	2	-	-	2	2	3
	ACSBS205.2	3	3	3	2	2	-	-	-	-	2	2	1
	ACSBS205.3	3	2	3	2	3	1	-	-	-	2	2	2
	ACSBS205.4	3	2	3	2	3	1	1	-	-	2	-	3
	ACSBS205.5	1	1	1	1	1	-	-	-	-	2	-	2
	AVERAGE	2.6	2.2	2.6	2	2.4	1	1.5	-	-	2	2	2.2
Mathematical Foundations -I (AAS0104)	AAS0104.1	3	2	1	1	3	2	-	-	-	2	2	3
	AAS0104.2	3	3	2	3	3	-	-	-	-	2	3	3
	AAS0104.3	3	2	3	3	3	2	-	-	-	2	3	3
	AAS0104.4	3	2	3	3	2	2	-	-	-	2	2	3

(AAS0104)	AAS0104.5	1	1	1	1	1	-	-	-	-	2	-	3
	AVERAGE	2.6	2	2	2.2	2.4	2	-	-	-	2	2.5	3
Mathematical Foundations -II (AAS0204)	AAS0204.1	3	3	3	3	3	1	2	-	-	2	2	3
	AAS0204.2	3	3	3	2	2	-	-	-	-	2	2	1
	AAS0204.3	3	2	3	2	3	1	-	-	-	2	2	2
	AAS0204.4	3	2	3	2	3	1	1	-	-	2	-	3
	AAS0204.5	1	1	1	1	1	-	-	-	-	2	-	2
	AVERAGE	2.6	2.2	2.6	2	2.4	1	1.5	-	-	2	2	2.2
Data Structures and Algorithms Lab (ACSBS0253)	ACSBS0253.1	3	3	3	3	1	1	1	1	2	2	1	2
	ACSBS0253.2	2	3	3	2	1	1	1	2	3	2	2	3
	ACSBS0253.3	1	2	2	1	1	3	2	2	3	3	2	2
	ACSBS0253.4	2	2	2	3	1	1	1	2	2	2	1	2
	ACSBS0253.5	3	3	3	2	3	2	1	1	2	2	2	3
	AVERAGE	2.2	2.6	2.6	2.2	1.4	1.6	1.2	1.6	2.4	2.2	1.6	2.4
Programming for problem solving using C Lab(ACSE0251)	ACSE0251.1	3	3	2	2	2	1	1	2	2	2	2	2
	ACSE0251.2	3	3	2	2	2	1	1	2	2	2	2	2
	ACSE0251.3	2	2	3	2	2	2	1	2	2	2	2	3
	ACSE0251.4	2	2	2	3	2	2	2	2	2	2	2	1
	ACSE0251.5	2	2	2	3	3	3	2	2	3	3	3	2
	AVERAGE	2.4	2.4	2.2	2.4	2.2	1.8	1.4	2	2.2	2.2	2.2	2
Engineering Chemistry Lab (AAS0152/AAS0252)	AAS0152.1	2	2	1	-	2	1	-	2	2	2	-	2
	AAS0152.2	2	2	-	-	1	1	1	2	2	2	-	2
	AAS0152.3	2	2	-	-	1	2	2	2	2	2	-	2
	AAS0152.4	2	1	-	-	1	-	-	2	2	2	-	2
	AVERAGE	2	1.8	1	-	1.3	1.3	1.5	2	2	2	-	2
Physics For Computing Science Lab (ACSBS0151)	ACSBS0151.1	3	-	-	-	3	-	1	1	2	1	1	1
	ACSBS0151.2	3	-	-	-	2	-	1	1	2	1	1	1
	ACSBS0151.3	2	-	-	-	2	-	2	1	2	1	1	1
	ACSBS0151.4	2	-	-	-	2	-	1	1	2	1	1	1
	AVERAGE	2.5	-	-	-	2.25	-	1.25	1	2	1	1	1
BCVS-I(ACSBS0104)	ACSBS0104.1	-	-	-	-	-	1	--	2	1	1	-	1
	ACSBS0104.2	1	-	-	-	-	1	--	2	2	1	-	1
	ACSBS0104.3	1	1	1	-	-	1	1	2	2	2	-	1
	ACSBS0104.4	1	1	1	1	1	1	1	2	1	3	-	2
	ACSBS0104.5	1	1	1	1	1	1	1	1	2	3	-	2
	AVERAGE	1	1	1	1	1	1	1	1.8	1.6	2		1.4
BCVS-	ACSBS0204.1	-	-	-	-	-	1	--	2	1	1	-	1
	ACSBS0204.2	1	-	-	-	-	1	--	2	2	1	-	1
	ACSBS0204.3	1	1	1	-	-	1	1	2	2	2	-	1

II(ACBS0204)	ACBS0204.4	1	1	1	1	1	1	1	2	1	3	-	2
	ACBS0204.5	1	1	1	1	1	1	1	1	2	3	-	2
	AVERAGE	1	1	1	1	1	1	1	1.8	1.6	2		1.4
Programming for problem solving using C (ACSE0201)	ACSE0201.1	3	3	3	3	2	2	-	-	1	3	1	2
	ACSE0201.2	3	3	3	3	2	2	1	-	1	1	1	2
	ACSE0201.3	3	3	3	3	2	2	1	1	2	1	2	2
	ACSE0201.4	3	3	3	3	2	2	1	1	2	1	2	3
	ACSE0201.5	3	3	3	3	2	2	1	1	2	1	2	3
	AVERAGE	3.0	3.0	3.0	3.0	2.0	2.0	1.0	1.0	1.6	1.4	1.6	2.4
Statistical Methods (ACBS0201)	ACBS0201.1	3	3	3	3	1	1	1	1	1	1	1	2
	ACBS0201.2	3	3	3	3	1	1	1	1	1	1	2	2
	ACBS0201.3	3	3	3	3	1	1	1	1	1	1	2	2
	ACBS0201.4	3	3	3	3	1	1	1	1	1	1	1	2
	ACBS0201.5	3	3	3	3	1	1	1	1	1	1	2	2
	AVERAGE	3	3	3	3	1	1	1	1	1	1	1.6	2
Principles of Electrical Engineering Lab (ACBS0152)	ACBS0152.1	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0152.2	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0152.3	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0152.4	3	2	1	-	-	2	1	1	1	-	-	3
	AVERAGE	3	2	1	-	-	2	1	1	1	-	-	3
Principles of Electronics Lab (ACBS0252)	ACBS0252.1	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0252.2	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0252.3	3	2	1	-	-	2	1	1	1	-	-	3
	ACBS0252.4	3	2	1	-	-	2	1	1	1	-	-	3
	AVERAGE	3	2	1	-	-	2	1	1	1	-	-	3
Principles of Electrical Engineering (ACBS0102)	ACBS0102.1	3	2	1	-	2	1	2	-	-	-	-	2
	ACBS0102.2	3	2	1	-	2	2	2	-	-	-	-	2
	ACBS0102.3	3	3	2	-	2	2	2	-	-	-	-	2
	ACBS0102.4	3	3	2	-	2	3	2	-	-	-	-	2
	ACBS0102.5	3	3	2	-	3	3	2	-	-	-	-	2
	AVERAGE	3	2.5	1.5	-	2	2	2	-	-	-	-	2
	ACBS0202.1	3	2	1	-	2	1	2	-	-	-	-	2
	ACBS0202.2	3	2	1	-	2	2	2	-	-	-	-	2

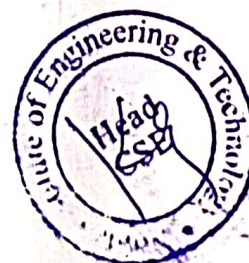
Principles of Electronics (ACBS0202)	ACBS0202.3	3	3	2	-	2	2	2	-	-	-	-	2
	ACBS0202.4	3	3	2	-	2	3	2	-	-	-	-	2
	ACBS0202.5	3	3	2	-	3	3	2	-	-	-	-	2
	AVERAGE	3	2.5	1.5	-	2	2	2	-	-	-	-	2
Introduction to Biotechnology (ABT0251)	ABT0251.1	3	2	1	2	1	2	2	2	2	2	2	3
	ABT0251.2	3	2	1	2	1	2	2	2	2	2	2	3
	ABT0251.3	3	2	1	2	1	2	2	2	2	2	2	2
	ABT0251.4	3	2	1	2	1	2	2	2	2	2	2	3
	AVERAGE	3	2	1	2	1	2	2	2	2	2	2	2.75
Introduction to Biotechnology (ABT0201)	ABT0201.1	2	3	2	3	2	2	2	2	2	3	2	3
	ABT0201.2	3	3	2	2	2	2	2	2	2	2	1	1
	ABT0201.3	3	3	2	2	2	2	2	2	2	2	1	2
	ABT0201.4	3	3	2	3	2	2	2	2	2	2	2	-
	ABT0201.5	2	3	2	2	2	2	2	2	2	3	2	1
	AVERAGE	2.6	3	2	2.4	2	2	2	2	2	2.4	1.6	1.4
Data Structures and Algorithms (ACBS0203)	ACBS0203.1	3	3	2	2	2	1	-	1	2	2	2	2
	ACBS0203.2	3	3	2	2	2	1	-	1	2	2	2	2
	ACBS0203.3	3	3	3	2	2	1	-	1	2	2	2	2
	ACBS0203.4	3	3	3	2	2	1	-	1	2	2	2	3
	ACBS0203.5	3	3	3	3	2	2	2	2	3	3	3	3
	AVERAGE	3.0	3.0	2.6	2.2	2.0	1.2	2.0	1.2	2.2	2.2	2.2	2.4
Fundamentals of Computer Science Lab (ACBS0153)	ACBS0153.1	3	3	1	1	3	3	1	3	3	3	3	3
	ACBS0153.2	3	3	1	3	3	3	1	3	3	3	3	3
	ACBS0153.3	3	1	3	3	3	1	1	1	3	3	3	3
	ACBS0153.4	3	1	3	3	3	1	1	1	3	3	3	3
	ACBS0153.5	3	1	3	1	3	1	3	1	3	3	3	3
	AVERAGE	3	1.8	2.2	2.2	3	1.8	1.4	1.8	3	3	3	3
Statistical Methods Lab (ACBS0251)	ACBS0251.1	3	3	1	1	3	1	-	-	-	-	-	3
	ACBS0251.2	3	3	3	1	2	-	-	-	-	-	-	2
	ACBS0251.3	1	3	1	2	3	1	-	-	-	-	-	-
	ACBS0251.4	3	2	3	2	3	1	1	-	-	-	-	-
	ACBS0251.5	1	2	2	1	3	-	-	-	-	-	-	-
	AVERAGE	2.2	2.6	2	1.4	2.8	1	1	-	-	-	-	2.5

**DEPARTMENT
OF
COMPUTER SCIENCE
&
ENGINEERING**

B.Tech in (Computer Science & Engineering)

SESSION 2020-2021

Course Code	Course Name	Course Outcomes
Universal Human Values	KVE 3-1.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
	KVE 3-1.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body
	KVE 3-1.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
	KVE 3-1.4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
	KVE 3-1.5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
Data Structure	KCS3-1 .1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.
	KCS3-1 .2	Discuss the computational efficiency of the sorting and searching algorithms.
	KCS3-1 .3	Implementation of Trees and Graphs and perform various operations on these data structure.
	KCS3-1 .4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.
	KCS3-1 .5	Identify the alternative implementations of data structures with respect to its performance to solve a real world problem.
Computer Organization and Architecture	KCS3-2 .1	Study of the basic structure and operation of a digital computer system.
	KCS3-2 .2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.
	KCS3-2 .3	Implementation of control unit techniques and the concept of Pipelining
	KCS3-2 .4	Understanding the hierarchical memory system, cache memories and virtual memory
	KCS3-2 .5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces

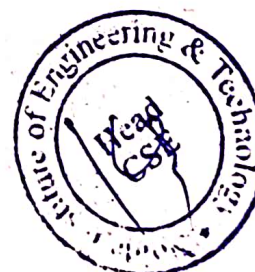


Discrete Structures & Theory of Logic	KCS303 .1	Write an argument using logical notation and determine if the argument is or is not valid
	KCS303 .2	Understand the basic principles of sets and operations in sets.
	KCS303 .3	Demonstrate an understanding of relations and functions and be able to determine their properties.
	KCS303 .4	Demonstrate different traversal methods for trees and graphs
	KCS303 .5	Model problems in Computer Science using graphs and trees
Sensor and Instrumentation	KOE -34.1.	Apply the use of sensors for measurement of displacement, force and pressure.
	KOE -34.2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.
	KOE -34.3	Demonstrate the use of virtual instrumentation in automation industries.
	KOE -34.4	Identify and use data acquisition methods.
	KOE -34.5	Comprehend intelligent instrumentation in industrial automation.
Computer System Security	KNC301.1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
	KNC301.2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats
	KNC301.3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
	KNC301.4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
	KNC301.5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques
Data Structures Using C Lab	KCS351 .1	To analyze and implement C programs for solving mathematical problems, array processing problems, taking care of all input, output possibilities and error conditions
	KCS351 .2	To implement various data structures like stacks, queue, linked lists, trees, sparse matrices, graphs, using various strategies involving use of arrays and self-referential pointers
	KCS351 .3	To analyze and evaluate the performance of a program
	KCS351 .4	To analyze and implement efficient sorting and searching programs
	KCS351 .5	To solve real life problems by identifying the proper data structures and algorithms
Computer Organization Lab	KCS352.1	To be able to analyze the behavior of logic gates.
	KCS352.2	To be able to design combinational circuits for basic components of computer system and applications.
	KCS352.3	To be able to understand instruction execution, instruction format and addressing mode.

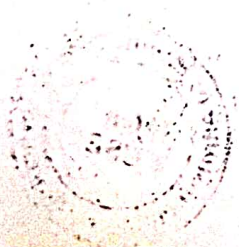
	KCS352.4	To be able to analyze the operational behavior and applications of various flip flops.
	KCS352.5	To be able to design Arithmetic logic units and different types of memory blocks.
Discrete Structure & Logic Lab	KCS353 .1	Students would be having understanding of working with a mathematical tool Maple
	KCS353 .2	Students would be able to perform programs of recursion, combinatorics and counting
	KCS353 .3	Students would be able to perform programs of set theory, set operations and probability
	KCS353 .4	Student would be able to implement classical mathematical problems like Birthday paradox based on pigeonhole principle.
	KCS353 .5	
Maths IV	KAS402.1	Remember the concept of partial differential equation and to solve partial differential equations
	KAS402.2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations
	KAS402.3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting
	KAS402.4	Remember the concept of probability to evaluate probability distributions
	KAS402.5	Apply the concept of hypothesis testing and statistical quality control to create control charts
Technical Communication	KAS401 .1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.
	KAS401 .2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
	KAS401 .3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.
	KAS401 .4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.
	KAS401 .5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.
Operating Systems	KCS401 .1	Understand the structure and functions of OS
	KCS401 .2	Learn about Processes, Threads and Scheduling algorithms
	KCS401 .3	Understand the principles of concurrency and Deadlocks
	KCS401 .4	Learn various memory management scheme
	KCS401 .5	Study I/O management and File systems.
Theory of Automata and Formal Languages	KCS402 .1	Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars
	KCS402 .2	Analyze and design, Turing machines, formal languages, and grammars



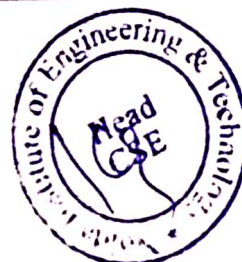
	KCS402 .3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving
	KCS402 .4	Prove the basic results of the Theory of Computation.
	KCS402 .5	State and explain the relevance of the Church-Turing thesis.
Microprocessor	KCS403 .1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
	KCS403 .2	Analyze a detailed s/w & h/w structure of the Microprocessor.
	KCS403 .3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.
	KCS403 .4	Analyze the properties of Microprocessors(8085/8086)
	KCS403 .5	Evaluate the data transfer information through serial & parallel ports
Python Programming	KNC402.1	To read and write simple Python programs.
	KNC402.2	To develop Python programs with conditionals and loop.
	KNC402.3	To define Python functions and to use Python data structures -- lists, tuples, dictionaries.
	KNC402.4	To do input/output with files in Python.
	KNC402.5	To do searching, sorting and merging in Python.
Operating Systems Lab	KCS451.1	To execute various unix commands for process and file management as well as input/output system calls.
	KCS451.2	To implement various preemptive and non preemptive CPU scheduling policies.
	KCS451.3	To understand the concept of Deadlock and implementation of banker's algorithm.
	KCS451.4	To understand and implement various memory and file management techniques.
	KCS451.5	To understand and implement various inter process communication techniques.
Microprocessor Lab	KCS452 .1	Understand principles and architecture of 8085 chip.
	KCS452 .2	Understand principles and architecture of 8086 chip.
	KCS452 .3	Develop and run a program i.e. to find out largest and smallest number, for converting temperature from F to C degree, for computing ascending/descending order of a number.
	KCS452 .4	Perform interfacing of 8255 chip to 8085.
	KCS452 .5	Learn about interfacing of UART/USART.
Python Language Programming Lab	KCS453 .1	To read and write simple Python programs.
	KCS453 .2	To develop Python programs with conditionals and loops.
	KCS453 .3	To define Python functions and to use Python data structures -- lists, tuples, dictionaries
	KCS453 .4	To do input/output with files in Python
	KCS453 .5	To do searching, sorting and merging in Python
	KCS501.1	Apply knowledge of database for real life applications.



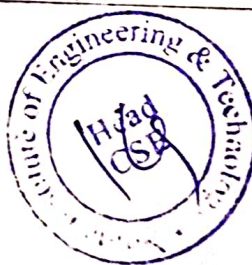
Database Management System	KCS501.2	Apply query processing techniques to automate the real time problems of databases.
	KCS501.3	Identify and solve the redundancy problem in database tables using normalization
	KCS501.4	Understand the concepts of transactions, their processing so familiar with broad range of database management issues including data integrity, security and recovery.
	KCS501.5	Design, develop and implement a small database project using database tools.
Compiler Design	KCS502.1	Acquire knowledge of different phases and passes of the compiler and also able to use the compiler tools like LEX, YACC, etc. Students will also be able to design different types of compiler tools to meet the requirements of the realistic constraints of compilers
	KCS502.2	Understand the parser and its types i.e. Top-Down and Bottom-up parsers and construction of LL, SLR, CLR, and LALR parsing table
	KCS502.3	Implement the compiler using syntax-directed translation method and get knowledge about the synthesized and inherited attributes
	KCS502.4	Acquire knowledge about run time data structure like symbol table organization and different techniques used in that.
	KCS502.5	Understand the target machine's run time environment, its instruction set for code generation and techniques used for code optimization
Design and Analysis of Algorithm	KCS503.1	To have knowledge of basic principles of algorithm design and Analysis, asymptotic notations and growth of functions for time and space complexity analysis and applying the same in different sorting algorithms
	KCS503.2	To apply different problem-solving approaches for advanced data structures
	KCS503.3	To apply divide and conquer method for solving merge sort, quick sort, matrix multiplication and Greedy Algorithm for solving different Graph Problem
	KCS503.4	To analyze and apply different optimization techniques like dynamic programming, backtracking and Branch & Bound to solve the complex problems
	KCS503.5	To understand the advanced concepts like NP Completeness and Fast Fourier Transform, to analyze and apply String Matching, Approximation and Randomized Algorithms to solve the complex problems
Data Analytics	KCS051.1	Describe the life cycle phases of Data Analytics through discovery, planning and building.
	KCS051.2	Understand and apply Data Analysis Techniques.
	KCS051.3	Identify various Data streams.
	KCS051.4	Understand item sets, Clustering, frame works & Visualizations.



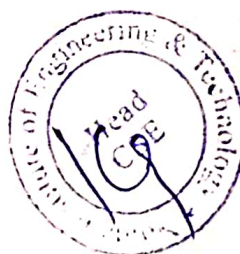
	KCS051.5	Apply R tool for developing and evaluating real time applications.
Web Designing	KCS052.1	Understand principle of Web page design and about types of websites.
	KCS052.2	Visualize and recognize the basic concept of HTML and application in web designing.
	KCS052.3	Recognize and apply the elements of Creating Style Sheet (CSS).
	KCS052.4	Understanding the basic concept of Java Script and its application.
	KCS052.5	Introduce basics concept of Web Hosting and apply the concept of SEO.
Object Oriented System Design	KCS054.1	Understand the application development and analyze the insights of object oriented programming to implement application
	KCS054.2	Understand, analyze and apply the role of overall modeling concepts (i.e. System, structural)
	KCS054.3	Understand, analyze and apply oops concepts (i.e. abstraction, inheritance)
	KCS054.4	Understand the basic concepts of C++ to implement the object oriented concepts
	KCS054.5	To understand the object oriented approach to implement real world problem.
Machine Learning Technique	KCS055.1	To understand the need for Machine Learning for various problem solving
	KCS055.2	To understand a wide variety of learning algorithms and how to evaluate models generated from data
	KCS055.3	To understand the latest trends in machine learning
	KCS055.4	To design appropriate machine learning algorithms and apply the algorithms to a real-world problems
	KCS055.5	To optimize the models learned and reports on the expected accuracy that can be achieved by applying the models
Application of Soft Computing	KCS056.1	Identify soft computing techniques and their applications
	KCS056.2	Apply neural networks using various learning techniques.
	KCS056.3	Formulate the Artificial Neural Network with their different layers
	KCS056.4	Compare the Fuzzy sets and Crisp Sets and apply fuzzy operations in real life problems.
	KCS056.5	Design fuzzy Controller with the help of Fuzzy Rules, fuzzyfications and Defuzzification.
Constitution of India, Law and Engineering	KNC501.1	Understand the basic principles of thought process & inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.
	KNC501.2	Illustrate the importance of our surroundings and encourage the students to contribute towards sustainable development.
	KNC501.3	Interpret the issues related to 'Indian' culture, tradition, & its composite character.



	KNC501.4	Aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.
	KNC501.5	Acquaint students with Indian Knowledge System, Indian perspective of modern scientific worldview and basic principles of Yoga and holistic health care system.
Database Management System Lab	KCS551.1	To analyze the limitation of file system over RDBMS
	KCS551.2	To Analyze, design and implement different database models
	KCS551.3	To implement and design basics of SQL and Construct queries using SQL/PLSQL. Use Commercial relational database system (Oracle) by writing Queries using SQL
	KCS551.4	To analyze and design the normalized database & understand the internal data structure.
	KCS551.5	To design, apply and implement RDBMS Concepts in software development applications for the Community and society.
Compiler Design Lab	KCS552.1	Identify patterns, tokens & regular expressions for lexical analysis
	KCS552.2	Design Lexical analyser for given language using C and LEX /YACC tools
	KCS552.3	Design and analyse top down and bottom up parsers.
	KCS552.4	Generate the intermediate code
	KCS552.5	Generate machine code from the intermediate code forms
Design and Analysis of Algorithm Lab	KCS553.1	To design and implement algorithms for different searching techniques
	KCS553.2	To understand the concept of various sorting techniques based on comparison & linear order time and implement the same.
	KCS553.3	To have knowledge of divide & conquer approach and apply on different sorting algorithms like merge sort and quick sort.
	KCS553.4	To understand and implement the concept of greedy algorithm for different graph problems.
	KCS553.5	To design and apply optimization techniques like Dynamic Programming and Backtracking for solving complex and real world problems
Software Engineering	KCS601.1	Explain various software characteristics and analyze different software Development Models.
	KCS601.2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards.
	KCS601.3	Compare and contrast various methods for software design
	KCS601.4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing
	KCS601.5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.



Web Technology	KCS602.1	Explain web development Strategies and Protocols governing Web.
	KCS602.2	Develop Java programs for window/web-based applications
	KCS602.3	Design web pages using HTML, XML, CSS and JavaScript
	KCS602.4	Creation of client-server environment using socket programming
	KCS602.5	Building enterprise level applications and manipulate web databases using JDBC
Computer Networks	KCS603.1	Design interactive web applications using Servlets and JSP
	KCS603.2	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission
	KCS603.3	Apply channel allocation, framing, error and flow control techniques.
	KCS603.4	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
	KCS603.5	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
Big Data	KCS061.1	Explain the functions offered by session and presentation layer and their Implementation.
	KCS061.2	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.
	KCS061.3	Demonstrate knowledge of Big Data Analytics concepts and its applications in business.
	KCS061.4	Demonstrate functions and components of Map Reduce Framework and HDFS.
	KCS061.5	Discuss Data Management Concepts in NoSQL environment.
Real Time Systems	KCS063.1	Explain process of developing Map Reduce based distributed processing applications.
	KCS063.2	Explain process of developing applications using HBASE, Hive, Pig etc.
	KCS063.3	illustrate the need and the challenges in the design of hard and soft real time systems
	KCS063.4	Compare different scheduling algorithms and the schedulable criteria.
	KCS063.5	Discuss resource sharing methods in real time environment
Data Compression	KCS064.1	Compare and contrast different real time communication and medium access control techniques.
	KCS064.2	Analyze real time Operating system and Commercial databases
	KCS064.3	Describe the evolution and fundamental concepts of Data Compression and Coding Techniques
	KCS064.4	Apply and compare different static coding techniques (Huffman & Arithmetic coding) for text compression.
	KCS064.5	Apply and compare different dynamic coding techniques (Dictionary Technique) for text compression.



UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY HUMAN ASPIRATIONS AND ITS FULFILLMENT	KOE069 .1	The students identify the importance of human values and skills for sustained happiness.
	KOE069 .2	The students must aware about difference between what you are and what you really want to be.
	KOE069 .3	The students strike a balance between profession and personal happiness/goals.
	KOE069 .4	The students must be able to explain the terms like Sanyam,sukh, moksh, sanskar.
	KOE069 .5	Distinguish between the self and the body, understand the meaning of Harmony in the Self the Co-Existence of Self and Body.
Indian Tradition, Culture and Society	KNC602.1	To identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.
	KNC602.2	To understand the importance of our surroundings and encourage the students to contribute towards sustainable development.
	KNC602.3	To make aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.
	KNC602.4	To sensitize towards issues related to 'Indian' culture, tradition and its composite character.
	KNC602.5	To acquaint with Indian Knowledge System, Indian perspective of modern scientific world-view and basic principles of Yoga and holistic health care system.
Software Engineering Lab	KCS651.1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement.
	KCS651.2	Identify different actors and use cases from a given problem statement and draw use case diagram to associate use cases with different types of relationship
	KCS651.3	Draw a class diagram after identifying classes and association among them
	KCS651.4	Graphically represent various UML diagrams, and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially
	KCS651.5	Able to use modern engineering tools for specification, design, implementation and testing
Web Technology Lab	KCS652.1	Develop static web pages using HTML
	KCS652.2	Develop Java programs for window/web-based applications.
	KCS652.3	Design dynamic web pages using Javascript and XML
	KCS652.4	Design dynamic web page using server site programming Ex. ASP/JSP/PHP

	KCS652.5	Design server site applications using JDDC, ODBC and section tracking API
Computer Networks Lab	KCS653.1	Student will be able to understand the various hardware devices, cables and connectors related computer network.
	KCS653.2	Student will be able to understand the programming of TCP, UDP.
	KCS653.3	Student will be able to understand the programming of various error detection method like CRC, Hamming code.
	KCS653.4	Student will be able to understand the programming of RPC protocol
	KCS653.5	Student will be able to understand the simulation of Network topology, configuration of devices
Understanding the Human Being Comprehensively Human Aspirations and its Fulfillment	ROE074.1	The students identify the importance of human values and skills for sustained happiness.
	ROE074.2	The students must aware about difference between what you are and what you really want to be.
	ROE074.3	The students strike a balance between profession and personal happiness/goals.
	ROE074.4	The students must be able to explain the terms like Sanyam, sukh, moksh, sanskar.
	ROE074.5	Distinguish between the self and the body, understand the meaning of Harmony in the Self the Co-Existence of Self and Body.
Application of Soft Computing	RCS071.1	Identify soft computing techniques and their applications
	RCS071.2	Apply neural networks using various learning techniques.
	RCS071.3	Formulate the Artificial Neural Network with their different layers.
	RCS071.4	Compare the fuzzy sets and Crisp Sets and apply fuzzy operations in real life problems.
	RCS071.5	Design Fuzzy Controller with the help of Fuzzy Rules, Fuzzyfications and Defuzzification.
Cloud Computing	RCS075.1	Discuss the concept of Genetic Algorithm and its various applications.
	RCS075.2	Define Cloud Computing and memorize the different Cloud service and deployment models
	RCS075.3	Describe importance of virtualization along with their technologies
	RCS075.4	Use and Examine different cloud computing services
	RCS075.5	Student will learn resource management and security in cloud
Distributed System	RCS701.1	Analyze the components of open stack & Google Cloud platform
	RCS701.2	To provide hardware and software issues in modern distributed systems.
	RCS701.3	To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems
	RCS701.4	To analyze the current popular distributed systems such as peer-to-peer (P2P) systems will also be analyzed.
	RCS701.5	To know about Shared Memory Techniques and have Sufficient knowledge about file access

Artificial Intelligence	RCS702.1	Have knowledge of Synchronization and Deadlock.
	RCS702.2	Understand the basics of the theory and practice of Artificial Intelligence as a discipline and about intelligent agents.
	RCS702.3	Understand search techniques and gaming theory.
	RCS702.4	The student will learn to apply knowledge representation techniques and problem solving strategies to common AI applications.
	RCS702.5	Student should be aware of techniques used for classification and clustering.
Distributed System Lab	RCS751.1	Comprehensive understanding of distributed system concepts, including distributed file systems, key-value stores, and consensus algorithms.
	RCS751.2	Participants will develop proficiency in designing and implementing fault-tolerant distributed systems, ensuring robustness in the face of node failures.
	RCS751.3	Principles of distributed data management through the implementation of distributed databases, file systems, and key-value stores.
	RCS751.4	Acquire practical experience in load balancing techniques, gaining skills in distributing network traffic across multiple servers to optimize resource utilization.
	RCS751.5	Apply distributed computing paradigms, such as MapReduce and distributed task scheduling, to solve real-world problems in scalable and efficient ways.
Artificial Intelligence Lab	RCS752.1	To understand the concept of languages in more detail.
	RCS752.2	Students are able to learn different logic programming languages.
	RCS752.3	To model the data with the help probabilistic reasoning.
	RCS752.4	Students are able to apply and analyze various problem solving techniques on artificial intelligent problems.
	RCS752.5	To implement the concepts that include travelling salesman problem, 4-queen problem
Machine Learning	RCS080.1	Students will be able to apply the fundamental concepts of machine learning, well defined learning problems and its associated algorithms
	RCS080.2	Students will be able to apply and analyse Decision Tree Learning and Artificial Neural network.
	RCS080.3	Students will be able to learn the Evaluation of Hypothesis Theory, Bayesian Learning and Bayesian Network.
	RCS080.4	Students will be able to understand the concept of Computational Learning Theory and its associated algorithms.
	RCS080.5	Students will be able analyse and apply the concept of Genetic Algorithm and its role in Reinforcement Machine Learning.
Digital and Social Media Marketing	ROE081.1	Students will develop an understanding of digital and social media marketing practices.
	ROE081.2	Students will develop understanding of the social media platforms.



	ROE081.3	Students will acquire the skill to acquire and engage consumers online.
	ROE081.4	Students will develop understanding of building organizational competency by way of digital marketing practices and cost considerations.
	ROE081.5	Students will develop understanding of the latest digital practices for marketing and promotion.
Renewable Energy Resources	ROE086.1	To understand basic of Primary and Secondary energy Resources.
	ROE086.2	Understanding domain of development of system of Non-Conventional Sources of Energy
	ROE086.3	Analyzing existing sources of energy comprehensively
	ROE086.4	Analysis the need and verify the requirements of customer and environments.
	ROE086.5	Analyze and Demonstrate various resources of energy at global level.
Parallel and Distributed Computing	RCS083.1	To develop an understanding of various basic concepts associated with Parallel Computing Environment
	RCS083.2	To understand the effects of that issues of API function with Memory, Kernal, transferring data to host Processor.
	RCS083.3	To gain experience in a number of different parallel computing paradigms including memory passing, memory sharing, data-parallel and other approaches.
	RCS083.4	To use the applicatio of Data Structure algorithms in the development of parallel applications.
	RCS083.5	To interpret various search algorithms for parallel searching.
Deep Learning	RCS086.1	Acquire a deep grasp of ML basics, covering linear models, neural networks, and optimization techniques like backpropagation and stochastic gradient descent.
	RCS086.2	Explore deep learning intricacies, including backpropagation, regularization, convolutional networks, GANs, and semi-supervised learning, gaining profound knowledge of VC Dimension and network comparisons.
	RCS086.3	Master techniques like PCA, LDA, autoencoders, and manifold learning, while understanding their applications in neural networks, alongside exploring popular ConvNet architectures.
	RCS086.4	Develop specialized optimization skills for deep learning, addressing non-convex optimization, stochastic techniques, spatial transformer networks, recurrent networks, LSTM, and delving into word-level RNNs and deep reinforcement learning.
	RCS086.5	Apply theoretical knowledge to practical scenarios, exploring real-world applications in image recognition, object detection, audio processing, natural language processing, and various case studies.
Data Compression	RCS087.1	Explain the evolution and fundamental concepts of Data Compression and coding techniques.

	RCS087.2	Analyze and apply various techniques for the text and audio compression and also evaluate performance of the coding techniques.
	RCS087.3	Analyze and apply the various coding techniques like Huffman coding, dictionary techniques and predictive coding to solve real world problem.
	RCS087.4	Understand the vector and scalar quantization.
	RCS087.5	Apply the appropriate quantization method to acquire research effective communication over the internet.
Seminar	RCS851.1	Students will demonstrate an understanding of technical and research-oriented topics by selecting a seminar topic that is current, relevant, and aligned with the field of computer science and engineering.
	RCS851.2	Students will enhance their communication skills through the development of a well-structured seminar report. This includes composing an abstract, acknowledgments, and a list of symbols, abbreviations, and nomenclature.
	RCS851.3	Students will conduct a comprehensive literature review on the chosen seminar topic. This involves critically analyzing existing research papers, summarizing related work, and presenting a clear overview of the state-of-the-art in the field.
	RCS851.4	Students will gain proficiency in describing and understanding the implementation or simulation details related to the selected seminar topic. This includes explaining algorithms, models, protocols, or methodologies used in the referred research papers.
	RCS851.5	Students will develop problem-solving skills by presenting the results of the implementation or simulation. They will draw conclusions based on the outcomes and suggest areas for further work, demonstrating critical thinking and analysis.
Project	RCS852.1	The students can effectively collaborate in groups to achieve a common goal.
	RCS852.2	Students can improve their capacity to communicate effectively with a diverse group of people.
	RCS852.3	Students learn how to design a software or hardware product by learning technical skills, conducting research, and responding ethically.
	RCS852.4	The students use what they've learned to create and implement a business plan for an entrepreneurial venture.
	RCS852.5	Students build self-learning skills and apply them to lifelong learning.



SUBJECT NAME	COURSE OUTCOME NO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Sensor and Instrumentation	KOE-34.1	2	1	1	-	2	2	-	-	-	-	-	2
	KOE-34.2	1	2	1	1	2	2	-	-	-	-	1	2
	KOE-34.3	2	2	2	2	3	1	-	-	-	1	1	2
	KOE-34.4	1	1	1	2	3	1	1	-	-	-	-	2
	KOE-34.5	2	2	1	2	3	1	-	-	-	1	1	2
	AVERAGE	1.6	1.6	1.2	1.75	2.6	1.4	1	-	-	1	1	2
Universal Human values	KVE-3-1.1	-	-	1	1	1	2	2	3	1	1	1	2
	KVE-3-1.2	-	-	1	-	-	1	-	-	2	1	-	2
	KVE-3-1.3	-	-	1	-	-	2	1	2	3	2	-	2
	KVE-3-1.4	-	2	2	-	-	2	3	-	2	-	-	3
	KVE-3-1.5	-	1	1	2	1	3	1	3	1	-	2	3
	AVERAGE	-	1.5	1.2	1.5	1	2	1.75	2.67	1.8	1.33	1.5	2.4
Data Structure	KCS3-1.1	2	2	2	1	1	2	1	2	2	1	2	1
	KCS3-1.2	1	3	2	2	3	2	1	2	1	2	2	2
	KCS3-1.3	1	2	2	1	1	2	1	1	2	1	2	1
	KCS3-1.4	1	1	1	1	2	1	1	1	2	1	1	1
	KCS3-1.5	2	3	2	2	3	2	2	2	2	2	2	2
	AVERAGE	1.4	2.2	1.8	1.4	2	1.8	1.2	1.6	1.8	1.4	1.8	1.4
Computer Organization and Architecture	KCS3-2.1	3	2	1	1	1	1	1	-	1	1	1	2
	KCS3-2.2	2	2	2	2	1	1	-	1	1	1	1	2
	KCS3-2.3	3	2	2	1	2	2	1	1	2	2	1	2
	KCS3-2.4	3	2	2	2	2	1	1	-	1	1	1	2
	KCS3-2.5	2	2	2	1	2	-	1	-	1	2	2	2
	AVERAGE	2.6	2	1.8	1.4	1.6	1.25	1	1	1.2	1.4	1.2	2
Discrete Structures & Theory of Logic	KCS303.1	2	1	-	-	-	-	-	-	-	-	-	1
	KCS303.2	1	3	-	2	-	-	-	-	-	-	-	1
	KCS303.3	3	2	2	-	-	-	-	-	-	-	-	1
	KCS303.4	3	2	2	1	-	-	-	-	-	-	-	2
	KCS303.5	3	2	1	1	3	-	-	-	-	-	-	1
	AVERAGE	2.4	2	1.67	1.33	3							1.2
Computer System Security	KNC301.1	3	2	2	2	3	2	1	2	3	2	3	1
	KNC301.2	2	3	2	2	2	2	2	3	2	2	2	1
	KNC301.3	2	2	3	2	2	2	1	2	2	2	2	1
	KNC301.4	2	2	1	3	2	2	3	2	2	3	2	2
	KNC301.5	1	2	2	2	3	2	1	3	3	2	3	3
	AVERAGE	2	2.2	2	2.2	2.4	2	1.6	2.4	2.4	2.2	2.4	1.6
Data Structures Using C Lab	KCS351.1	3	2	2	2	2	2	1	1	-	2	2	2

	KCS351.2	2	2	2	2	2	2	1	1	2	2	1	2
	KCS351.3	3	3	3	2	3	2	-	2	1	1	-	3
	KCS351.4	2	2	2	3	3	2	2	2	2	-	3	2
	KCS351.5	3	3	3	2	3	2	-	2	1	1	-	3
	AVERAGE	2.6	2.4	2.4	2.2	2.6	2	1.33	1.6	1.5	1.5	2	2.4
Computer Organization Lab	KCS352.1	3	3	2	2	3	2	1	1	1	2	1	2
	KCS352.2	3	2	2	2	3	2	1	1	2	2	2	2
	KCS352.3	3	3	2	2	2	2	-	1	1	2	1	2
	KCS352.4	3	3	2	1	2	2	-	1	2	2	2	2
	KCS352.5	2	2	2	1	3	2	1	1	2	2	2	1
	AVERAGE	2.8	2.6	2	1.6	2.6	2	1	1	1.6	2	1.6	1.8
Discrete Structure & Logic Lab	KCS353.1	3	2	3	1	-	-	-	-	-	1	-	2
	KCS353.2	3	2	3	2	2	-	-	-	-	2	-	3
	KCS353.3	3	2	2	2	1	1	-	-	-	-	2	2
	KCS353.4	3	2	2	2	1	1	-	-	-	-	-	3
	AVERAGE	3	2	2.5	1.75	1.33	1	-	-	-	1.5	2	2.5
Maths IV	KAS402.1	3	3	3	3	1	1	1	1	1	1	1	2
	KAS402.2	3	3	3	3	1	1	1	1	1	1	2	2
	KAS402.3	3	3	3	3	1	1	1	1	1	1	1	2
	KAS402.4	3	3	3	3	1	1	1	1	1	1	1	2
	KAS402.5	3	3	3	3	1	1	1	1	1	1	2	2
	AVERAGE	3	3	3	3	1	1	1	1	1	1	1.6	2
Technical Communication	KAS401.1	1	1	2	-	1	2	1	1	3	3	2	1
	KAS401.2	1	2	3	-	3	2	-	-	-	3	2	3
	KAS401.3	1	2	3	-	3	2	1	2	3	3	2	3
	KAS401.4	2	2	3	1	3	3	-	1	3	3	3	3
	KAS401.5	1	1	3	1	1	-	3	3	3	3	1	3
	AVERAGE	1.2	1.6	2.8	1	2.2	2.25	1.67	1.75	3	3	2	2.6
Operating Systems	KCS401.1	1	-	-	-	-	-	-	-	-	-	-	1
	KCS401.2	2	1	1	-	-	-	-	-	-	-	-	2
	KCS401.3	2	2	2	1	-	-	-	-	-	-	-	2
	KCS401.4	2	1	1	-	-	-	-	-	-	-	-	1
	KCS401.5	2	2	2	1	-	-	-	-	-	-	-	2
	AVERAGE	1.8	1.5	1.5	1	-	-	-	-	-	-	-	1.6
Theory of Automata and Formal Languages	KCS402.1	2	1	-	-	-	2	-	-	-	-	-	1
	KCS402.2	2	2	2	2	1	-	-	-	-	-	-	2
	KCS402.3	2	2	2	2	1	-	-	-	-	-	-	2
	KCS402.4	2	1	2	2	1	2	-	-	-	-	-	1
	KCS402.5	1	-	-	-	-	-	-	-	-	-	-	1
	AVERAGE	1.8	1.5	2	2	1	2						1.4
Microprocessor	KCS403.1	3	2	2	1	3	2	1	1	3	2	-	2
	KCS403.2	3	3	3	2	2	2	1	-	3	3	2	3
	KCS403.3	3	3	3	3	3	1	1	-	2	3	2	2

	KCS403.4	3	3	3	3	3	3	3	3	3	2	3	2
	KCS403.5	3	3	3	3	3	3	-	3	3	1	2	2
	AVERAGE	3	2.8	2.8	2.4	2.8	2.2	1.5	2.33	2.8	2.2	2.25	2.2
Python Programming	KNC402.1	3	2	3	-	1	-	-	-	2	-	1	-
	KNC402.2	3	3	2	-	1	-	-	-	2	-	1	-
	KNC402.3	3	2	2	-	-	-	-	-	2	-	-	-
	KNC402.4	3	3	3	-	-	-	-	-	3	-	3	-
	KNC402.5	1	2	2	-	1	-	-	-	-	-	3	-
	AVERAGE	2.6	2.4	2.4		1				2.25		2	
Operating Systems Lab	KCS451.1	3	1	2	1	1	1	-	1	1	1	1	3
	KCS451.2	3	2	3	3	1	2	-	2	2	2	1	3
	KCS451.3	3	3	3	3	1	2	-	2	2	2	1	3
	KCS451.4	3	2	3	3	1	1	-	-	1	1	1	3
	KCS451.5	3	2	3	3	1	1	-	-	1	1	1	3
	AVERAGE	3	2	2.8	2.6	1	1.4		1.67	1.4	1.4	1	3
Microprocessor Lab	KCS452.1	3	3	2	2	3	2	1	1	1	2	1	2
	KCS452.2	3	2	2	2	3	2	1	1	2	2	2	2
	KCS452.3	3	3	2	2	2	2	-	1	1	2	1	2
	KCS452.4	3	3	2	1	2	2	-	1	2	2	2	2
	KCS452.5	2	2	2	1	3	2	1	1	2	2	2	1
	AVERAGE	2.8	2.6	2	1.6	2.6	2	1	1	1.6	2	1.6	1.8
Python Language Programming Lab	KCS453.1	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.2	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.3	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.4	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.5	3	3	3	3	2	-	-	-	2	-	-	3
	AVERAGE	3	3	3	3	2				2			3
Database Management System	KCS501.1	3	3	3	3	2	1	-	1	2	2	2	2
	KCS501.2	3	2	2	3	2	2	-	2	1	2	2	2
	KCS501.3	3	2	2	3	3	2	-	2	1	2	2	3
	KCS501.4	3	2	3	2	2	2	-	2	2	2	3	3
	KCS501.5	2	2	2	2	2	2	-	2	1	2	1	2
	AVERAGE	2.8	2.2	2.4	2.6	2.2	1.8		1.8	1.4	2	2	2.4
Compiler Design	KCS502.1	1	1	2	2	1	-	-	-	-	-	1	2
	KCS502.2	2	2	3	2	1	-	-	-	-	-	1	3
	KCS502.3	1	2	2	2	1	-	-	-	-	-	1	2
	KCS502.4	2	2	2	2	1	-	-	-	-	-	1	3
	KCS502.5	2	2	3	2	1	-	-	-	-	-	1	2
	AVERAGE	1.6	1.8	2.4	2	1						1	2.4
Design and Analysis of Algorithm	KCS503.1	3	3	3	2	3	-	-	1	3	2	1	3
	KCS503.2	3	3	3	3	3	-	-	-	-	-	-	3
	KCS503.3	3	3	1	3	3	-	-	-	1	1	-	1
	KCS503.4	3	3	-	2	3	-	-	-	1	3	1	3

	KCS503 5	3	3	3	2	3	-	-	2	-	-	3
	AVERAGE	3	3	2.5	2.4	3	-	-	1	1.75	2	2.6
Data Analytics	KCS051 1	3	3	3	2	3	-	-	1	3	2	3
	KCS051 2	3	3	3	3	3	-	-	-	-	-	3
	KCS051 3	3	3	1	3	3	-	-	-	1	1	1
	KCS051 4	3	3	-	2	3	-	-	-	1	3	3
	KCS051 5	3	3	3	2	3	-	-	-	2	-	3
	AVERAGE	3	3	2.5	2.4	3	-	-	1	1.75	2	2.6
Web Designing	KCS052 1	2	2	2	-	3	-	-	-	-	-	-
	KCS052 2	3	2	3	-	3	-	-	-	-	-	-
	KCS052 3	3	2	3	-	3	-	-	-	-	-	-
	KCS052 4	3	2	3	-	3	-	-	-	-	-	-
	KCS052 5	3	2	3	-	3	-	-	-	-	-	-
	AVERAGE	2.8	2	2.8		3						
Object Oriented System Design	KCS054 1	2	2	3	2	-	-	-	1	1	-	2
	KCS054 2	3	3	3	3	3	-	-	3	2	2	3
	KCS054 3	3	3	2	3	3	-	-	3	2	2	3
	KCS054 4	3	2	2	2	2	2	-	3	2	-	3
	KCS054 5	3	3	2	3	3	2	2	3	3	2	3
	AVERAGE	2.8	2.6	2.4	2.6	2.2	0.8	0.4	2.6	2	1.2	2.8
Machine Learning Technique	KCS055 1	3	2	-	3	3	2	-	1	1	-	2
	KCS055 2	3	3	2	3	2	3	-	2	1	2	2
	KCS055 3	3	3	2	3	2	3	-	2	1	2	2
	KCS055 4	3	2	-	3	3	2	-	1	1	-	2
	KCS055 5	3	3	2	3	2	2	-	1	1	-	2
	AVERAGE	3	2.6	2	3	2.4	2.4	-	1	1.4	1	1.67
Application of Soft Computing	KCS056 1	3	3	-	-	-	3	1	-	3	1	3
	KCS056 2	3	1	2	-	2	3	-	-	2	-	3
	KCS056 3	3	3	-	3	-	-	-	-	-	-	2
	KCS056 4	3	3	-	3	-	3	-	-	3	-	-
	KCS056 5	3	2	3	3	2	3	-	-	3	-	2
	AVERAGE	3.0	2.4	2.5	3.0	2.0	3.0	1.0	2.8	1.0	3.0	2.5
Constitution of India, Law and Engineering	KNCS01 1	-	-	-	-	-	-	-	3	-	-	3
	KNCS01 2	-	-	-	-	-	-	-	3	-	-	3
	KNCS01 3	-	-	-	-	-	-	-	3	-	-	3
	KNCS01 4	-	-	-	-	-	-	-	3	-	-	3
	KNCS01 5	-	-	-	-	-	-	-	3	-	-	3
	AVERAGE	-	-	-	-	-	-	-	3.0	-	-	3.0
Database Management System Lab	KCS551 1	3	2	2	3	2	3	-	2	2	2	3
	KCS551 2	3	3	2	2	3	2	-	2	3	3	3
	KCS551 3	3	2	2	3	3	2	-	2	2	3	3
	KCS551 4	3	2	2	2	2	2	-	2	2	3	3
	KCS551 5	3	3	3	3	2	3	-	2	2	2	3

	AVERAGE	3.0	2.4	2.2	2.6	2.4	2.4		2.0	2.2	2.6	3.0	3.0
Compiler Design Lab	KCS552.1	1	1	2	1	1	-	-	-	-	-	1	2
	KCS552.2	1	2	1	1	1	-	-	-	-	-	1	1
	KCS552.3	1	2	2	2	1	-	-	-	-	-	1	2
	KCS552.4	2	2	1	1	1	-	-	-	-	-	1	2
	KCS552.5	1	2	1	2	1	-	-	-	-	-	1.0	1.6
	AVERAGE	1.2	1.8	1.4	1.4	1.0	-	-	-	-	-	-	2
Design and Analysis of Algorithm Lab	KCS553.1	3	1	2	1	1	-	2	-	2	-	-	2
	KCS553.2	3	2	2	2	2	-	1	-	2	-	-	2
	KCS553.3	3	3	2	2	3	-	1	-	2	-	-	2
	KCS553.4	3	3	2	2	2	-	1	-	2	-	-	3
	KCS553.5	3	3	2	2	2	-	1	-	2	-	-	2.2
	AVERAGE	3.0	2.4	2.0	1.8	2.0	-	1.4	-	2.0	-	3	3
Software Engineering	KCS601.1	2	3	3	-	-	-	-	-	-	-	2	3
	KCS601.2	3	3	3	-	-	-	-	-	-	-	3	3
	KCS601.3	3	2	-	-	2	-	-	-	-	-	3	3
	KCS601.4	2	2	2	-	3	3	-	3	-	3	3	3
	KCS601.5	2	2	3	-	3	3	-	3	-	3	3	3
	AVERAGE	2.4	2.4	2.8	3.0	2.8	3.0	-	3.0	3.0	3.0	2.8	3.0
Web Technology	KCS602.1	-	1	-	-	-	-	-	2	-	-	-	-
	KCS602.2	-	-	-	-	3	3	1	2	-	-	1	1
	KCS602.3	-	2	3	-	2	1	-	2	-	-	-	-
	KCS602.4	-	-	-	-	3	-	-	-	-	-	-	-
	KCS602.5	1	2	-	-	3	1	1	-	-	-	-	-
	AVERAGE	1.0	1.7	3.0	-	2.8	1.7	1.0	2.0	-	-	1.0	1.0
Computer Networks	KCS603.1	3	2	2	-	2	-	-	-	2	-	2	3
	KCS603.2	3	3	2	-	-	-	-	-	-	-	-	3
	KCS603.3	3	3	3	-	2	-	-	-	2	-	2	3
	KCS603.4	3	2	2	3	2	-	-	-	-	-	-	3
	KCS603.5	3	3	2	-	2	3	-	2	-	-	-	3
	AVERAGE	3.0	2.6	2.2	3.0	2.0	3.0	-	2.0	2.0	-	2.0	3.0
Big Data	KCS061.1	3	3	3	2	3	-	-	-	-	-	-	3
	KCS061.2	3	3	3	3	3	-	-	-	1	1	-	1
	KCS061.3	3	3	1	3	3	-	-	-	1	3	1	3
	KCS061.4	3	3	-	2	3	-	-	-	2	-	-	3
	KCS061.5	3	3	3	2	3	-	-	-	-	-	-	3
	AVERAGE	3.0	3.0	2.5	2.4	3.0	-	-	1.0	1.8	2.0	1.0	2.6
Real Time Systems	KCS063.1	2	3	3	-	-	-	-	-	-	-	3	3
	KCS063.2	3	3	3	3	3	-	-	-	-	-	2	3
	KCS063.3	3	2	-	-	2	-	-	-	-	-	3	3
	KCS063.4	2	2	2	-	3	3	-	3	3	-	3	3
	KCS063.5	2	2	3	-	3	3	-	3	-	3	3	3
	AVERAGE	2.4	2.4	2.8	3.0	2.8	3.0	-	3.0	3.0	3.0	2.8	3.0



Data Compression	KCS064.1	3	2	2	2	2	1	1	1	1	1	1	1
	KCS064.2	3	3	2	1	2	1	1	1	1	1	1	1
	KCS064.3	3	3	2	1	2	1	1	1	1	1	1	1
	KCS064.4	2	2	2	3	3	3	2	2	3	2	3	2
	KCS064.5	2	2	2	2	3	1	2	2	2	3	2	2
	AVERAGE	2.6	2.4	2.0	1.8	2.4	1.4	1.4	1.4	1.6	1.6	1.6	1.4
UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY HUMAN ASPIRATIONS AND ITS FULFILLMENT	KOE069.1	-	-	1	-	-	2	2	3	1	2	2	1
	KOE069.2	1	-	1	1	1	2	3	3	1	2	1	1
	KOE069.3	1	1	1	-	1	2	3	3	-	1	1	2
	KOE069.4	1	1	1	1	1	2	2	3	1	1	2	-
	KOE069.5	-	1	-	1	2	2	2	2	-	2	2	1
	AVERAGE	1.0	1.0	1.0	1.0	1.3	2.0	2.4	2.8	1.0	1.6	1.6	1.3
Software Engineering Lab	KCS651.1	2	1	-	-	-	-	-	1	-	-	-	1
	KCS651.2	3	3	2	2	2	2	1	1	1	1	1	3
	KCS651.3	3	3	3	3	2	-	1	-	-	-	1	3
	KCS651.4	2	3	2	2	2	-	1	1	1	-	2	3
	KCS651.5	3	3	3	3	2	-	1	-	1	-	2	3
	AVERAGE	2.6	2.6	2.5	2.5	2.0	2.0	1.0	1.0	1.0	1.0	1.5	2.6
Web Technology Lab	KCS652.1	-	-	2	-	3	-	-	-	-	-	-	-
	KCS652.2	2	2	3	1	3	-	-	-	-	-	-	-
	KCS652.3	2	2	3	1	3	-	-	-	-	-	-	-
	KCS652.4	2	2	3	1	3	-	-	-	-	-	-	-
	KCS652.5	2	2	3	1	3	-	-	-	-	-	-	-
	AVERAGE	2.0	2.0	2.8	1.0	3.0							
Computer Networks Lab	KCS653.1	3	2	2	2	3	2	1	1	1	3	1	1
	KCS653.2	3	2	2	1	3	1	1	2	1	3	2	1
	KCS653.3	3	3	2	2	1	3	2	2	2	3	1	2
	KCS653.4	3	2	2	1	1	2	1	1	2	3	1	1
	KCS653.5	3	3	3	1	2	2	2	1	1	3	2	1
	AVERAGE	3.0	2.4	2.2	1.4	2.0	2.0	1.4	1.4	1.4	3.0	1.4	1.2
Indian Tradition, Culture and Society	KNC602.1	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.2	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.3	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.4	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.5	-	-	-	-	-	2	-	-	-	2	-	1
	AVERAGE						2.0				2.0		1.0
Understanding the Human Being Comprehensively Human Aspirations and its Fulfillment	ROE074.1	1	2	2	3	3	2	1	3	-	-	-	-
	ROE074.2	1	2	1	3	3	3	2	3	-	-	-	-
	ROE074.3	1	2	2	3	3	2	2	3	-	-	-	-
	ROE074.4	1	2	2	3	3	3	2	3	-	-	-	-
	ROE074.5	1	2	2	3	3	3	2	3	-	-	-	-
	AVERAGE	1	2	1.8	3	3	2.6	1.8	3				
	RCS071.1	3	3	-	-	-	3	1	-	3	1	-	3

Application of Soft Computing	RCS071.2	3	1	2	-	2	3	-	-	2	-	3	3
	RCS071.3	3	3	-	3	-	-	-	-	-	-	-	2
	RCS071.4	3	3	-	3	-	3	-	-	3	-	-	-
	RCS071.5	3	2	3	3	2	3	-	-	3	-	3	2
	AVERAGE	3.0	2.4	2.5	3.0	2.0	3.0	1.0		2.8	1.0	3.0	2.5
Cloud Computing	RCS075.1	2	2	3	2	2	-	-	-	-	-	-	2
	RCS075.2	3	2	3	3	3	-	-	-	2		2	-
	RCS075.3	3	3	2	3	2	2	-	-	-		-	-
	RCS075.4	3	3	3	3	3	3	2	-	-		-	-
	RCS075.5	3	2	2	3	2	-	-	-	2		2	-
	AVERAGE	2.8	2.4	2.6	2.8	2.4	2.5	2		2		2	2
Distributed System	RCS701.1	2	3	1	2	2	3	1	2	3	2	3	1
	RCS701.2	3	3	2	3	2	3	2	3	3	2	3	2
	RCS701.3	2	3	1	2	3	3	1	2	3	3	3	1
	RCS701.4	1	2	3	2	1	2	3	2	2	1	2	3
	RCS701.5	2	2	1	3	2	2	1	3	2	2	2	1
	AVERAGE	2	2.6	1.6	2.4	2	2.6	1.6	2.4	2.6	2	2.6	1.6
Artificial Intelligence	RCS702.1	2	2	2	-	-	-	-	2	2	2	3	-
	RCS702.2	2	-	-	2	1	3	-	1	2	3	2	-
	RCS702.3	3	2	-	-	1	3	-	2	2	2	3	1
	RCS702.4	3	2	2	-	-	2	-	2	2	2	2	1
	RCS702.5	3	2	1	3	-	2	-	2	2	3	2	1
	AVERAGE	2.6	2	1.67	2.5	1	2.5		1.8	2	2.4	2.4	1
Distributed System Lab	RCS751.1	3	3	3	2	3	2	1	2	3	2	3	1
	RCS751.2	3	3	3	2	3	2	2	3	3	2	3	1
	RCS751.3	3	3	3	2	3	2	1	2	3	2	3	1
	RCS751.4	1	3	3	3	2	2	3	2	2	3	2	2
	RCS751.5	3	3	3	2	3	2	1	3	3	2	3	3
	AVERAGE	2.6	3	3	2.2	2.8	2	1.6	2.4	2.8	2.2	2.8	1.6
Artificial Intelligence Lab	RCS752.1	2	2	2	2	3	-	-	-	-	-	-	3
	RCS752.2	3	3	3	3	3	2	-	-	-	-	-	3
	RCS752.3	3	3	3	3	2	3	-	-	-	-	3	3
	RCS752.4	3	3	3	3	3	3	2	1	1	2	3	3
	RCS752.5	3	3	3	3	3	2	-	-	2	2	3	3
	AVERAGE	2.8	2.8	2.8	2.8	2.8	2.5	2	1	1.5	2	3	3
Industrial Training Viva Voce	RCS753.1	2	3	2	2	3	-	2	3	-	-	-	3
	RCS753.2	2	3	3	2	3	-	2	2	-	-	-	3
	RCS753.3	2	-	3	-	3	-	-	3	-	3	-	-
	RCS753.4	2	1	1	1	3	-	-	2	3	3	-	-
	RCS753.5	-	-	-	-	-	-	-	-	3	-	-	3
	AVERAGE	2	2.33	2.25	1.67	3	-	2	2.5	3	3	-	3
Project	RCS754.1	3	3	2	2	1	-	-	-	-	-	1	1
	RCS754.2	2	3	-	3	1	-	-	-	-	-	-	-



	RCS754.3	3	2	3	3	3	3	3	1	-	-	1	2
	RCS754.4	-	-	1	1	1	-	-	2	3	3	3	3
	RCS754.5	2	2	2	-	2	2	2	3	2	3	3	3
	AVERAGE	2.5	2.5	2	2.25	1.6	2.5	2.5	2	2.5	3	2	2.25
Machine Learning	RCS080.1	3	3	1	3	1	2	2	1	1	1	1	1
	RCS080.2	3	3	2	2	2	2	1	1	1	2	2	1
	RCS080.3	2	2	1	1	1	1	1	1	1	1	1	1
	RCS080.4	2	2	1	2	1	1	1	1	1	1	1	2
	RCS080.5	3	3	2	2	2	2	1	1	1	2	2	1
	AVERAGE	2.6	2.6	1.4	2	1.4	1.6	1.2	1	1	1.4	1.4	1.2
Digital and Social Media Marketing	ROE081.1	-	-	-	3	3	-	3	1	-	2	-	2
	ROE081.2	-	-	2	2	-	-	-	1	1	-	3	2
	ROE081.3	-	-	-	-	1	-	-	2	-	-	-	1
	ROE081.4	-	-	-	-	-	2	-	3	2	-	-	2
	ROE081.5	-	-	-	-	-	-	-	2	-	-	-	2
	AVERAGE			2	2.5	2	2	3	1.8	1.5	2	3	1.8
Renewable Energy Resources	ROE086.1	-	2	2	-	-	-	1	2	2	-	-	-
	ROE086.2	1	1	-	-	2	1	-	1	2	1	-	-
	ROE086.3	1	2	2	1	1	-	-	2	2	2	-	-
	ROE086.4	1	2	2	-	-	-	-	1	2	1	-	-
	ROE086.5	-	2	2	1	1	-	1	2	1	-	1	-
	AVERAGE	1	1.8	2	1	1.33	1	1	1.6	1.8	1.33	1	
Parallel and Distributed Computing	RCS083.1	2	2	1	-	-	-	-	-	-	-	-	1
	RCS083.2	2	2	2	-	2	-	-	-	-	-	-	2
	RCS083.3	2	1	3	-	1	-	-	-	-	-	-	2
	RCS083.4	2	2	3	-	2	-	-	-	-	-	-	2
	RCS083.5	2	2	3	1	2	-	-	-	-	-	-	2
	AVERAGE	2	1.8	2.4	1	1.75	-	-	-	-	-	-	1.8
Deep Learning	RCS086.1	3	3	2	2	3	2	1	3	2	2	2	2
	RCS086.2	3	3	2	2	-	3	1	3	2	2	2	2
	RCS086.3	-	2	-	2	2	2	1	2	2	1	-	2
	RCS086.4	3	3	2	3	3	3	1	3	2	2	2	3
	RCS086.5	3	3	3	3	3	3	2	3	-	2	2	-
	AVERAGE	3	2.8	2.25	2.4	2.75	2.6	1.2	2.8	2	1.8	2	2.25
Data Compression	RCS087.1	2	1	-	2	2	-	-	2	2	1	2	2
	RCS087.2	2	2	-	2	2	-	-	2	2	2	2	2
	RCS087.3	2	2	1	3	2	-	-	2	2	2	2	2
	RCS087.4	2	2	-	2	2	-	-	2	2	2	2	2
	RCS087.5	2	2	2	2	2	1	-	2	2	2	2	2
	AVERAGE	2	1.8	1.5	2.2	2	1		2	2	1.8	2	2
Seminar	RCS851.1	3	2	3	2	2	2	-	2	2	-	2	2
	RCS851.2	2	2	2	-	2	3	2	2	2	3	3	2
	RCS851.3	3	3	3	2	2	3	3	2	1	3	2	-



Project	RCS851.4	2	2	2	3	2	2	2	2	2	2	2	2
	RCS851.5	2	2	2	2	-	2	-	2	2	-	3	2
	AVERAGE	2.4	2.2	2.4	2.25	2	2.4	2.33	2.00	1.80	2.67	2.4	2
	RCS852.1	-	-	3	3	3	2	-	-	3	3	3	3
	RCS852.2	-	-	-	-	-	-	-	-	3	3	2	3
	RCS852.3	3	3	3	3	3	2	-	3	3	3	3	3
	RCS852.4	3	3	3	3	3	-	2	3	2	3	3	2
	RCS852.5	3	3	3	2	3	-	2	-	3	-	2	3
	AVERAGE	3	3	3	2.75	3	2	2	3	2.8	3	2.6	2.8



M.Tech in Integrated (Computer Science & Engineering)

SESSION 2020-2021

Course Outcomes		
COURSE	COURSE OUTCOME NO.	COURSE OUTCOMES
Data Structures	CO1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.
	CO2	Discuss the computational efficiency of the sorting and searching algorithms.
	CO3	Implementation of Trees and Graphs and perform various operations on these data structure.
	CO4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.
	CO5	Identify the alternative implementations of data structures with respect to its performance to solve a real world problem.
COMPUTER ORGANIZATION AND ARCHITECTURE	CO 1	Study of the basic structure and operation of a digital computer system.
	CO 2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.
	CO 3	Implementation of control unit techniques and the concept of Pipelining
	CO 4	Understanding the hierarchical memory system, cache memories and virtual memory
	CO 5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces
DISCRETE STRUCTURES & THEORY OF LOGIC	CO 1	Write an argument using logical notation and determine if the argument is or is not valid.
	CO 2	Understand the basic principles of sets and operations in sets.
	CO 3	Demonstrate an understanding of relations and functions and be able to determine their properties.
	CO 4	Demonstrate different traversal methods for trees and graphs.
	CO 5	Model problems in Computer Science using graphs and trees.
OPERATING SYSTEM	CO 1	Understand the structure and functions of OS
	CO 2	Learn about Processes, Threads and Scheduling algorithms.
	CO 3	Understand the principles of concurrency and Deadlocks
	CO 4	Learn various memory management scheme
	CO 5	Study I/O management and File systems.
THEORY OF AUTOMATA AND FORMAL LANGUAGES	CO 1	Analyse and design finite automata, pushdown automata, Turing machines, formal languages, and grammars
	CO 2	Analyse and design, Turing machines, formal languages, and grammars
	CO 3	Demonstrate the understanding of key notions, such as algorithm,

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MICROPROCESSOR	CO 4	computability, decidability, and complexity through problem solving
	CO 5	Prove the basic results of the Theory of Computation.
	CO 1	State and explain the relevance of the Church-Turing thesis.
	CO 2	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
	CO 3	Analyze a detailed s/w & h/w structure of the Microprocessor.
TECHNICAL COMMUNICATION	CO 4	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.
	CO 5	Analyze the properties of Microprocessors(8085/8086)
	CO 1	Evaluate the data transfer information through serial & parallel ports.
	CO 2	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.
	CO 3	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
MATHEMATICS-IV	CO 4	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.
	CO 5	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.
	CO1	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics
	CO2	Remember the concept of partial differential equation and to solve partial differential equations
	CO3	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations
UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS	CO4	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting
	CO5	Remember the concept of probability to evaluate probability distributions
UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS	CO1	Apply the concept of hypothesis testing and statistical quality control to create control charts
	CO2	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS	CO1	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
	CO2	

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	CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
	CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
	CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
COMPUTER SYSTEM SECURITY	CO 1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
	CO 2	To discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats
	CO 3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
	CO 4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
	CO 5	To articulate the well known cyber attack incidents, explain the attack scenarios, and explain mitigation techniques.
PYTHON PROGRAMMING	CO 1	To read and write simple Python programs.
	CO 2	To develop Python programs with conditionals and loops.
	CO 3	To define Python functions and to use Python data structures — lists, tuples, dictionaries
	CO 4	To do input/output with files in Python
	CO 5	To do searching ,sorting and merging in Python
SENSOR AND INSTRUMENTATION	CO 1	Apply the use of sensors for measurement of displacement, force and pressure.
	CO2	Employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.
	CO3	Demonstrate the use of virtual instrumentation in automation industries.
	CO4	Identify and use data acquisition methods.
	CO5	Comprehend intelligent instrumentation in industrial automation.

2020-21 CO-PO													
Course	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Data Structures	CO1	3	3	2	2	2	-	-	-	-	-	-	1
	CO2	3	3	3	3	2	-	-	1	2	1	-	2
	CO3	3	3	3	3	2	-	1	2	2	1	2	3

	CO4	3	3	3	3	2	2	1	2	2	1	2	2
	CO5	3	3	3	3	2	3	2	1	3	3	2	3
	AVG	3	3	2.8	2.8	2	2.5	1.33	1.5	2.25	1.5	2	2.2
Computer Organization & Architecture	CO1	3	3	2	2	2	-	-	-	-	-	-	1
	CO2	3	3	2	3	3	-	-	-	-	-	-	-
	CO3	3	2	2	2	2	-	-	-	-	-	-	-
	CO4	3	3	2	2	2	-	-	-	-	-	-	1
	CO5	3	3	2	2	2	-	-	-	-	-	-	1
	AVG	3	2.8	2	2.2	2.2	-	-	-	-	-	-	1
Discrete Structures	CO1	3	2	2	-	-	1	-	-	-	1	1	3
	CO2	3	3	2	2	1	-	-	-	-	-	2	1
	CO3	3	3	2	1	-	-	3	-	-	-	2	2
	CO4	3	3	2	1	-	-	1	-	-	3	-	2
	CO5	3	3	2	1	-	-	3	-	-	1	-	3
		3.00	2.80	2.00	1.25	1.00	1.00	2.33	####	####	1.67	1.67	2.20
Operating Systems	CO1	3	3	2	2	1	2	-	2	3	2	2	3
	CO2	3	3	3	2	2	3	2	2	3	-	1	3
	CO3	3	3	2	2	2	2	2	2	2	3	1	3
	CO4	3	2	2	3	1	2	2	-	2	-	2	3
	CO5	3	1	2	2	2	2	-	-	2	2	2	3
	AVG	3	2.4	2.2	2.2	1.6	2.2	2	2	2.4	2.33	1.6	3
Theory of Automata and Formal Languages	CO1	1	3	3	3	1	-	-	1	-	-	-	2
	CO2	1	2	3	3	-	-	-	1	-	-	-	2
	CO3	1	2	2	2	-	-	-	1	-	-	-	2
	CO4	1	2	3	2	-	-	-	1	-	-	-	2
	CO5	2	3	3	3	-	-	-	1	-	-	-	2
	AVG	1.2	2.4	2.8	2.6	1	-	-	1	-	-	-	2
Microprocessor	CO1	3	1	2	-	1	-	-	1	-	-	-	3
	CO2	3	1	-	-	1	-	-	-	-	-	-	2
	CO3	2	1	3	-	1	-	-	-	-	-	-	2
	CO4	3	1	-	-	1	-	-	-	-	-	-	2
	CO5	3	1	2	-	1	-	-	-	-	-	-	2
	AVG	2.8	1	2.33	-	1	-	-	1	-	-	-	2.2
Technical Communication	CO1	2	2	2	2	-	1	1	1	2	3	2	2
	CO2	1	1	1	1	-	-	-	1	2	3	1	2
	CO3	2	1	-	1	-	1	1	0	2	3	2	2
	CO4	1	-	-	2	-	-	-	-	3	3	1	3
	CO5	3	1	-	1	-	1	-	3	3	3	1	3
	Average	1.8	1.25	1.5	1.4	-	1	1	1.25	2.4	3	1.4	2.4

Engineering Mathematics-IV	CO1	3	3	2	2	2	-	-	-	-	-	-	1
	CO2	3	3	3	3	2	-	-	2	2	1	-	2
	CO3	3	3	3	3	2	-	1	2	2	1	2	2
	CO4	3	3	3	3	2	2	1	2	2	1	2	2
	CO5	3	3	3	3	2	3	2	-	3	3	2	3
	Average	3	3	2.8	2.8	2	2.5	1.33	2	2.25	1.5	2	2
Universal Human Values & Professional Ethics	CO1		-	1	1	1	2	2	3	1	1	1	2
	CO2		-	1	-	-	1	-	-	2	1	-	2
	CO3		-	1	-	-	2	1	2	3	2	-	2
	CO4		2	2	-	-	2	3	-	2	-	-	3
	CO5		1	1	2	1	3	1	3	1	-	2	3
	AVERAGE		1.5	1.2	1.5	1	2	1.75	2.67	1.8	1.33	1.5	2.4
Sensor and Instrumentation	CO1	2	1	1	-	2	2	-	-	-	-	1	2
	CO2	1	2	1	1	2	2	-	-	-	1	1	2
	CO3	2	2	2	2	3	1	-	-	-	-	-	2
	CO4	1	1	1	2	3	1	1	-	-	1	1	2
	CO5	2	2	1	2	3	1	-	-	-	1	1	2
	AVERAGE	1.6	1.6	1.2	1.75	2.6	1.4	1	-	-	2	-	1
Python Programming	CO1	2	3	2	-	1	-	-	-	2	-	1	-
	CO2	1	3	3	-	1	-	-	-	2	-	-	-
	CO3	1	3	3	-	-	-	-	-	3	-	3	-
	CO4	1	2	2	-	-	-	-	-	-	-	3	-
	CO5	1	2	2	-	1	-	-	-	-	-	3	-
	AVERAGE	1.2	2.6	2.4	-	1	-	-	-	2.25	-	2	-
COMPUTER SYSTEM SECURITY	CO1	2	3	2	3	2	2	3	2	3	2	2	2
	CO2	2	3	2	3	3	2	2	2	2	2	2	2
	CO3	2	2	2	3	3	2	2	2	2	2	2	2
	CO4	2	3	2	2	2	2	2	3	2	2	2	2
	CO5	2	2	2	2	3	2	2	2	2	2	2	2
	AVERAGE	2	2.6	2	2.6	2.6	2	2.2	2.2	2.2	2	2	2

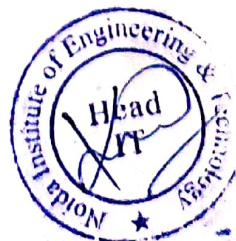
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**DEPARTMENT
OF
INFORMATION
TECHNOLOGY**

Session 2020-21

Course Outcomes

COURSE	COURSE OUTCOME NO.	COURSE OUTCOMES
Universal Human Values	KVE 301.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
	KVE 301.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
	KVE 301.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
	KVE 301.4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
	KVE 301.5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.
Data Structure	KCS301 .1	Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented in memory, used by the algorithms and their common applications.
	KCS301 .2	Discuss the computational efficiency of the sorting and searching algorithms.
	KCS301 .3	Implementation of Trees and Graphs and perform various operations on these data structure.
	KCS301 .4	Understanding the concept of recursion, application of recursion and its implementation and removal of recursion.
	KCS301 .5	Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem.
Computer Organization and Architecture	KCS302 .1	Study of the basic structure and operation of a digital computer system.
	KCS302 .2	Analysis of the design of arithmetic & logic unit and understanding of the fixed point and floating-point arithmetic operations.
	KCS302 .3	Implementation of control unit techniques and the concept of Pipelining.
	KCS302 .4	Understanding the hierarchical memory system, cache memories and virtual memory.
	KCS302 .5	Understanding the different ways of communicating with I/O devices and standard I/O interfaces
Discrete Structures & Theory of Logic	KCS303 .1	Write an argument using logical notation and determine if the argument is or is not valid.
	KCS303 .2	Understand the basic principles of sets and operations in sets.
	KCS303 .3	Demonstrate an understanding of relations and functions and be able to determine their properties.
	KCS303 .4	Demonstrate different traversal methods for trees and graphs.
	KCS303 .5	Model problems in Computer Science using graphs and trees.
Data Structures Using C Lab	KCS351 .1	To analyze and implement C programs for solving mathematical problems, array processing problems, taking care of all input, output possibilities and error conditions.
	KCS351 .2	To implement various data structures like stacks, queue, linked lists, trees, sparse matrices, graphs, using various strategies involving use of arrays and self-referential pointers.
	KCS351 .3	To analyze and evaluate the performance of a program.
	KCS351 .4	To analyze and implement efficient sorting and searching programs.
	KCS351 .5	To solve real life problems by identifying the proper data structures and algorithms

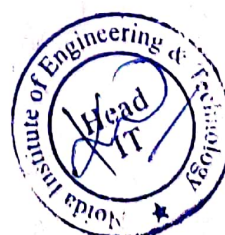


NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA
(An Autonomous Institute)
Affiliated to Dr.A.P.J. Abdul Kalam Technical University, Lucknow, Uttar Pradesh
DEPARTMENT OF INFORMATION TECHNOLOGY

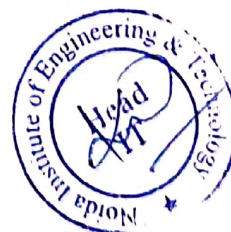
Computer Organization Lab	KCS352.1	To be able to analyze the behaviour of logic gates.
	KCS352.2	To be able to design combinational circuits for basic components of computer system and applications.
	KCS352.3	To be able to understand instruction execution, instruction format and addressing mode.
	KCS352.4	To be able to analyze the operational behaviour and applications of various flip flops.
	KCS352.5	To be able to design Arithmetic logic units and different types of memory blocks.
Discrete Structure & Logic Lab	KCS353 .1	Students would be having understanding of working with a mathematical tool Maple.
	KCS353 .2	Students would be able to perform programs of recursion, combinatorics and counting.
	KCS353 .3	Students would be able to perform programs of set theory, set operations and probability.
	KCS353 .4	Student would be able to implement classical mathematical problem like Birthday paradox based on pigeonhole principle.
Computer System Security	KNC301.1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats.
	KNC301.2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats.
	KNC301.3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
	KNC301.4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios.
	KNC301.5	To articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques.
Maths IV	KAS302.1	Remember the concept of partial differential equation and to solve partial differential equations.
	KAS302.2	Analyze the concept of partial differential equations to evaluate the problems concerned with partial differential equations.
	KAS302.3	Understand the concept of correlation, moments, skewness and kurtosis and curve fitting.
	KAS302.4	Remember the concept of probability to evaluate probability distributions.
	KAS302.5	Apply the concept of hypothesis testing and statistical quality control to create control charts.
Sensor and Instrumentation	KOE 044.1	Student will be able to apply the use of sensors for measurement of displacement, force and pressure.
	KOE 044.2	Student will be able to employ commonly used sensors in industry for measurement of temperature, position, accelerometer, vibration sensor, flow and level.
	KOE 044.3	Student will be able to demonstrate the use of virtual instrumentation in automation industries.
	KOE 044.4	Student will be able to identify and use data acquisition methods.
	KOE 044.5	Student will be able to comprehend intelligent instrumentation in industrial automation.
Technical Communication	KAS401 .1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.
	KAS401 .2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.
	KAS401 .3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.



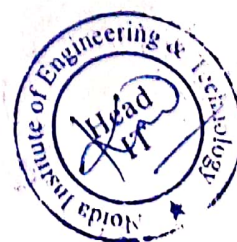
	KAS401 .4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence.
	KAS401 .5	It would enable them to evaluate their efficacy as fluent & efficient communicators b learning the voice-dynamics.
Operating Systems	KCS401 .1	Understand the structure and functions of OS.
	KCS401 .2	Learn about Processes, Threads and Scheduling algorithms.
	KCS401 .3	Understand the principles of concurrency and Deadlocks.
	KCS401 .4	Learn various memory management scheme.
	KCS401 .5	Study I/O management and File systems.
Theory of Automata and Formal Languages	KCS402 .1	Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars
	KCS402 .2	Analyze and design, Turing machines, formal languages, and grammars
	KCS402 .3	Demonstrate the understanding of key notions, such as algorithm, computability, decidability, and complexity through problem solving.
	KCS402 .4	Prove the basic results of the Theory of Computation.
	KCS402 .5	State and explain the relevance of the Church-Turing thesis.
Web Designing	KIT 401.1	Understand principle of Web page design and about types of websites
	KIT 401.2	Visualize and recognize the basic concept of HTML and application in web designing.
	KIT 401.3	Recognize and apply the elements of Creating Style Sheet (CSS).
	KIT 401.4	Understanding the basic concept of Java Script and its application.
	KIT 401.5	Introduce basics concept of Web Hosting and apply the concept of SEO
Operating Systems Lab	KCS451.1	To execute various Unix commands for process and file management as well as input/output system calls.
	KCS451.2	To implement various preemptive and non-preemptive CPU scheduling policies.
	KCS451.3	To understand the concept of Deadlock and implementation of banker's algorithm.
	KCS451.4	To understand and implement various memory and file management techniques.
	KCS451.5	To understand and implement various inter process communication techniques.
Web Designing Lab	KIT 451.1	Understand principle of Web page design and about types of websites.
	KIT 451.2	Visualize and recognize the basic concept of HTML and application in web designing.
	KIT 451.3	Recognize and apply the elements of Creating Style Sheet (CSS).
	KIT 451.4	Understanding the basic concept of Java Script and its application.
	KIT 451.5	Introduce basics concept of Web Hosting and apply the concept of SEO.
Python Language Programming Lab	KCS453 .1	To read and write simple Python programs.
	KCS453 .2	To develop Python programs with conditionals and loops.
	KCS453 .3	To define Python functions and to use Python data structures -- lists, tuples, dictionaries.
	KCS453 .4	To do input/output with files in Python.
	KCS453 .5	To do searching, sorting and merging in Python.
Python Programming	KNC402.1	To read and write simple Python programs.
	KNC402.2	To develop Python programs with conditionals and loop.
	KNC402.3	To define Python functions and to use Python data structures -- lists, tuples, dictionaries.
	KNC402.4	To do input/output with files in Python.
	KNC402.5	To do searching, sorting and merging in Python.



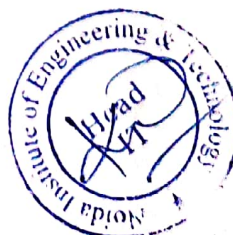
Database Management System	KCS501.1	Apply knowledge of database for real life applications.
	KCS501.2	Apply query processing techniques to automate the real time problems of databases.
	KCS501.3	Identify and solve the redundancy problem in database tables using normalization.
	KCS501.4	Understand the concepts of transactions, their processing so they will familiar with broad range of database management issues including data integrity, security and recovery
	KCS501.5	Design, develop and implement a small database project using database tools.
Design and Analysis of Algorithm	KCS503.1	To have knowledge of basic principles of algorithm design and Analysis, asymptotic notations and growth of functions for time and space complexity analysis and applying the same in different sorting algorithms.
	KCS503.2	To apply different problem-solving approaches for advanced data structures
	KCS503.3	To apply divide and conquer method for solving merge sort, quick sort, matrix multiplication and Greedy Algorithm for solving different Graph Problem
	KCS503.4	To analyze and apply different optimization techniques like dynamic programming, backtracking and Branch & Bound to solve the complex problems.
	KCS503.5	To understand the advanced concepts like NP Completeness and Fast Fourier Transform, to analyze and apply String Matching, Approximation and Randomized Algorithms to solve the complex problems.
Web Technologies	KIT501.1	Apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.
	KIT501.2	Understand, analyze and apply the role of markup languages like HTML, DHTML, and XML in the workings of the web and web applications.
	KIT501.3	Use web application development software tools i.e. XML, Apache Tomcat etc. and identifies the environments currently available on the market to design web sites
	KIT501.4	Understand, analyze and build dynamic web pages using client-side programming JavaScript and also develop the web application using servlet and JSP.
	KIT501.5	Understand the impact of web designing by database connectivity with JDBC in the current market place where everyone uses to prefer electronic medium for shopping, commerce, fund transfer and even social life also.
Object Oriented System Design	KCS054.1	Understand the application development and analyze the insights of object-oriented programming to implement application.
	KCS054.2	Understand, analyze and apply the role of overall modelling concepts (i.e. System, structural).
	KCS054.3	Understand, analyze and apply oops concepts (i.e. abstraction, inheritance).
	KCS054.4	Understand the basic concepts of C++ to implement the object-oriented concepts.
	KCS054.5	To understand the object-oriented approach to implement real world problem.
Machine Learning Technique	KCS055.1	To understand the need for machine learning for various problem solving.
	KCS055.2	To understand a wide variety of learning algorithms and how to evaluate models generated from data.
	KCS055.3	To understand the latest trends in machine learning
	KCS055.4	To design appropriate machine learning algorithms and apply the algorithms to a real-world problem.
	KCS055.5	To optimize the models learned and report on the expected accuracy that can be achieved by applying the models.
Database Management System Lab	KCS551.1	To analyze the limitation of file system over RDBMS.



	KCS551.2	To Analyze, design and implement different database models.
	KCS551.3	To implement and design basics of SQL and Construct queries using SQL/PLSQL. Use Commercial relational database system (Oracle) by writing Queries using SQL
	KCS551.4	To analyze and design the normalized database & understand the internal data structure.
	KCS551.5	To design, apply and implement RDBMS Concepts in software development applications for the Community and society.
Design and Analysis of Algorithm Lab	KCS553.1	To design and implement algorithms for different searching techniques
	KCS553.2	To understand the concept of various sorting techniques based on comparison & linear order time and implement the same.
	KCS553.3	To have knowledge of divide & conquer approach and apply on different sorting algorithms like merge sort and quick sort.
	KCS553.4	To understand and implement the concept of greedy algorithm for different graph problems.
	KCS553.5	To design and apply optimization techniques like Dynamic Programming and Backtracking for solving complex and real-world problems.
Web Technology Lab	KIT551.1	Develop static web pages using HTML.
	KIT551.2	Develop Java programs for window/web-based applications.
	KIT551.3	Design dynamic web pages using JavaScript and XML.
	KIT551.4	Design dynamic web page using server site programming Ex. ASP/JSP/PHP
	KIT551.5	Design server site applications using JDDC, ODBC and session tracking API
Constitution of India, Law and Engineering	KNC501.1	Understand the basic principles of thought process & inference to identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.
	KNC501.2	Illustrate the importance of our surroundings and encourage the students to contribute towards sustainable development.
	KNC501.3	Interpret the issues related to 'Indian' culture, tradition, & its composite character.
	KNC501.4	Aware of holistic life styles of Yogic-science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.
	KNC501.5	Acquaint students with Indian Knowledge System, Indian perspective of modern scientific worldview and basic principles of Yoga and holistic health care system.
Data Analytics	KIT601.1	Describe the life cycle phases of Data Analytics through discovery, planning and building
	KIT601.2	Understand and apply Data Analysis Techniques.
	KIT601.3	Identify various Data streams.
	KIT601.4	Understand item sets, Clustering, frame works & Visualizations.
	KIT601.5	Apply R tool for developing and evaluating real time applications.
DATA ANAYTICS Lab	KIT651.1	To get an in-depth knowledge from basic to advanced level on data analytics in R/Python.
	KIT651.2	To get in basic understanding of data visualization tool.
	KIT651.3	Create views and customize data in visualizations tool.
	KIT651.4	Building and organizing data visualization with Tableau.
	KIT651.5	Case studies & real-world application of Tableau and data visualization using interactive dashboards.
Software Engineering	KCS601.1	Explain various software characteristics and analyze different software Development Models.
	KCS601.2	Demonstrate the contents of a SRS and apply basic software quality assurance practices to ensure that design, development meet or exceed applicable standards.



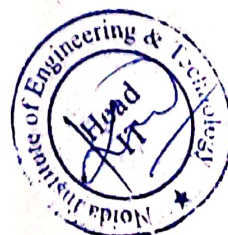
	KCS601.3	Compare and contrast various methods for software design.
	KCS601.4	Formulate testing strategy for software systems, employ techniques such as unit testing, Test driven development and functional testing.
	KCS601.5	Manage software development process independently as well as in teams and make use of Various software management tools for development, maintenance and analysis.
Computer Networks	KCS603.1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission.
	KCS603.2	Apply channel allocation, framing, error and flow control techniques.
	KCS603.3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.
	KCS603.4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.
	KCS603.5	Explain the functions offered by session and presentation layer and their Implementation.
	KCS603.6	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.
Big Data	KCS061.1	Demonstrate knowledge of Big Data Analytics concepts and its applications in business.
	KCS061.2	Demonstrate functions and components of Map Reduce Framework and HDFS.
	KCS061.3	Discuss Data Management Concepts in NoSQL environment.
	KCS061.4	Explain process of developing Map Reduce based distributed processing applications.
	KCS061.5	Explain process of developing applications using HBASE, Hive, Pig etc.
UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY HUMAN ASPIRATIONS AND ITS FULFILLMENT	KOE069 .1	The student's identity the importance of human values and skills for sustained happiness.
	KOE069 .2	The students must aware about difference between what you are and what you really want to be.
	KOE069 .3	The students strike a balance between profession and personal happiness/goals.
	KOE069 .4	The students must be able to explain the terms like Sanyam,sukh, moksh, sanskar.
	KOE069 .5	Distinguish between the self and the body, understand the meaning of Harmony in the Self the Co-Existence of Self and Body.
Software Engineering Lab	KCS651.1	Identify ambiguities, inconsistencies and incompleteness from a requirements specification and state functional and non-functional requirement.
	KCS651.2	Identify different actors and use cases from a given problem statement and draw use case diagram to associate use cases with different types of relationship.
	KCS651.3	Draw a class diagram after identifying classes and association among them
	KCS651.4	Graphically represent various UML diagrams, and associations among them and identify the logical sequence of activities undergoing in a system, and represent them pictorially
	KCS651.5	Able to use modern engineering tools for specification, design, implementation and testing
Computer Networks Lab	KCS653.1	Student will be able to understand the various hardware devices, cables and connectors related computer network.
	KCS653.2	Student will be able to understand the programming of TCP, UDP.
	KCS653.3	Student will be able to understand the programming of various error detection method like CRC, Hamming code.
	KCS653.4	Student will be able to understand the programming of RPC protocol
	KCS653.5	Student will be able to understand the simulation of Network topology, configuration of devices
Indian Tradition, Culture and Society	KNC602.1	Identify the roots and details of some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past





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	KNC602.2	Understand the importance of our surroundings and encourage the students to contribute towards sustainable development.
	KNC602.3	Make aware of holistic lifestyles of Yogic science and wisdom capsules in Sanskrit literature that are important in modern society with rapid technological advancements and societal disruptions.
	KNC602.4	Sensitize towards issues related to 'Indian' culture, tradition and its composite character
	KNC602.5	Acquaint with Indian Knowledge System, Indian perspective of modern scientific worldview and basic principles of Yoga and holistic health care system.
Understanding the Human Being Comprehensively Human Aspirations and its Fulfillment	ROE074.1	The student's identity the importance of human values and skills for sustained happiness.
	ROE074.2	The students must aware about difference between what you are and what you really want to be.
	ROE074.3	The students strike a balance between profession and personal happiness goals.
	ROE074.4	The students must be able to explain the terms like Sanyam, sukh, moksh, sanskar.
	ROE074.5	Distinguish between the self and the body, understand the meaning of Harmony in the Self the Co-Existence of Self and Body.
Human Computer Interface	RCS073.1	Discuss the concept of Genetic Algorithm and its various applications.
	RCS073.2	Apply, adapt and extend classic design standards, guidelines, and patterns.
	RCS073.3	Employ selected design methods and evaluation methods at a basic level of competence.
	RCS073.4	Build prototypes at varying levels of fidelity, from paper prototypes to functional, interactive prototypes.
	RCS073.5	Demonstrate sufficient theory of human computer interaction, experimental methodology and inferential statistics to engage with the contemporary research literature in interface technology and design.
Agile Software Development	RCS077.1	Understand the fundamentals of Agile methodology and differentiate it from traditional models. Analyze principles, ethics, and documentation practices in Agile.
	RCS077.2	Evaluate different Agile process models like SCRUM, XP, FDD, Crystal, and Lean; understand their lifecycle, roles, and practices.
	RCS077.3	Analyze the role of knowledge management in Agile environments and apply KM techniques for effective decision-making and software knowledge sharing.
	RCS077.4	Understand and manage dynamic and evolving requirements using Agile Requirement Engineering practices and models.
	RCS077.5	Apply Agile-based quality assurance methods, metrics, and test-driven development principles in global and distributed development contexts.
Cryptography & Network Security	RIT701.1	Classify the symmetric encryption techniques and illustrate various public key cryptographic techniques.
	RIT701.2	Understand security protocols for protecting data on networks and be able to digitally sign emails and files.
	RIT701.3	Understand vulnerability assessments and the weakness of using passwords for authentication.
	RIT701.4	Be able to perform simple vulnerability assessments and password audits.
	RIT701.5	Summarize the intrusion detection and its solutions to overcome the attacks.
Artificial Intelligence	RCS702.1	Understand the basics of the theory and practice of Artificial Intelligence as a discipline and about intelligent agents.
	RCS702.2	Understand search techniques and gaming theory.
	RCS702.3	The student will learn to apply knowledge representation techniques and problem-solving strategies to common AI applications.
	RCS702.4	Student should be aware of techniques used for classification and clustering.



	RCS702.5	Student should aware of basics of pattern recognition and steps required for it
Cryptography & Network Security Lab	RIT751.1	Learn the implementation of classical encryption techniques
	RIT751.2	Learn the implementation of mathematical theorems.
	RIT751.3	Learn the implementation of asymmetric encryption technique and key exchange algorithm
	RIT751.4	Learn implementation of message authentication and digital signature
	RIT751.5	Learn simulation of Elliptic Curve Cryptography.
Artificial Intelligence Lab	RCS752.1	To understand the concept of languages in more detail.
	RCS752.2	Students are able to learn different logic programming languages.
	RCS752.3	To model the data with the help probabilistic reasoning
	RCS752.4	Students are able to apply and analyze various problem-solving techniques on artificial intelligent problems.
	RCS752.5	To implement the concepts that include travelling salesman problem, 4-queen problem.
Industrial Training	RIT753.1	Analyze and understand the real-life problem in industry and apply their knowledge to get programming solution.
	RIT753.2	Engage in the creative design process through the diverse technical knowledge and expertise to meet customer needs as well as address social issues.
	RIT753.3	Use and apply the various tools and techniques, coding practices for developing real life solution to the problem
	RIT753.4	Find out the errors in software solutions of real- life projects and implementations.
	RIT753.5	Justify/defend opinions, validity of ideas or quality of work based on a set of criteria.
Project	RIT754.1	Solve potential research problems in the field of computer science with the help of engineering knowledge.
	RIT754.2	Conduct investigation of latest available literatures in the field of computer science and information system.
	RIT754.3	Analyze and design solution for complex engineering problems related to health, safety, environment, culture and society by evaluating and comparing the existing solutions.
	RIT754.4	Apply project management to develop an ability to work as an individual and as a team member effectively.
	RIT754.5	Create innovative product/research, demonstrate these through presentation and publish through technical writing considering legal and ethical standards.
Renewable Energy Resources	ROE086.1	To understand basic of Primary and Secondary energy Resources.
	ROE086.2	Understanding domain of development of system of Non-Conventional Sources of Energy.
	ROE086.3	Analyzing existing sources of energy comprehensively.
	ROE086.4	Analysis the need and verify the requirements of customer and environments.
	ROE086.5	Analyze and Demonstrate various resources of energy at global level.
Image Processing	RCS082.1	Explain the basic concepts of two-dimensional signal acquisition, sampling, quantization and colour model.
	RCS082.2	Apply image processing techniques for image enhancement in both the spatial and frequency domains.
	RCS082.3	Apply and compare image restoration techniques in both spatial and frequency domain.
	RCS082.4	Compare edge based and region-based segmentation algorithms for ROI extraction.
	RCS082.5	Explain compression techniques and descriptors for image processing.



Data Compression	RCS087.1	Explain the evolution and fundamental concepts of Data Compression and coding techniques
	RCS087.2	Analyze and apply various techniques for the text and audio compression and also evaluate performance of the coding techniques.
	RCS087.3	Analyze and apply the various coding techniques like Huffman coding, dictionary techniques and predictive coding to solve real world problem.
	RCS087.4	Understand the vector and scalar quantization.
	RCS087.5	Apply the appropriate quantization method to acquire research effective communication over the internet.
Seminar	RIT851.1	Students will demonstrate an understanding of technical and research-oriented topics by selecting a seminar topic that is current, relevant, and aligned with the field of computer science and engineering.
	RIT851.2	Students will enhance their communication skills through the development of a well-structured seminar report. This includes composing an abstract, acknowledgments, and a list of symbols, abbreviations, and nomenclature.
	RIT851.3	Students will conduct a comprehensive literature review on the chosen seminar topic. This involves critically analyzing existing research papers, summarizing related work, and presenting a clear overview of the state-of-the-art in the field.
	RIT851.4	Students will gain proficiency in describing and understanding the implementation or simulation details related to the selected seminar topic. This includes explaining algorithms, models, protocols, or methodologies used in the referred research papers.
	RIT851.5	Students will develop problem-solving skills by presenting the results of the implementation or simulation. They will draw conclusions based on the outcomes and suggest areas for further work, demonstrating critical thinking and analysis.
Project	RIT852.1	The students can effectively collaborate in groups to achieve a common goal.
	RIT852.2	Students can improve their capacity to communicate effectively with a diverse group of people.
	RIT852.3	Students learn how to design a software or hardware product by learning technical skills, conducting research, and responding ethically.
	RIT852.4	The students use what they've learned to create and implement a business plan for an entrepreneurial venture.
	RIT852.5	Students build self-learning skills and apply them to lifelong learning.

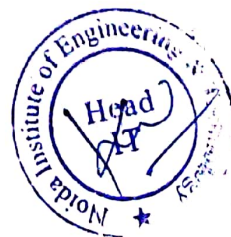


2020-21 CO-PO Mapping													
Course	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Universal Human values	KVE 301.1	-	-	1	1	1	2	2	3	1	1	1	2
	KVE 301.2	-	-	1	-	-	1	-	-	2	1	-	2
	KVE 301.3	-	-	1	-	-	2	1	2	3	2	-	2
	KVE 301.4	-	2	2	-	-	2	3	-	2	-	-	3
	KVE 301.5	-	1	1	2	1	3	1	3	1	-	2	3
	AVERAGE	-	1.50	1.20	1.50	1.00	2.00	1.75	2.67	1.80	1.33	1.50	2.40
Data Structure	KCS301 .1	2	2	2	1	1	2	1	2	2	1	2	1
	KCS301 .2	1	3	2	2	3	2	1	2	1	2	2	2
	KCS301 .3	1	2	2	1	1	2	1	1	2	1	2	1
	KCS301 .4	1	1	1	1	2	1	1	1	2	1	1	1
	KCS301 .5	2	3	2	2	3	2	2	2	2	2	2	2
	AVERAGE	1.4	2.2	1.8	1.4	2	1.8	1.2	1.6	1.8	1.4	1.8	1.4
Computer Organization and Architecture	KCS302 .1	3	2	1	1	1	1	1	-	1	1	1	2
	KCS302 .2	2	2	2	2	1	1	-	1	1	1	1	2
	KCS302 .3	3	2	2	1	2	2	1	1	2	2	1	2
	KCS302 .4	3	2	2	2	2	1	1	-	1	1	1	2
	KCS302 .5	2	2	2	1	2	-	1	-	1	2	2	2
	AVERAGE	2.60	2.00	1.80	1.40	1.60	1.25	1.00	1.00	1.20	1.40	1.20	2.00
Discrete Structures & Theory of Logic	KCS303 .1	2	1	-	-	-	2	1	-	-	-	1	1
	KCS303 .2	1	3	-	2	-	1	3	-	2	-	3	1
	KCS303 .3	3	2	2	-	-	3	2	2	-	-	2	1
	KCS303 .4	3	2	2	1	-	3	2	2	1	-	2	2
	KCS303 .5	3	2	1	1	3	3	2	1	1	3	2	1
	AVERAGE	2.40	2.00	1.67	1.33	3.00	-	-	-	-	-	-	1.20
Data Structures Using C Lab	KCS351 .1	3	2	2	2	2	2	1	1	-	2	2	2
	KCS351 .2	2	2	2	2	2	2	1	1	2	2	1	2
	KCS351 .3	3	3	3	2	3	2	-	2	1	1	-	3
	KCS351 .4	2	2	2	3	3	2	2	2	2	-	3	2
	KCS351 .5	3	3	3	2	3	2	-	2	1	1	-	3
	AVERAGE	2.60	2.40	2.40	2.20	2.60	2.00	1.33	1.60	1.50	1.50	2.00	2.40
Computer Organization Lab	KCS352.1	3	3	2	2	3	2	1	1	1	2	1	2
	KCS352.2	3	2	2	2	3	2	1	1	2	2	2	2
	KCS352.3	3	3	2	2	2	2	-	1	1	2	1	2
	KCS352.4	3	3	2	1	2	2	-	1	2	2	2	2
	KCS352.5	2	2	2	1	3	2	1	1	2	2	2	1
	AVERAGE	2.80	2.60	2.00	1.60	2.60	2.00	1.00	1.00	1.60	2.00	1.60	1.80
	KCS353 .1	3	2	3	1	-	-	-	-	-	1	-	2



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Discrete Structure & Logic Lab	KCS353.2	3	2	3	2	2	-	-	-	-	2	-	3
	KCS353.3	3	2	2	2	1	1	-	-	-	-	2	2
	KCS353.4	3	2	2	2	1	1	-	-	-	-	-	3
	AVERAGE	3.00	2.00	2.50	1.75	1.33	1.00	-	-	-	1.50	2.00	2.50
Computer System Security	KNC301.1	3	2	2	2	3	2	1	2	3	2	3	1
	KNC301.2	2	3	2	2	2	2	2	3	2	2	2	1
	KNC301.3	2	2	3	2	2	2	1	2	2	2	2	1
	KNC301.4	2	2	1	3	2	2	3	2	2	3	2	2
	KNC301.5	1	2	2	2	3	2	1	3	3	2	3	3
	AVERAGE	2.00	2.20	2.00	2.20	2.40	2.00	1.60	2.40	2.40	2.20	2.40	1.60
Maths IV	KAS302.1	1	1	2	-	1	2	1	1	3	3	2	1
	KAS302.2	1	2	3	-	3	2	-	-	-	3	2	3
	KAS302.3	1	2	3	-	3	2	1	2	3	3	2	3
	KAS302.4	2	2	3	1	3	3	-	1	3	3	3	3
	KAS302.5	1	1	3	1	1	-	3	3	3	3	1	3
	AVERAGE	1.20	1.60	2.80	1.00	2.20	2.25	1.67	1.75	3.00	3.00	2.00	2.60
Sensor and Instrumentation	KOE 044.1	2	1	1		2	2	-	-	-	-	-	2
	KOE 044.2	1	2	1	1	2	2	-	-	-	-	1	2
	KOE 044.3	2	2	2	2	3	1	-	-	-	1	1	2
	KOE 044.4	1	1	1	2	3	1	1	-	-	-	-	2
	KOE 044.5	2	2	1	2	3	1	-	-	-	1	1	2
	AVERAGE	1.60	1.60	1.20	1.75	2.60	1.40	1.00	-	-	1.00	1.00	2.00
Technical Communication	KAS401.1	1	1	2	-	1	2	1	1	3	3	2	1
	KAS401.2	1	2	3	-	3	2	-	-	-	3	2	3
	KAS401.3	1	2	3	-	3	2	1	2	3	3	2	3
	KAS401.4	2	2	3	1	3	3	-	1	3	3	3	3
	KAS401.5	1	1	3	1	1	-	3	3	3	3	1	3
	AVERAGE	1.20	1.60	2.80	1.00	2.20	2.25	1.67	1.75	3.00	3.00	2.00	2.60
Operating Systems	KCS401.1	1	-	-	-	-	-	-	-	-	-	-	1
	KCS401.2	2	1	1	-	-	-	-	-	-	-	-	2
	KCS401.3	2	2	2	1	-	-	-	-	-	-	-	2
	KCS401.4	2	1	1	-	-	-	-	-	-	-	-	1
	KCS401.5	2	2	2	1	-	-	-	-	-	-	-	2
	AVERAGE	1.80	1.50	1.50	1.00	-	-	-	-	-	-	-	1.60
Theory of Automata and Formal Languages	KCS402.1	2	3	3	2	2	2	-	1	1	1	-	2
	KCS402.2	2	3	3	2	2	2	-	1	-	2	-	3
	KCS402.3	2	3	3	2	2	2	-	1	2	1	-	2
	KCS402.4	2	3	3	2	2	2	-	1	-	2	-	2
	KCS402.5	1	3	3	2	2	2	-	1	1	2	-	3
	AVERAGE	1.80	3.00	3.00	2.00	2.00	2.00	-	1.00	1.33	1.60	-	2.40
Web Designing	KIT 401.1	3	3	3	2	2	1	1	1	1	2	2	1



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	KIT 401.2	3	3	3	2	2	1	1	1	1	1	2	1
	KIT 401.3	3	3	3	2	2	1	1	1	1	1	1	3
	KIT 401.4	3	3	3	2	1	2	1	1	1	2	1	3
	KIT 401.5	3	3	3	2	1	2	1	1	1	2	1	1
	AVERAGE	3.00	3.00	3.00	2.00	1.60	1.40	1.00	1.00	1.00	1.60	1.40	1.80
Operating Systems Lab	KCS451.1	3	1	2	1	1	1	-	1	1	1	1	3
	KCS451.2	3	2	3	3	1	2	-	2	2	2	1	3
	KCS451.3	3	3	3	3	1	2	-	2	2	2	1	3
	KCS451.4	3	2	3	3	1	1	-	-	1	1	1	3
	KCS451.5	3	2	3	3	1	1	-	-	1	1	1	3
	AVERAGE	3.00	2.00	2.80	2.60	1.00	1.40	-	1.67	1.40	1.40	1.00	3.00
Web Designing Lab	KIT451.1	3	3	2	2	3	2	1	1	1	2	1	2
	KIT451.2	3	2	2	2	3	2	1	1	2	2	2	2
	KIT451.3	3	3	2	2	2	2	-	1	1	2	1	2
	KIT451.4	3	3	2	1	2	2	-	1	2	2	2	2
	KIT451.5	2	2	2	1	3	2	1	1	2	2	2	1
	AVERAGE	2.80	2.60	2.00	1.60	2.60	2.00	1.00	1.00	1.60	2.00	1.60	1.80
Python Language Programming Lab	KCS453.1	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.2	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.3	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.4	3	3	3	3	2	-	-	-	2	-	-	3
	KCS453.5	3	3	3	3	2	-	-	-	2	-	-	3
	AVERAGE	3.00	3.00	3.00	3.00	2.00	-	-	-	2.00	-	-	3.00
Python Programming	KNC402.1	3	2	3	-	1	-	-	-	2	-	1	-
	KNC402.2	3	3	2	-	1	-	-	-	2	-	1	-
	KNC402.3	3	2	2	-	-	-	-	-	2	-	-	-
	KNC402.4	3	3	3	-	-	-	-	-	3	-	3	-
	KNC402.5	1	2	2	-	1	-	-	-	-	-	3	-
	AVERAGE	2.60	2.40	2.40	-	1.00	-	-	-	2.25	-	2.00	-
Database Management System	KCS501.1	3	3	3	3	2	1	-	1	2	2	2	2
	KCS501.2	3	2	2	3	2	2	-	2	1	2	2	2
	KCS501.3	3	2	2	3	3	2	-	2	1	2	2	3
	KCS501.4	3	2	3	2	2	2	-	2	2	2	3	3
	KCS501.5	2	2	2	2	2	2	-	2	1	2	1	2
	AVERAGE	2.80	2.20	2.40	2.60	2.20	1.80	-	1.80	1.40	2.00	2.00	2.40
Design and Analysis of Algorithm	KCS503.1	3	3	3	3	3	2	-	-	3	3	2	3
	KCS503.2	3	3	3	3	3	1	-	-	3	3	1	2
	KCS503.3	3	3	3	3	3	1	-	-	3	3	2	3
	KCS503.4	3	2	2	2	3	2	-	-	3	3	1	3
	KCS503.5	3	3	3	3	3	2	-	-	3	3	1	2
	AVERAGE	3.00	2.80	2.80	2.80	3.00	1.60	-	-	3.00	3.00	1.40	2.60

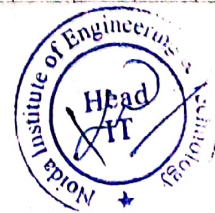


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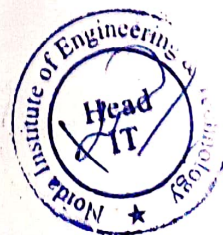
Web Technologies	KIT501.1	3	3	3	2	2	1	1	1	1	2	2	1
	KIT501.2	3	3	3	2	2	1	1	1	1	2	2	1
	KIT501.3	3	3	3	2	2	1	1	1	1	1	1	3
	KIT501.4	3	3	3	2	1	2	1	1	1	2	1	3
	KIT501.5	3	3	3	2	1	2	1	1	1	2	1	1
	AVERAGE	3.00	3.00	3.00	2.00	1.60	1.40	1.00	1.00	1.00	1.80	1.40	1.80
Object Oriented System Design	KCS054.1	2	2	3	2	-	-	-	-	1	1	-	2
	KCS054.2	3	3	3	3	3	-	-	-	3	2	2	3
	KCS054.3	3	3	2	3	3	-	-	-	3	2	2	3
	KCS054.4	3	2	2	2	2	2	-	-	3	2	-	3
	KCS054.5	3	3	2	3	3	2	2	-	3	3	2	3
	AVERAGE	2.80	2.60	2.40	2.60	2.75	2.00	2.00	-	2.60	2.00	2.00	2.80
Machine Learning Technique	KCS055.1	3	2	-	3	3	2	-	1	1	-	-	2
	KCS055.2	3	3	2	3	2	3	-	-	2	1	2	2
	KCS055.3	3	3	2	3	2	3	-	-	2	1	2	2
	KCS055.4	3	2	-	3	3	2	-	1	1	-	-	2
	KCS055.5	3	3	2	3	2	2	-	1	1	-	1	2
	AVERAGE	3.00	2.60	2.00	3.00	2.40	2.40	-	1.00	1.40	1.00	1.67	2.00
Database Management System Lab	KCS551.1	3	2	2	3	2	3	-	2	2	2	3	3
	KCS551.2	3	3	2	2	3	2	-	2	3	3	3	3
	KCS551.3	3	2	2	3	3	2	-	2	2	3	3	3
	KCS551.4	3	2	2	2	2	2	-	2	2	3	3	3
	KCS551.5	3	3	3	3	2	3	-	2	2	2	3	3
	AVERAGE	3.00	2.40	2.20	2.60	2.40	2.40	-	2.00	2.20	2.60	3.00	3.00
Design and Analysis of Algorithm Lab	KCS553.1	3	1	2	1	1	-	2	-	1	-	-	2
	KCS553.2	3	2	2	2	2	-	2	-	2	-	-	2
	KCS553.3	3	3	2	2	2	-	1	-	2	-	-	2
	KCS553.4	3	3	2	2	3	-	1	-	2	-	-	2
	KCS553.5	3	3	2	2	2	-	1	-	2	-	-	3
	AVERAGE	3.00	2.40	2.00	1.80	2.00	-	1.40	-	1.80	-	-	2.20
Web Technology Lab	KIT551.1	-	-	2	-	3	-	-	-	-	-	-	-
	KIT551.2	2	2	3	1	3	-	-	-	-	-	-	-
	KIT551.3	2	2	3	1	3	-	-	-	-	-	-	-
	KIT551.4	2	2	3	1	3	-	-	-	-	-	-	-
	KIT551.5	2	2	3	1	3	-	-	-	-	-	-	-
	AVERAGE	2.00	2.00	2.80	1.00	3.00	-	-	-	-	-	-	-
Constitution of India, Law and Engineering	KNC501.1	-	-	-	-	-	-	-	3	-	-	-	3
	KNC501.2	-	-	-	-	-	-	-	3	-	-	-	3
	KNC501.3	-	-	-	-	-	-	-	3	-	-	-	3
	KNC501.4	-	-	-	-	-	-	-	3	-	-	-	3
	KNC501.5	-	-	-	-	-	-	-	3	-	-	-	3



	AVERAGE	-	-	-	-	-	-	-	3.00	-	-	-	3.00
Data Analytics	KIT601.1	3	3	3	2	3	-	-	1	3	2	1	3
	KIT601.2	3	3	3	3	3	-	-	-	-	-	-	3
	KIT601.3	3	3	1	3	3	-	-	-	1	1	-	1
	KIT601.4	3	3	-	2	3	-	-	-	1	3	1	3
	KIT601.5	3	3	3	2	3	-	-	-	2	-	-	3
	AVERAGE	3.00	3.00	2.50	2.40	3.00	-	-	1.00	1.75	2.00	1.00	2.60
DATA ANAYTICS Lab	KIT651.1	3	3	2	3	3	1	1	1	1	2	1	2
	KIT651.2	2	2	2	2	3	1	1	1	2	3	1	2
	KIT651.3	2	2	3	2	3	1	1	1	2	3	1	2
	KIT651.4	2	2	3	2	3	1	1	1	2	3	1	2
	KIT651.5	2	3	3	3	3	2	2	1	3	3	2	3
	AVERAGE	2.20	2.40	2.60	2.40	3.00	1.20	1.20	1.00	2.00	2.80	1.20	2.20
Software Engineering	KCS601.1	2	3	3	-	-	-	-	-	-	-	3	3
	KCS601.2	3	3	3	3	3	-	-	-	-	-	2	3
	KCS601.3	3	2	-	-	2	-	-	-	-	-	3	3
	KCS601.4	2	2	2	-	3	3	-	3	3	-	3	3
	KCS601.5	2	2	3	-	3	3	-	3	-	3	3	3
	AVERAGE	2.40	2.40	2.75	3.00	2.75	3.00	-	3.00	3.00	3.00	2.80	3.00
Computer Networks	KCS603.1	3	2	2	-	2	-	-	-	2	-	2	3
	KCS603.2	3	3	2	-	-	-	-	-	-	-	-	3
	KCS603.3	3	3	3	-	2	-	-	-	2	-	2	3
	KCS603.4	3	2	2	3	2	-	-	-	-	-	-	3
	KCS603.5	3	3	2	-	2	3	-	2	-	-	-	3
	KCS603.6	3	2	2	-	2	2	2	2	-	2	2	3
	AVERAGE	3.00	2.50	2.17	3.00	2.00	2.50	2.00	2.00	2.00	2.00	2.00	3.00
Big Data	KCS061.1	3	3	3	2	3	-	-	1	3	2	1	3
	KCS061.2	3	3	3	3	3	-	-	-	-	-	-	3
	KCS061.3	3	3	1	3	3	-	-	-	1	1	-	1
	KCS061.4	3	3	-	2	3	-	-	-	1	3	1	3
	KCS061.5	3	3	3	2	3	-	-	-	2	-	-	3
	AVERAGE	3.00	3.00	2.50	2.40	3.00	-	-	1.00	1.75	2.00	1.00	2.60
Understanding the Human Being Comprehensively Human Aspirations and its Fulfilment	KOE069.1	-	-	1	-	-	2	2	3	1	2	2	1
	KOE069.2	1	-	1	1	1	2	3	3	1	2	1	1
	KOE069.3	1	1	1	-	1	2	3	3	-	1	1	2
	KOE069.4	1	1	1	1	1	2	2	3	1	1	2	-
	KOE069.5	-	1	-	1	2	2	2	2	-	2	2	1
	AVERAGE	1.00	1.00	1.00	1.00	1.25	2.00	2.40	2.80	1.00	1.60	1.60	1.25
Software Engineering Lab	KCS651.1	2	1	-	-	-	-	-	1	-	-	-	1
	KCS651.2	3	3	2	2	2	2	1	1	1	1	1	3
	KCS651.3	3	3	3	3	2	-	1	-	-	-	1	3



	KCS651.4	2	3	2	2	2	-	1	1	1	-	2	3
	KCS651.5	3	3	3	3	2	-	1	-	1	-	2	3
	AVERAGE	2.60	2.60	2.50	2.50	2.00	2.00	1.00	1.00	1.00	1.00	1.50	2.60
Computer Networks Lab	KCS653.1	3	2	2	2	3	2	1	1	1	3	1	1
	KCS653.2	3	2	2	1	3	1	1	2	1	3	2	1
	KCS653.3	3	3	2	2	1	3	2	2	2	3	1	2
	KCS653.4	3	2	2	1	1	2	1	1	2	3	1	1
	KCS653.5	3	3	3	1	2	2	2	1	1	3	2	1
	AVERAGE	3.00	2.40	2.20	1.40	2.00	2.00	1.40	1.40	1.40	3.00	1.40	1.20
Indian Tradition, Culture and Society	KNC602.1	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.2	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.3	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.4	-	-	-	-	-	2	-	-	-	2	-	1
	KNC602.5	-	-	-	-	-	2	-	-	-	2	-	1
	AVERAGE	-	-	-	-	-	2.00	-	-	-	2.00	-	1.00
Understanding the Human Being Comprehensively Human Aspirations and its Fulfilment	ROE074.1	1	2	2	3	3	2	1	3	-	-	-	-
	ROE074.2	1	2	1	3	3	3	2	3	-	-	-	-
	ROE074.3	1	2	2	3	3	2	2	3	-	-	-	-
	ROE074.4	1	2	2	3	3	3	2	3	-	-	-	-
	ROE074.5	1	2	2	3	3	3	2	3	-	-	-	-
	AVERAGE	1.00	2.00	1.80	3.00	3.00	2.60	1.80	3.00	-	-	-	-
Human Computer Interface	RCS073.1	2	-	-	-	2	-	-	-	-	2	-	2
	RCS073.2	2	2	1	2	2	-	-	-	-	-	-	2
	RCS073.3	2	1	2	2	2	2	-	2	2	1	2	2
	RCS073.4	2	2	2	1	2	2	-	-	-	-	-	2
	RCS073.5	2	2	2	2	2	2	2	-	2	-	1	2
	AVERAGE	2.00	1.75	1.75	1.75	2.00	2.00	2.00	2.00	2.00	1.50	1.50	2.00
Agile Software Development	RCS077.1	3	2	1	-	-	-	-	2	1	2	1	2
	RCS077.2	3	3	3	-	2	-	-	-	2	-	2	1
	RCS077.3	2	3	-	2	2	-	-	-	2	-	3	3
	RCS077.4	3	3	3	2	3	-	-	-	-	-	2	2
	RCS077.5	3	3	3	3	3	-	-	-	2	-	3	3
	AVERAGE	2.80	2.80	2.50	2.33	2.50	-	-	2.00	1.75	2.00	2.20	2.20
Cryptography & Network Security	RIT701.1	3	2	2	1	-	-	-	-	-	-	-	-
	RIT701.2	3	3	3	3	2	-	-	-	2	1	-	2
	RIT701.3	3	3	3	3	2	-	-	-	2	1	-	2
	RIT701.4	3	2	2	1	3	3	-	-	2	1	-	2
	RIT701.5	2	1	1	3	2	3	-	-	3	3	2	3
	AVERAGE	2.80	2.20	2.20	2.20	2.25	3.00	-	-	2.25	1.50	2.00	2.25
Artificial Intelligence	RCS702.1	1	1	1	1	-	-	-	-	-	-	1	2
	RCS702.2	3	3	2	2	3	-	-	-	-	-	1	2



	RCS702.3	3	3	2	2	3	-	-	-	-	-	1	2
	RCS702.4	3	2	3	3	-	-	-	-	-	-	1	3
	RCS702.5	3	2	3	1	-	-	-	-	-	-	1	3
	AVERAGE	2.60	2.20	2.20	1.80	3.00	-	-	-	-	-	1.00	2.40
Cryptography & Network Security Lab	RIT751.1	3	3	3	2	2	1	3	3	1	1	2	2
	RIT751.2	3	3	3	2	2	1	2	1	1	1	2	2
	RIT751.3	3	3	3	2	2	1	3	3	1	1	2	2
	RIT751.4	3	3	3	2	2	1	3	3	1	1	2	2
	RIT751.5	3	3	3	2	2	1	3	2	1	1	2	2
	AVERAGE	3.00	3.00	3.00	2.00	2.00	1.00	2.80	2.40	1.00	1.00	2.00	2.00
Artificial Intelligence Lab	RCS752.1	2	2	2	2	3	-	-	-	-	-	-	3
	RCS752.2	3	3	3	3	3	2	-	-	-	-	-	3
	RCS752.3	3	3	3	3	2	3	-	-	-	-	3	3
	RCS752.4	3	3	3	3	3	3	2	1	1	2	3	3
	RCS752.5	3	3	3	3	3	2	-	-	2	2	3	3
	AVERAGE	2.80	2.80	2.80	2.80	2.80	2.50	2.00	1.00	1.50	2.00	3.00	3.00
Industrial Training	RIT753.1	2	3	2	2	3	-	2	3	-	-	-	3
	RIT753.2	2	3	3	2	3	-	2	2	-	-	-	3
	RIT753.3	2	-	3	-	3	-	-	3	-	3	-	-
	RIT753.4	2	1	1	1	3	-	-	2	3	3	-	-
	RIT753.5	-	-	-	-	-	-	-	-	3	-	-	3
	AVERAGE	2.00	2.33	2.25	1.67	3.00	-	2.00	2.50	3.00	3.00	-	3.00
Project	RCS754.1	3	3	2	2	1	-	-	-	-	-	1	1
	RCS754.2	2	3	-	3	1	-	-	-	-	-	-	-
	RCS754.3	3	2	3	3	3	3	3	1	-	-	1	2
	RCS754.4	-	-	1	1	1	-	-	2	3	3	3	3
	RCS754.5	2	2	2	-	2	2	2	3	2	3	3	3
	AVERAGE	2.50	2.50	2.00	2.25	1.60	2.50	2.50	2.00	2.50	3.00	2.00	2.25
Renewable Energy Resources	ROE086.1	-	2	2	-	-	-	1	2	2	-	-	-
	ROE086.2	1	1	-	-	2	1	-	1	2	1	-	-
	ROE086.3	1	2	2	1	1	-	-	2	2	2	-	-
	ROE086.4	1	2	2	-	-	-	-	1	2	1	-	-
	ROE086.5	-	2	2	1	1	-	1	2	1	-	1	-
	AVERAGE	1.00	1.80	2.00	1.00	1.33	1.00	1.00	1.60	1.80	1.33	1.00	-
Image Processing	RCS082.1	3	2	2	2	-	-	-	-	-	-	-	2
	RCS082.2	3	2	2	2	1	-	-	-	-	-	-	2
	RCS082.3	3	2	2	2	1	-	-	-	-	-	-	2
	RCS082.4	3	3	2	2	2	-	-	-	-	-	-	3
	RCS082.5	3	3	3	1	1	-	-	-	-	-	-	3
	AVERAGE	3.00	2.40	2.20	1.80	1.25	-	-	-	-	-	-	2.40
Data Compression	RCS087.1	2	1	-	2	2	-	-	2	2	1	2	2



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DEPARTMENT OF INFORMATION TECHNOLOGY

	RCS087.2	2	2	-	2	2	-	-	2	2	2	2	2
	RCS087.3	2	2	1	3	2	-	-	2	2	2	2	2
	RCS087.4	2	2	-	2	2	-	-	2	2	2	2	2
	RCS087.5	2	2	2	2	2	1	-	2	2	2	2	2
	AVERAGE	2.00	1.80	1.50	2.20	2.00	1.00	-	2.00	2.00	1.80	2.00	2.00
Seminar	RIT851.1	3	2	3	2	2	2	-	2	2	-	2	2
	RIT851.2	2	2	2	-	2	3	2	2	2	3	3	2
	RIT851.3	3	3	3	2	2	3	3	2	1	3	2	-
	RIT851.4	2	2	2	3	2	2	2	2	2	2	2	2
	RIT851.5	2	2	2	2	-	2	-	2	2	-	3	2
	AVERAGE	2.40	2.20	2.40	2.25	2.00	2.40	2.33	2.00	1.80	2.67	2.40	2.00
Project	RCS852.1	-	-	3	3	3	2	-	-	3	3	3	3
	RCS852.2	-	-	-	-	-	-	-	-	3	3	2	3
	RCS852.3	3	3	3	3	3	2	-	3	3	3	3	3
	RCS852.4	3	3	3	3	3	-	2	3	2	3	3	2
	RCS852.5	3	3	3	2	3	-	2	-	3	-	2	3
	AVERAGE	3.00	3.00	3.00	2.75	3.00	2.00	2.00	3.00	2.80	3.00	2.60	2.80



**DEPARTMENT
OF
ELECTRONICS AND
COMMUNICATION
ENGINEERING**

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
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DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW



Evaluation Scheme & Syllabus

For

B. Tech in Electronics & Communication Engineering (ECE) First Year
(Effective from the Session: 2020-21)

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA
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B. TECH (ECE)
Evaluation Scheme
SEMESTER I

SEMESTER X													
Sl. N o.	Subject Codes	Subject	Periods			Evaluation Schemes				End Semeste r		Total	Credi t
			L	T	P	C T	T A	TOTA L	PS	T E	P E		
3 WEEKS COMPULSORY INDUCTION PROGRAM													
1	AAS0103	Engineering Mathematics-I	3	1	0	30	20	50		100		150	4
2	AAS0101C	Engineering Physics	3	1	0	30	20	50		100		150	4
3	ACSE0101	Problem Solving using Python	3	0	0	30	20	50		100		150	3
4	AASL0101	Professional Communication	2	0	0	30	20	50		100		150	2
5	AAS0151C	Engineering Physics Lab	0	0	2				25		25	50	1
6	ACSE0151	Problem Solving using Python Lab	0	0	2				25		25	50	1
7	AASL0151	Professional Communication Lab	0	0	2				25		25	50	1
8	AME0151	Digital Manufacturing Practices	0	0	3				25		25	50	1.5
9		MOOCs (For B.Tech. Hons. Degree)											
		TOTAL										800	17.5



Abbreviation Used:-
L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., PE: Practical End Semester Exam.

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA
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B. TECH (ECE)
Evaluation Scheme
SEMESTER II

Sl. No.	Subject Codes	Subject	Periods			Evaluation Schemes				End Semester		Total	Credit
			L	T	P	CT	TA	TOTAL	PS	TE	PE		
1	AAS0203	Engineering Mathematics-II	3	1	0	30	20	50		100		150	4
2	AAS0202	Engineering Chemistry	3	1	0	30	20	50		100		150	4
3	ACSE0201	Programming for Problem Solving using C	3	0	0	30	20	50		100		150	3
4	AEC0201	Basic Electrical and Electronics Engineering.	3	1	0	30	20	50		100		150	4
5		Foreign Language*	2	0	0	30	20	50		50		100	2
6	AAS0252	Engineering Chemistry Lab	0	0	2				25		25	50	1
7	AEC0251	Basic Electrical and Electronics Engineering Lab	0	0	2				25		25	50	1
8	ACSE0251	Programming for Problem Solving using C Lab	0	0	2				25		25	50	1
9	AME0252	Engineering Graphics & Solid Modelling	0	0	3				25		25	50	1.5
10		MOOCs (For B.Tech. Hons. Degree)											
		TOTAL										900	21.5
Mini Project or Internship (3-4 weeks) shall be conducted during summer break after II semester and will be assessed during III semester													

*** List of MOOCs (NPTEL) Based Recommended Courses for first year B. Tech Students**

1. Developing Soft Skills and personality-Odd Semester-8 Weeks-3 Credits
2. Enhancing Soft Skills and personality-Even Semester-8 Weeks-3 Credits

*** AICTE Guidelines in Model Curriculum:**

After successful completion of 160 credits, a student shall be eligible to get Under Graduate degree in Engineering. A student will be eligible to get Under Graduate degree with Honours only, if he/she completes additional university recommended courses only (Equivalent to 20 credits; NPTEL Courses of 4 Weeks, 8 Weeks and 12 Weeks shall be of 2, 3 and 4 Credits respectively) through MOOCs. For registration to MOOCs Courses, the students shall follow NPTEL Site <http://npTEL.ac.in/> as per the NPTEL policy and norms. The students can register for these courses through NPTEL directly as per the course offering in Odd/Even Semesters at NPTEL. These NPTEL courses (recommended by the University) may be cleared during the B. Tech degree program (not necessary one course in each semester). After successful completion of these MOOCs courses the students, shall, provide their successful completion NPTEL status/certificates to the University (COE) through their college of study only. The student shall be awarded Hons. Degree (on successful completion of MOOCs based 20 credit) only if he/she secures 7.50 or above CGPA and passed each subject of that Degree Programme in single attempt without any grace marks.

Abbreviation Used:-

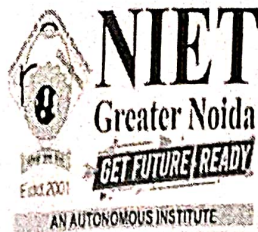
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B. TECH (ECE)

***Foreign Language :**

1. AASL0202 French
2. AASL0203 German
3. AASL0204 Japanese



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Semester: 1 Subject Name/Code: Engineering Mathematics-I (AAS0103)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0103.1	Apply the concept of matrices to solve linear simultaneous equations.
AAS0103.2	Apply the concept of successive differentiation and partial differentiation to solve problems of Leibnitz theorems and total derivatives.
AAS0103.3	Apply partial differentiation for evaluating maxima, minima, Taylor's series and Jacobians.
AAS0103.4	Apply the concept of multiple integral to find area, volume.
AAS0103.5	Solve the problems of Profit, Loss, Number & Series, Coding & decoding, Algebra.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0101C.1	3	2	1	1	3	2	-	-	-	2	2	3	3	2	3
AAS0101C.2	3	3	2	3	3	-	-	-	-	2	3	3	3	2	3
AAS0101C.3	3	2	3	3	3	2	-	-	-	2	3	3	3	2	3
AAS0101C.4	3	2	3	3	2	2	-	-	-	2	2	3	3	2	3
AAS0101C.5	1	1	1	1	1	-	-	-	-	2	-	3	3	2	3
Avg	2.6	2	2	2.2	2.4	2.0	-	-	-	2	2.5	3	3	2	3



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Semester: 1 Subject Name/Code: Engineering Physics (AAS0101C)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0101C.1	Solve the relativistic mechanics problems.
AAS0101C.2	Apply the concept of quantum mechanics.
AAS0101C.3	Apply the laws of optics and their application in various processes.
AAS0101C.4	Apply the concept of electromagnetics.
AAS0101C.5	Discuss the dielectric properties of material and their possible engineering applications.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0101C.1	3	2	1	-	2	2	2	-	-	-	-	2	2	1	-
AAS0101C.2	3	2	1	-	1	2	2	-	-	-	-	2	2	1	-
AAS0101C.3	3	3	1	-	2	2	2	-	-	-	-	2	2	1	-
AAS0101C.4	3	2	2	-	2	3	2	-	-	-	-	2	2	1	-
AAS0101C.5	3	2	2	-	2	2	2	-	-	-	-	2	2	1	-
Avg	3	2.2	1.4	-	1.8	2.2	2	-	-	-	-	2	2	1	-



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Semester: 1 Subject Name/Code: Problem solving using Python (ACSE0101)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ACSE0101.1	Write simple python programs.
ACSE0101.2	Develop python programs using decision control statements.
ACSE0101.3	Implement user defined functions and modules in python.
ACSE0101.4	Implement python data structures –lists, tuples, set, dictionaries.
ACSE0101.5	Perform input/output operations with files in python and implement searching, sorting and merging algorithms.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ACSE0101.1	3	2	3	2	3	2	1	-	2	1	2	2	-	-	-
ACSE0101.2	3	2	3	2	3	2	1	-	2	1	2	2	-	-	-
ACSE0101.3	3	2	3	2	3	2	1	-	2	1	2	3	-	-	-
ACSE0101.4	3	2	3	2	3	2	1	1	2	1	2	3	-	-	-
ACSE0101.5	3	3	3	3	3	2	2	1	2	2	2	3	-	-	-
Average	3.0	2.2	3.0	2.2	3.0	2.0	1.2	0.4	2.0	1.2	2.0	2.6	-	-	-



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Semester: 1 Subject Name/Code: Professional Communication (AASL0101)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AASL0101.1	Understand the basic objective of the course and comprehend texts for professional reading tasks in preparation for an International Certification in Business English.
AASL0101.2	Write professionally in simple and correct English.
AASL0101.3	Interpret listening tasks for better professional competence.
AASL0101.4	Recognize the elements of effective speaking with emphasis on applied phonetics.
AASL0101.5	Apply the skill of speaking at the workplace.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AASL0101.1	2	2	1	2	1	2	1	1	2	2	2	2	-	-	-
AASL0101.2	2	2	2	3	-	-	-	-	2	3	2	2	-	-	-
AASL0101.3	1	-	-	2	-	-	-	-	3	3	-	3	-	-	-
AASL0101.4	-	-	-	1	-	1	-	-	3	3	1	3	-	-	-
AASL0101.5	1	-	-	1	-	1	-	-	3	3	1	3	-	-	-
Avg	1.5	2	1.5	1.8	1	1.33	1	1	2.6	2.8	1.5	2.6	-	-	-

Semester: 1 Subject Name/Code: Engineering Physics Lab (AAS0151C)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0151C.1	Apply the practical knowledge of the phenomenon of interference, diffraction and polarization.
AAS0151C.2	Understand energy band gap and resistivity.
AAS0151C.3	Develop the measurement techniques of magnetism.
AAS0151C.4	Analyze the flow of liquids.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0151C.1	3	-	-	-	3	-	1	1	2	1	1	1	2	1	-
AAS0151C.2	3	-	-	-	2	-	1	1	2	1	1	1	2	1	-
AAS0151C.3	2	-	-	-	2	-	2	1	2	1	1	1	2	1	-
AAS0151C.4	2	-	-	-	2	-	1	1	2	1	1	1	2	1	-
Avg	2.5	-	-	-	2.25	-	1.25	1	2	1	1	1	2	1	-





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Semester: 1 Subject Name/Code: Problem Solving using Python Lab (ACSE0151)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ACSE0151.1	Write simple python programs.
ACSE0151.2	Implement python programs using decision control statements.
ACSE0151.3	Writing python programs using user defined functions and modules.
ACSE0151.4	Implement programs using python data structures –lists, tuples, set, dictionaries.
ACSE0151.5	Write programs to perform input/output operations on files.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ACSE0202.1	3	2	3	2	3	2	1	-	2	1	2	2	-	-	-
ACSE0202.2	3	2	3	2	3	2	1	-	2	1	2	2	-	-	-
ACSE0202.3	3	2	3	2	3	2	1	-	2	1	2	3	-	-	-
ACSE0202.4	3	2	3	2	3	2	1	1	2	1	2	3	-	-	-
ACSE0202.5	3	3	3	3	3	2	2	1	2	2	2	3	-	-	-
Average	3.0	2.2	3.0	2.2	3.0	2.0	1.2	0.4	2.0	1.2	2.0	2.6	-	-	-



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Semester: 1 Subject Name/Code: Professional Communication Lab (AASL0151)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AASL0151.1	Learn to use English language for communicating ideas.
AASL0151.2	Develop interpersonal skills and leadership abilities.
AASL0151.3	Practice their public speaking skills and gain confidence in it.
AASL0151.4	Realize the importance of analytical listening during communication.
AASL0151.5	Apply critical thinking skills in interpreting texts and discourses.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AASL0151.1	2	2	1	2	1	2	1	1	2	2	2	2	-	-	-
AASL0151.2	2	2	2	3	-	-	-	-	2	3	2	2	-	-	-
AASL0151.3	1	-	-	2	-	-	-	-	3	3	-	3	-	-	-
AASL0151.4	-	-	-	1	-	1	-	-	3	3	1	3	-	-	-
AASL0151.5	1	-	-	1	-	1	-	-	3	3	1	3	-	-	-
Avg	1.5	2	1.5	1.8	1	1.33	1	1	2.6	2.8	1.5	2.6	-	-	-



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Semester: 1 Subject Name/Code: Digital Manufacturing Practices (AME0151)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AME0151.1	To impart knowledge to students about the latest technological developments in manufacturing technology.
AME0151.2	To make the students capable to identify and use primary machine tools for manufacturing of job/product.
AME0151.3	To make the students understand constructional features, principle and coding/ programming of CNC machines.
AME0151.4	To explain current and emerging 3D printing technologies in industries.
AME0151.5	To impart fundamental knowledge of Automation and Robotics.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AME0151.1	3	1	1	2	2	2	1	1	3	2	1	2	-	-	-
AME0151.2	3	1	1	1	1	2	1	1	2	1	1	3	-	-	-
AME0151.3	3	1	1	1	2	2	1	1	2	1	1	2	-	-	-
AME0151.4	3	1	1	2	1	2	1	1	2	1	1	2	-	-	-
AME0151.5	3	1	1	2	1	2	1	1	2	1	1	2	-	-	-
Average	3	1	1	1.6	1.4	2	1	1	2.2	1.2	1	2.2	-	-	-



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Semester: 2 Subject Name/Code: ENGINEERING MATHEMATICS-II (AAS0203)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0203.1	Apply the concept of differentiation to solve differential equations.
AAS0203.2	Apply the concept of convergence of sequence and series to evaluate Fourier series.
AAS0203.3	Apply the Laplace transform to solve ordinary differential equations.
AAS0203.4	Apply the concept of vector calculus to evaluate line, surface and volume integrals.
AAS0203.5	Solve the problems of Proportion & Partnership, Problem of ages, Allegation & Mixture, Direction, Blood relation, Simple & Compound interest.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0203.1	3	2	1	1	3	2	-	-	-	2	2	3	-	-	-
AAS0203.2	3	3	2	3	3	-	-	-	-	2	2	3	-	-	-
AAS0203.3	3	2	3	3	3	2	-	-	-	2	3	3	-	-	-
AAS0203.4	3	2	3	3	2	2	-	-	-	2	2	3	-	-	-
AAS0203.5	1	1	1	1	1	-	-	-	-	2	-	3	-	-	-
Average	2.6	2	2	2.2	2.4	2.0	-	-	-	2	2.5	3	-	-	-



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Semester: 2 Subject Name/Code: Engineering Chemistry (AAS0202)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0202.1	Understand the concept of fuel, their calorific value and its usage.
AAS0202.2	Develop the understanding to apply the principles of water chemistry to the water treatment.
AAS0202.3	Apply concepts of Electrochemistry, corrosion and their prevention methods with cement manufacturing.
AAS0202.4	Understand elementary preparation and application of polymers and Organometallic compounds.
AAS0202.5	Understand Molecular orbital theory and simplified concepts of spectroscopic techniques.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0202.1	3	2	1	-	-	1	1	-	1	1	-	1	-	-	-
AAS0202.2	3	2	1	-	-	1	1	-	1	1	-	1	-	-	-
AAS0202.3	3	2	1	-	-	1	1	-	1	1	-	1	-	-	-
AAS0202.4	2	2	1	-	-	1	1	-	1	1	-	1	-	-	-
AAS0202.5	3	2	1	-	2	-	-	-	1	1	-	1	-	-	-
Average	2.8	2	1	-	2	1	1	-	1	1	-	1	-	-	-



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Semester: 2 Subject Name/Code: Programming for Problem Solving using C (ACSE0201)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ACSE0201.1	Develop simple algorithms for arithmetic and logical problems.
ACSE0201.2	Implement and trace the execution of programs written in C language.
ACSE0201.3	Implement conditional branching and iteration.
ACSE0201.4	Use function, arrays and structures to develop algorithms and programs.
ACSE0201.5	Use searching and sorting algorithm to arrange data and use file handling for developing real life projects.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ACSE0151.1	2	2	2	2	1	1	1	2	1	2	1	1	-	-	-
ACSE0151.2	2	2	2	2	1	1	1	2	2	2	1	1	-	-	-
ACSE0151.3	2	2	3	2	1	1	1	2	2	2	2	2	-	-	-
ACSE0151.4	2	2	2	3	2	1	2	2	2	2	2	2	-	-	-
ACSE0151.5	2	2	2	2	2	1	2	2	2	2	2	2	-	-	-
Average	2	2	2.2	2.2	1.4	1	1.4	2	1.8	2	1.6	1.6	-	-	-



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Semester: 2 Subject Name/Code: Basic Electrical and Electronics Engineering (AEC0201)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AEC0201.1	Apply the principle of KVL/KCL and network theorems for analysis of D.C circuit.
AEC0201.2	Analyze the steady state behavior of single phase and three phase AC electrical circuits.
AEC0201.3	Illustrate and analyze the working principles of a single-phase transformer, efficiency, and components of Power system, Earthing, and energy calculation.
AEC0201.4	Explain the construction, working principle, and application of PN junction diode, Zener diode and Display devices.
AEC0201.5	Explain the concept of Op-Amp, Digital multimeter, Sensors, IoT and its applications.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AEC0201.1	3	3	1	2	-	-	-	-	1	1	1	2	3	2	2
AEC0201.2	3	3	1	2	-	-	-	-	1	1	1	2	3	2	2
AEC0201.3	3	2	2	1	-	-	-	-	1	1	1	2	3	2	2
AEC0201.4	3	2	1	2	-	-	-	-	1	1	1	2	3	2	2
AEC0201.5	3	1	1	-	-	-	1	1	1	1	1	2	3	2	2
Average	3	2.2	1.2	1.75	-	-	1	1	1	1	1	2	3	2	2



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Semester: 2 Subject Name/Code: French (AASL0202)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AASL0202.1	Recognize the basic sounds, letters, numbers, words and phrases of French.
AASL0202.2	Develop basic French vocabulary.
AASL0202.3	Use simple phrases in real life conversations.
AASL0202.4	Read simple sentences.
AASL0202.5	Write simple sentences and fill in a form.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AASL0202.1	1	1	2	2	-	1	1	1	2	3	3	1	-	-	-
AASL0202.2	2	1	1	1	-	-	-	1	2	3	1	2	-	-	-
AASL0202.3	2	1	-	1	-	1	1	1	2	3	2	2	-	-	-
AASL0202.4	1	-	-	2	-	-	-	-	3	2	1	3	-	-	-
AASL0202.5	2	1	2	1	-	1	-	3	3	3	1	3	-	-	-
Average	1.6	1	1.6	1.4	-	1	1	1.5	2.4	2.8	1.6	2.2	-	-	-



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Semester: 2 Subject Name/Code: German (AASL0203)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AASL0203.1	Understand and be familiar with basic German and the culture.
AASL0203.2	Recognise the foundational vocabulary.
AASL0203.3	Use simple phrases in everyday conversations.
AASL0203.4	Read simple sentences.
AASL0203.5	Write simple sentences and fill in a form.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AASL0203.1	-	1	1	-	-	-	1	1	2	3	1	3	-	-	-
AASL0203.2	-	1	1	-	-	-	1	1	2	3	2	3	-	-	-
AASL0203.3	-	2	2	1	-	1	1	1	3	3	2	3	-	-	-
AASL0203.4	-	2	2	1	-	1	1	1	3	3	2	3	-	-	-
AASL0203.5	-	2	2	1	-	1	1	1	3	3	2	3	-	-	-
Average	-	1.6	1.6	1	-	1	1	1	2.6	3	1.8	3	-	-	-



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Semester: 2 Subject Name/Code: Japanese (AASL0204)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AASL0204.1	Understand the basics of Japanese Language and its script.
AASL0204.2	Recognise the foundational vocabulary.
AASL0204.3	Use simple phrases in everyday conversations.
AASL0204.4	Read simple sentences.
AASL0204.5	Write simple sentences.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AASL0204.1	1	1	2	2	-	1	1	1	2	3	3	1	-	-	-
AASL0204.2	2	1	1	1	-	-	-	1	2	3	1	2	-	-	-
AASL0204.3	2	1	-	1	-	1	1	1	2	3	2	2	-	-	-
AASL0204.4	1	-	-	2	-	-	-	-	3	2	1	3	-	-	-
AASL0204.5	2	1	2	1	-	1	-	3	3	3	1	3	-	-	-
Average	1.6	1	1.6	1.4	-	1	1	1.5	2.4	2.8	1.6	2.2	-	-	-



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Semester: 2 Subject Name/Code: Engineering Chemistry Lab (AAS0252)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AAS0252.1	Use different analytical instruments.
AAS0252.2	Calculate molecular/system properties such as surface tension, viscosity, conductance of solution, chloride and iron content in water.
AAS0252.3	Calculate flash point of fuel and lubricants.
AAS0252.4	Estimate the rate constant of reaction.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AAS0252.1	2	2	1	-	2	1	-	2	2	2	-	2	-	-	-
AAS0252.2	2	2	-	-	1	1	1	2	2	2	-	2	-	-	-
AAS0252.3	2	2	-	-	1	2	2	2	2	2	-	2	-	-	-
AAS0252.4	2	1	-	-	1	-	-	2	2	2	-	2	-	-	-
Average	2	1.75	1	-	1.25	1.33	1.5	2	2	2	-	2	-	-	-



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Semester: 2 Subject Name/Code: Basic Electrical and Electronics Engineering Lab (AEC0251)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AEC0251.1	Apply the principle of KVL/KCL and theorem to analysis DC Electric circuits.
AEC0251.2	Demonstrate the behavior of AC circuits connected to single phase AC supply and measure power in single phase as well as three phase electrical circuits.
AEC0251.3	Calculate efficiency of a single-phase transformer and energy consumption.
AEC0251.4	Understand the concept and applications of diode, Op-Amp, sensors and IoT.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AEC0251.1	3	-	-	-	2	2	1	1	2	1	1	2	3	2	-
AEC0251.2	3	-	-	-	2	2	1	1	2	1	1	2	3	2	-
AEC0251.3	3	-	-	-	2	2	1	1	2	1	1	2	3	2	-
AEC0251.4	3	-	-	-	2	2	1	1	2	1	1	2	3	2	-
Average	3	-	-	-	2	2	1	1	2	1	1	2	3.00	2.00	-



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Semester: 2 Subject Name/Code: Programming for Problem Solving Using C Lab (ACSE0251)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ACSE0251.1	Write programs for arithmetic and logical problems.
ACSE0251.2	write programs for conditional branching, iteration and recursion.
ACSE0251.3	Write programs using functions and synthesize a complete program using divide and conquer approach.
ACSE0251.4	Write programs using arrays, pointers and structures.
ACSE0251.5	Write programs to perform input/output operations on files.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ACSE0251.1	2	2	2	1	1	1	1	1	2	1	1	2	-	-	-
ACSE0251.2	2	3	3	1	1	1	1	1	3	2	2	2	-	-	-
ACSE0251.3	2	2	3	2	2	2	1	1	2	2	3	3	-	-	-
ACSE0251.4	2	2	2	3	2	2	1	1	2	1	2	2	-	-	-
ACSE0251.5	2	2	2	1	3	2	1	1	2	2	2	2	-	-	-
Average	2	2.2	2.4	1.6	1.8	1.6	1	1	2.2	1.6	2	2.2	-	-	-



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Semester: 2 Subject Name/Code: Engineering Graphics & Solid Modelling (AME0252)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
AME0252.1	Apply the basic principles of engineering graphics to draw various types of Scales, Cycloidal and involutes curves.
AME0252.2	Draw and develop the projections of points lines and planes.
AME0252.3	Draw orthographic projection of solids and their sections and draw the lateral surfaces.
AME0252.4	Apply CAD software to draw 2D and 3D drawing.
AME0252.5	Apply CREO software to draw 2D and 3D drawing.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
AME0252.1	3	2	1	1	1	1	1	2	2	3	1	3	-	-	-
AME0252.2	3	2	1	1	1	2	2	1	2	2	1	2	-	-	-
AME0252.3	3	3	1	1	1	2	2	1	2	2	1	2	-	-	-
AME0252.4	3	1	2	1	3	2	2	1	2	3	1	3	-	-	-
AME0252.5	3	1	2	1	3	2	2	1	2	3	1	3	-	-	-
Average	3	1.8	1.4	1	1.8	1.8	1.8	1.2	2	2.6	1	2.6	-	-	-

**DR. A.P.J. ABDUL KALAM TECHNICAL
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EVALUATION SCHEME & SYLLABUS

FOR

B. TECH. SECOND YEAR

**ELECTRONICS ENGINEERING/ ELECTRONICS AND
COMMUNICATION ENGINEERING/ ELECTRONICS AND
TELECOMMUNICATION ENGINEERING/ ELECTRONICS AND
INSTRUMENTATION ENGINEERING/ INSTRUMENTATION AND
CONTROL ENGINEERING/ APPLIED ELECTRONICS AND
INSTRUMENTATION/ INSTRUMENTATION ENGINEERING**

AS PER

AICTE MODEL CURRICULUM

[Effective from the Session: 2019-20]

Semester III

B.Tech. (Electronics & Communication Engg.)

Sr. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	P S	TE	PE		
			3	1	0	30	20	50		100		150	4
	KOE031-38/ KAS302	Engg. Science Course / Maths IV	3	1	0	30	20	50		100		150	3
1.	KAS301/ KVE301	Technical Communication / Universal Human values	2	1	0	30	20	50		100		150	4
			3	0	0					100		150	4
2.	KEC301	Electronic Devices	3	1	0	30	20	50		100		150	4
3.	KEC302	Digital System Design	3	1	0	30	20	50		100		150	3
4.	KEC303	Network Analysis and Synthesis	3	0	0	30	20	50		100		150	3
6.	KEC351	Electronics Devices Lab	0	0	2				25		25	50	1
7.	KEC352	Digital System Design Lab	0	0	2				25		25	50	1
8.	KEC353	Network Analysis and Synthesis lab	0	0	2				25		25	50	1
9.	KEC354	Mini Project or Internship Assessment	0	0	2			50				50	1
10.	KNC301 /KNC302	Computer System Security /Python Programming	2	0	0	15	10	25		50			0
11.		MOOCs (Essential for Hons. Degree)											
		TOTAL										950	22

*The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester.

Semester IV

Sr. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1.	KAS402/ KOE041-48	Maths-IV / Engg. Science Course	3	1	0	30	20	50		100		150	4
2.	KVE401/ KAS401	Universal Human Values/ Technical Communication	3	0	0	30	20	50		100		150	3
			2	1	0								
3.	KEC401	Communication Engineering	3	0	0	30	20	50		100		150	3
4.	KEC402	Analog Circuits	3	1	0	30	20	50		100		150	4
5.	KEC403	Signal System	3	1	0	30	20	50		100		150	4
6.	KEC451	Communication Engineering Lab	0	0	2				25		25	50	1
7.	KEC452	Analog Circuits Lab	0	0	2				25		25	50	1
8.	KEC453	Signal System Lab	0	0	2				25		25	50	1
9.	KNC402/ KNC401	Python Programming/ Computer System Security	2	0	0	15	10	25		50			0
10.		MOOCs (Essential for Hons. Degree)											
		TOTAL										900	21



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Semester: 3 Subject Name/Code: Electronics Devices (KEC301)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC301.1	Understand the principles of semiconductor Physics.
KEC301.2	Understand and utilize the mathematical models of semiconductor junctions.
KEC301.3	Understand carrier transport in semiconductors and design resistors.
KEC301.4	Utilize the mathematical models of MOS transistors for circuits and systems.
KEC301.5	Analyse and find application of special purpose diodes.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 301.1	3	3	2	2	-	-	-	-	-	-	-	2	2	-	2
KEC 301.2	3	2	2	2	-	-	-	-	-	-	-	2	2	-	2
KEC 301.3	3	3	2	2	-	-	-	-	-	-	-	2	2	-	2
KEC 301.4	3	3	2	2	-	-	-	-	-	-	-	2	2	-	2
KEC 301.5	3	3	1	2	-	-	-	-	-	-	-	2	2	-	2
Average	3.00	2.80	1.80	2.00	-	-	-	-	-	-	-	2	2	-	2
												2.00	2.00	-	2.00



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Semester: 3 Subject Name/Code: Digital System Design (KEC302)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC302.1	Design and analyze combinational logic circuits.
KEC302.2	Design and analyze modular combinational circuits with MUX / DEMUX, Decoder & Encoder.
KEC302.3	Design & analyze synchronous sequential logic circuits.
KEC302.4	Analyze various logic families.
KEC302.5	Design ADC and DAC and implement in amplifier, integrator, etc.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC302.1	3	3	3	3	-	-	-	-	-	-	-	-	2	-	2
KEC302.2	2	3	3	2	-	-	-	-	-	-	-	-	2	-	2
KEC302.3	2	3	3	2	-	-	-	-	-	-	-	-	2	-	2
KEC302.4	3	3	3	3	-	-	-	-	-	-	-	-	2	-	2
KEC302.5	3	3	3	-	-	-	-	-	-	-	-	-	2	-	2
Average	2.60	3.00	3.00	2.50	-	-	-	-	-	-	-	-	2	-	2
													2.00	-	2.00

Signature



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Semester: 3 Subject Name/Code: Network Analysis and Synthesis (KEC303)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC303.1	Understand basics electrical circuits with nodal and mesh analysis.
KEC303.2	Appreciate electrical network theorems.
KEC303.3	Apply Laplace transform for steady state and transient analysis.
KEC303.4	Determine different network functions.
KEC303.5	Appreciate the frequency domain techniques.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 303.1	3	3	2	1	-	-	-	-	-	-	-	3	2	2	3
KEC 303.2	3	3	2	1	-	-	-	-	-	-	-	3	2	2	3
KEC 303.3	3	3	-	1	-	-	-	-	-	-	-	1	2	2	2
KEC 303.4	3	3	2	1	-	-	-	-	-	-	-	1	2	1	2
KEC 303.5	3	2	2	2	-	-	-	-	-	-	-	1	2	1	2
Average	3.00	2.80	2.00	1.20	-	-	-	-	-	-	-	1.80	2.00	1.60	2.40



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Semester: 3 Subject Name/Code: Network Analysis and Synthesis (KEC303)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC303.1	Understand basics electrical circuits with nodal and mesh analysis.
KEC303.2	Appreciate electrical network theorems.
KEC303.3	Apply Laplace transform for steady state and transient analysis.
KEC303.4	Determine different network functions.
KEC303.5	Appreciate the frequency domain techniques.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 303.1	3	3	2	1	-	-	-	-	-	-	-	3	2	2	3
KEC 303.2	3	3	2	1	-	-	-	-	-	-	-	3	2	2	3
KEC 303.3	3	3	-	1	-	-	-	-	-	-	-	1	2	2	2
KEC 303.4	3	3	2	1	-	-	-	-	-	-	-	1	2	1	2
KEC 303.5	3	2	2	2	-	-	-	-	-	-	-	1	2	1	2
Average	3.00	2.80	2.00	1.20	-	-	-	-	-	-	-	1.80	2.00	1.60	2.40



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Semester: 3 Subject Name/Code: Electronic Devices Lab (KEC351)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC351.1	Understand working of basic electronics lab equipment.
KEC351.2	Understand working of PN junction diode and its applications.
KEC351.3	Understand characteristics of Zener diode.
KEC351.4	Design a voltage regulator using Zener diode.
KEC351.5	Understand working of BJT, FET, MOSFET and apply the concept in designing of amplifiers.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 351.1	3	1	2	-	-	-	-	-	3	-	-	-	3	-	1
KEC 351.2	3	2	1	-	-	-	-	-	2	-	-	-	3	-	1
KEC 351.3	3	2	1	-	-	-	-	-	2	-	-	-	3	-	1
KEC 351.4	3	2	1	-	-	-	-	-	2	-	-	-	3	-	1
KEC 351.5	3	3	1	-	-	-	-	-	2	-	-	-	3	-	1
Average	3.00	2.00	1.20	-	-	-	-	-	2.20	-	-	-	3.00	-	1.00

Semester: 3 Subject Name/Code: Digital System Design Lab (KEC352)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC352.1	Design and analyze combinational logic circuits.
KEC352.2	Design & analyze modular combinational circuits with MUX/DEMUX, decoder, encoder.
KEC352.3	Design & analyze synchronous sequential logic circuits.
KEC352.4	Design & build mini project using digital ICs.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC352.1	3	3	3	3	3	-	-	-	3	-	-	3	3	3	3
KEC352.2	3	3	3	3	3	-	-	-	3	-	-	3	3	3	3
KEC352.3	3	3	3	3	3	-	-	-	3	-	-	3	3	3	3
KEC352.4	3	3	3	3	3	-	-	-	3	-	-	3	3	3	3
Average	3.00	3.00	3.00	3.00	3.00	-	-	-	3.00	-	-	3.00	3.00	3.00	3.00





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Semester: 3 Subject Name/Code: Network Analysis and Synthesis Lab (KEC353)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC353.1	Understand basics of electrical circuits with nodal and mesh analysis.
KEC353.2	Appreciate electrical network theorems.
KEC353.3	Analyse RLC circuits.
KEC353.4	Determine the stability of an electrical circuit.
KEC353.5	Design network filters.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 353.1	3	1	1	2	-	3	1	1	3	1	-	3	2	1	2
KEC 353.2	3	1	1	2	-	3	1	1	-	1	-	3	2	1	2
KEC 353.3	3	1	1	2	-	3	-	-	3	1	-	3	2	1	2
KEC 353.4	3	1	1	2	-	-	-	-	3	-	-	3	2	1	2
KEC 353.5	3	1	1	2	-	3	1	1	3	-	-	3	2	1	2
Average	3.00	1.00	1.00	2.00	-	3.00	1.00	1.00	3.00	1.00	-	3.00	2.20	1.00	2.00



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Semester: 3 Subject Name/Code: Mini Project or Internship Assessment (KEC 354)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC 354.1	To apply the knowledge in real world problems.
KEC 354.2	To demonstrate good verbal and written communication skills
KEC 354.3	To deal with industry professionals and ethical issues in the work environment.
KEC 354.4	To lead the business and career paths in the company.
KEC 354.5	To write & Present mini project report on Proposed development

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 354.1	3	3	1	2	3	1	1	1	2	2	2	2	3	3	1
KEC 354.2	3	2	1	2	3	1	1	2	1	2	1	1	3	3	1
KEC 354.3	3	2	1	1	3	-	-	-	2	2	1	1	3	3	1
KEC 354.4	2	2	1	-	3	-	-	-	2	-	2	2	3	3	1
KEC 354.5	3	-	1	-	3	1	1	-	2	-	2	2	3	3	1
Average	2.80	2.25	1.00	1.67	3.00	1.00	1.00	1.50	1.80	2.00	1.60	1.40	3.00	3.00	1.00



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Semester: 3 Subject Name/Code: Computer System Security (KNC 301)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KNC 301.1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats.
KNC 301.2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats.
KNC 301.3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
KNC 301.4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios.
KNC 301.5	To articulate the well-known cyber-attack incidents, explain the attack scenarios, and explain mitigation techniques.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KNC 301.1	3	3	2	-	-	2	1	-	2	-	-	3	3	1	-
KNC 301.2	2	1	3	-	-	3	1	-		-	-	3	2	1	-
KNC 301.3	3	3	2	-	-	2	2	-	2	-	-	3	2	1	-
KNC 301.4	-	-	1	-	-	3	3	-	-	-	-	3	3	1	-
KNC 301.5	-	-	1	-	-	3	3	-	2	-	-	3	3	1	-
Average	2.67	2.33	1.80	-	-	2.60	2.00	-	2.00	-	-	3.00	2.60	1.00	-



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Semester: 4 Subject Name/Code: Maths-IV (KAS 402)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KAS 402.1	The idea of partial differentiation and types of partial differential equations.
KAS 402.2	The idea of classification of second partial differential equations, wave, heat equation and transmission lines.
KAS 402.3	The basic ideas of statistics including measures of central tendency, correlation, regression and their properties.
KAS 402.4	The idea s of probability and random variables and various discrete and continuous probability distributions and their properties.
KAS 402.5	The statistical methods of studying data samples, hypothesis testing and statistical quality control, control charts and their properties.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KAS 402.1	3	3	3	3	1	-	-	-	1	1	1	3	3	2	2
KAS 402.2	3	3	3	3	1	-	-	-	1	1	1	2	2	2	2
KAS 402.3	3	3	-	3	1	-	-	-	1	1	1	1	2	1	1
KAS 402.4	3	3	3	-	-	-	-	-	-	-	-	2	3	2	2
KAS 402.5	3	3	3	3	1	-	-	-	1	1	1	-	2	2	2
Average	3.00	3.00	3.00	3.00	1.00	-	-	-	1.00	1.00	1.00	2.00	3	2	2

Semester: 4 Subject Name/Code: Universal Human Values (KVE401)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KVE401.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
KVE401.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
KVE401.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
KVE401.4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
KVE401.5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KVE401.1	-	-	-	-	-	2	3	3	1	-	2	2	-	-	-
KVE401.2	-	-	-	-	-	2	-	3	2	-	1	2	-	-	-
KVE401.3	-	-	-	-	-	2	-	3	3	1	-	2	-	-	-
KVE401.4	-	-	-	-	-	1	3	3	1	1	-	2	-	-	-
KVE401.5	-	-	-	-	-	3	2	3	2	-	1	2	-	-	-
Average	-	-	-	-	-	2.00	2.66	3.00	1.80	1	1.33	2.00	-	-	-





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Semester: 4 Subject Name/Code: Communication Engineering (KEC401)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC401.1	Analyze and compare different analog modulation schemes for their efficiency and bandwidth.
KEC401.2	Analyze the behavior of a communication system in presence of noise.
KEC401.3	Investigate pulsed modulation system and analyze their system performance.
KEC401.4	Investigate various multiplexing techniques.
KEC401.5	Analyze different digital modulation schemes and compute the bit error performance.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 401.1	3	2	3	2	2	3	2	-	2	-	-	-	3	3	2
KEC 401.2	3	2	3	2	2	3	2	-	2	-	-	-	3	3	2
KEC 401.3	3	2	3	2	2	3	2	-	2	-	-	-	3	3	2
KEC 401.4	3	2	3	2	2	3	2	-	2	-	-	-	3	3	2
KEC 401.5	3	2	3	2	2	3	2	-	2	-	-	-	3	3	2
Average	3.00	2.00	3.00	2.00	2.00	3.00	2.00	-	2.00	-	-	-	3.00	3.00	2.00

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Semester: 4 Subject Name/Code: Analog Circuits (KEC402)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC402.1	Understand the characteristics of diodes and transistors.
KEC402.2	Design and analyze various rectifier and amplifier circuits.
KEC402.3	Design sinusoidal and non-sinusoidal oscillators.
KEC402.4	Understand the functioning of OP-AMP and design OP-AMP based circuits.
KEC402.5	Design LPF, HPF, BPF, BSF.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 402.1	3	2	2	-	-	-	-	-	-	-	-	2	3	-	2
KEC 402.2	3	3	2	-	-	-	-	-	-	-	-	2	3	-	2
KEC 402.3	3	3	2	-	-	-	-	-	-	-	-	2	3	-	2
KEC 402.4	3	3	2	-	-	-	-	-	-	-	-	2	3	-	2
KEC 402.5	3	3	1	-	-	-	-	-	-	-	-	2	3	-	2
Average	3.00	2.80	1.80	-	-	-	-	-	-	-	-	2.00	3.00	-	2.00

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Semester: 4 Subject Name/Code: Signal System (KEC403)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to:-
KEC403.1	Analyze different types of signals.
KEC403.2	Analyze linear shift-invariant (LSI) systems.
KEC403.3	Represent continuous and discrete systems in time and frequency domain using Fourier series and transform.
KEC403.4	Analyze discrete time signals in z-domain.
KEC403.5	Study sampling and reconstruction of a signal.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 403.1	3	2	3	1	-	-	-	-	-	-	-	1	3	2	3
KEC 403.2	3	3	2	1	-	-	-	-	-	-	-	1	3	2	3
KEC 403.3	3	3	3	3	-	-	-	-	-	-	-	1	2	1	1
KEC 403.4	2	2	3	2	-	-	-	-	-	-	-	1	3	2	3
KEC 403.5	3	2	-	3	-	1	-	-	-	-	-	1	3	2	3
Average	2.80	2.40	2.75	2.00	-	1.00	-	-	-	-	-	1.00	2.80	1.80	3.00



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Semester: 4 Subject Name/Code: Communication Engineering Lab (KEC451)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC451.1	Analyze and compare different analog modulation schemes for their modulation factor and power.
KEC451.2	Study pulse amplitude modulation.
KEC451.3	Analyze different digital modulation schemes and can compute the bit error performance.
KEC451.4	Study and simulate the Phase shift keying.
KEC451.5	Design a front end BPSK modulator and demodulator.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 451.1	3	3	2	1	2	-	-	-	-	-	-	-	3	2	1
KEC 451.2	3	2	1	1	1	-	-	-	-	-	-	-	3	2	1
KEC 451.3	3	3	1	1	1	-	-	-	-	-	-	-	3	2	1
KEC 451.4	3	2	1	1	2	-	-	-	-	-	-	-	3	2	1
KEC 451.5	3	2	1	1	-	-	-	-	-	-	-	-	3	2	1
Average	3.00	2.60	1.20	1.00	1.50	-	-	-	-	-	-	-	3.00	2.00	1.00



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Semester: 4 Subject Name/Code: Analog Circuit Lab (KEC452)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC452.1	Understand the characteristics of transistors.
KEC452.2	Design and analyze various configurations of amplifier circuits.
KEC452.3	Design sinusoidal and non-sinusoidal oscillators.
KEC452.4	Understand the functioning of OP-AMP and design OP-AMP based circuits.
KEC452.5	Design ADC and DAC.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 452.1	3	2	1	-	-	-	-	-	3	-	-	3	3	2	2
KEC 452.2	3	3	2	-	-	-	-	-	2	-	-	3	3	2	2
KEC 452.3	3	3	2	-	-	-	-	-	2	-	-	3	3	2	2
KEC 452.4	3	3	2	-	-	-	-	-	3	-	-	3	3	2	2
KEC 452.5	3	3	2	-	-	-	-	-	3	-	-	3	3	-	2
Average	3.00	2.80	1.80	-	-	-	-	-	2.60	-	-	3.00	3.00	2.00	2.00



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Semester: 4 Subject Name/Code: Signal System Lab (KEC453)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC453.1	Understand the basics operation of MATLAB.
KEC453.2	Analysis the time domain and frequency domain signals.
KEC453.3	Implement the concept of Fourier series and Fourier transforms.
KEC453.4	Find the stability of system using pole-zero diagrams and bode diagram.
KEC453.5	Design frequency response of the system.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 453.1	3	3	2	1	3	-	-	-	-	-	-	1	3	3	-
KEC 453.2	3	3	2	1	3	-	-	-	-	-	-	1	2	2	-
KEC 453.3	3	3	1	1	3	-	-	-	-	-	-	1	3	2	-
KEC 453.4	3	3	2	1	3	-	-	-	-	-	-	1	2	2	-
KEC 453.5	3	3	1	1	3	-	-	-	-	-	-	1	2	2	-
Average	3.00	3.00	1.60	1.00	3.00	-	-	-	-	-	-	1.00	2.40	2.20	-



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Semester: 4 Subject Name/Code: PYTHON PROGRAMMING (KEC453)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KNC 402.1	To read and write simple Python programs.
KNC 402.2	To develop Python programs with conditionals and loops.
KNC 402.3	To define Python functions and to use Python data structures — lists, tuples, dictionaries.
KNC 402.4	To do input/output with files in Python.
KNC 402.5	To do searching ,sorting and merging in Python.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KNC 402.1	2	2	2	2	1	-	-	-	-	-	-	-	2	2	-
KNC 402.2	2	3	3	3	1	-	-	-	-	-	-	-	2	3	-
KNC 402.3	2	2	2	2	1	-	-	-	-	-	-	-	2	2	-
KNC 402.4	2	3	3	2	1	-	-	-	-	-	-	-	2	2	-
KNC 402.5	2	3	3	3	1	-	-	-	-	-	-	-	2	3	-
Average	2.00	2.60	2.60	2.40	1.00	-	-	-	-	-	-	-	2.00	2.40	-

ELECTRONICS AND COMMUNICATION ENGINEERING

DR. A.P.J. ABDUL KALAM TECHNICAL
UNIVERSITY, UTTAR PRADESH, LUCKNOW



EVALUATION SCHEME & SYLLABUS

FOR

B. TECH. THIRD YEAR

ELECTRONICS ENGINEERING
ELECTRONICS AND COMMUNICATION ENGINEERING
ELECTRONICS AND TELECOMMUNICATION ENGINEERING

AS PER

AICTE MODEL CURRICULUM

[Effective from the Session: 2020-21]

ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. V Semester Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KEC-501	Integrated Circuits	3	1	0	30	20	50		100		150	4
2	KEC-502	Microprocessor & Microcontroller	3	1	0	30	20	50		100		150	4
3	KEC-503	Digital Signal Processing	3	1	0	30	20	50		100		150	4
4	KEC-051-054	Department Elective-I	3	0	0	30	20	50		100		150	3
5	KEC-055-058	Department Elective-II	3	0	0	30	20	50		100		150	3
6	KEC-551	Integrated Circuits Lab	0	0	2				25		25	50	1
7	KEC-552	Microprocessor & Microcontroller Lab	0	0	2				25		25	50	1
8	KEC-553	Digital Signal Processing Lab	0	0	2				25		25	50	1
9	KEC-554	Mini Project/Internship **	0	0	2				50			50	1
10	KNC501/KNC502	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
11		MOOCs (Essential for Hons. Degree)											
		Total										950	22

**The Mini Project or Internship (4weeks) conducted during summer break after IV Semester and will be assessed during Vth Semester.

Course Code	Course Title
	Department Elective-I
KEC-051	Computer Architecture and Organization
KEC-052	Industrial Electronics
KEC-053	VLSI Technology
KEC-054	Advance Digital Design using Verilog
	Department Elective-II
KEC-055	Electronics Switching
KEC-056	Advance Semiconductor Device
KEC-057	Electronics Measurement & Instrumentation
KEC-058	Optical Communication

ELECTRONICS AND COMMUNICATION ENGINEERING

B.Tech. VI Semester Electronics and Communication Engineering

S. No.	Course Code	Course Title	Periods			Evaluation Scheme				End Semester		Total	Credits
			L	T	P	CT	TA	Total	PS	TE	PE		
1	KEC-601	Digital Communication	3	1	0	30	20	50		100		150	4
2	KEC-602	Control System	3	1	0	30	20	50		100		150	4
3	KEC-603	Antenna and Wave Propagation	3	1	0	30	20	50		100		150	4
4		Department Elective-III	3	0	0	30	20	50		100		150	3
5		Open Elective-I	3	0	0	30	20	50		100		150	3
6	KEC-651	Digital Communication Lab	0	0	2				25		25	50	1
7	KEC-652	Control System Lab	0	0	2				25		25	50	1
8	KEC-653	Elective Lab	0	0	2				25		25	50	1
9	KNC601/ KNC602	Constitution of India, Law and Engineering / Indian Tradition, Culture and Society	2	0	0	15	10	25		50			NC
10		MOOCs (Essential for Hons. Degree)											
		Total										900	21

Course Code

Course Title

Department Elective-III

KEC-061	Microcontroller & Embedded System Design
KEC-062	Satellite Communication
KEC-063	Data Communication Networks
KEC-064	Analog Signal Processing
KEC-065	Random Variables & Stochastic Process

Course Code

Elective Lab

KEC-653A	Measurement & Instrumentation Lab
KEC-653B	Cad for Electronics Lab
KEC-653C	Microcontroller & Embedded System Design Lab



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Semester: 5 Subject Name/Code: Integrated Circuits (KEC-501)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-501.1	Explain complete internal analysis of Op-Amp 741-IC.
KEC-501.2	Examine and design Op-Amp based circuits and basic components of ICs such as various types of filters.
KEC-501.3	Implement the concept of Op-Amp to design Op-Amp based non-linear applications and wave-shaping circuits.
KEC-501.4	Analyse and design basic digital IC circuits using CMOS technology.
KEC-501.5	Describe the functioning of application specific ICs such as 555 timer, VCO IC 566 and PLL.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC501.1	3	2	2	2	-	-	-	-	-	-	-	2	3	3	3
KEC501.2	3	3	3	2	-	-	-	-	-	-	-	3	3	3	3
KEC501.3	3	3	3	2	-	-	-	-	-	-	-	2	3	3	3
KEC501.4	3	3	3	2	-	-	-	-	-	-	-	2	3	3	3
KEC501.5	3	3	3	2	-	2	-	-	-	-	-	2	3	3	3
Average	3.00	2.80	2.80	2.00	-	2.00	-	-	-	-	-	2.20	3.00	3.00	3.00



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Semester: 5 Subject Name/Code: Microprocessor & Microcontroller (KEC-502)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-502.1	Demonstrate the basic architecture of 8085.
KEC-502.2	Illustrate the programming model of microprocessors & write program using 8085 microprocessors.
KEC-502.3	Demonstrate the basics of 8086 Microprocessor and interface different external Peripheral Devices like timer, USART etc. with Microprocessor (8085/8086).
KEC-502.4	Compare Microprocessors & Microcontrollers, and comprehend the architecture of 8051 microcontroller.
KEC-502.5	Illustrate the programming model of 8051 and implement them to design projects on real time problems.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 502.1	3	3	3	-	-	-	-	-	-	-	2	3	2	-	2
KEC 502.2	3	3	3	-	-	-	-	-	-	-	-	3	2	-	2
KEC 502.3	3	3	3	-	-	-	-	-	-	-	1	3	2	-	2
KEC 502.4	3	2	3	-	-	-	-	-	-	-	1	3	2	-	2
KEC 502.5	3	1.5	3	-	-	-	-	-	-	-	1	3	2	-	2
Average	3.00	2.50	3.00								1.25	3.00	2.00	-	2.00

Semester: 5 Subject Name/Code: DIGITAL SIGNAL PROCESSING (KEC-503)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-503.1	Design and describe different types of realizations of digital systems (IIR and FIR) and their utilities.
KEC-503.2	Select design parameters of analog IIR digital filters (Butterworth and Chebyshev filters) and implement various methods such as impulse invariant transformation and bilinear transformation of conversion of analog to digital filters.
KEC-503.3	Design FIR filter using various types of window functions.
KEC-503.4	Define the principle of discrete Fourier transform & its various properties and concept of circular and linear convolution. Also, students will be able to define and implement FFT i.e. a fast computation method of DFT.
KEC-503.5	Define the concept of decimation and interpolation. Also, they will be able to implement it in various practical applications.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC503.1	3	2	2	-	-	-	-	-	-	-	-	1	3	2	1
KEC503.2	3	3	2	-	-	-	-	-	-	-	2	2	3	3	1
KEC503.3	3	3	2	-	-	-	-	-	-	-	2	2	3	3	1
KEC503.4	3	2	2	-	-	-	-	-	-	-	-	1	3	3	1
KEC503.5	2	1	1	-	-	-	-	-	-	-	1	2	3	2	-
Average	2.80	2.20	1.80	-	-	-	-	-	-	-	1.66	1.60	3.00	2.60	1.00





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Semester: 5 Subject Name/Code: VLSI TECHNOLOGY (KEC-053)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-053.1	Interpret the basics of crystal growth, wafer preparation and wafer cleaning.
KEC-053.2	Evaluate the process of Epitaxy and oxidation.
KEC-053.3	Differentiate the lithography, etching and deposition process.
KEC-053.4	Analyze the process of diffusion and ion implantation.
KEC-053.5	Express the basic process involved in metallization and packaging.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC053.1	3	-	-	2	-	-	-	-	2	-	-	3	3	2	1
KEC053.2	3	2	-	2	-	-	-	-	2	-	-	2	3	2	1
KEC053.3	3	2	2	2	-	-	-	-	2	-	-	3	3	2	1
KEC053.4	3	2	2	2	-	-	-	-	2	-	-	3	3	2	1
KEC053.5	3	2	1	1	-	-	-	-	2	-	-	3	3	2	1
Average	3.00	2.00	1.67	1.80	-	-	-	-	2.00	-	-	2.60	3.00	2.00	1.00



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Semester: 5 Subject Name/Code: OPTICAL COMMUNICATION (KEC-058)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-058.1	Define and explain the basic concepts and theory of optical communication.
KEC-058.2	Describe the signal losses with their computation and dispersion mechanism occurring inside the optical fiber cable.
KEC-058.3	Differentiate the optical sources used in optical communication with their comparative study.
KEC-058.4	Identify different optical components on receiver side; assemble them to solve real world problems related to optical communication systems.
KEC-058.5	Evaluate the performance of an optical receiver to get idea about power budget and ultimately be an engineer with adequate knowledge in optical domain.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC058.1	3	2	1	-	-	-	-	-	-	-	-	2	3	3	2
KEC058.2	3	3	2	-	-	-	-	-	-	-	-	2	3	3	2
KEC058.3	3	2	1	-	-	-	-	-	-	-	-	2	3	3	2
KEC058.4	3	2	-	-	-	-	-	-	-	-	-	2	3	3	2
KEC058.5	3	2	1	-	-	-	-	-	-	-	-	2	3	3	2
Average	3.00	2.20	1.25	-	-	-	-	-	-	-	-	2.00	3.00	3.00	2.00

Semester: 5 Subject Name/Code: INTEGRATED CIRCUITS LAB (KEC-551)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-551.1	Design different non-linear applications of operational amplifiers such as log, antilog amplifiers and voltage comparators.
KEC-551.2	Explain and design different linear applications of operational amplifiers such as filters.
KEC-551.3	Demonstrate the function of waveforms generator using op-Amp.
KEC-551.4	Construct multivibrator and oscillator circuits using IC555 and IC566 and perform measurements of frequency and time.
KEC-551.5	Design and practically demonstrate the applications based on IC555 and IC566.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC-551.1	3	2	2	2	3	-	-	-	-	-	-	3	-	2	-
KEC-551.2	3	3	3	2	3	-	-	-	-	-	-	2	-	2	-
KEC-551.3	3	3	3	2	3	-	-	-	-	-	-	2	-	2	-
KEC-551.4	3	3	3	2	3	-	-	-	-	-	-	2	-	2	-
KEC-551.5	3	3	3	2	3	2	-	-	-	-	-	2	-	2	-
Average	3.00	2.80	2.80	2.00	3.00	2.00	-	-	-	-	-	2.20	-	2.00	-



Semester: 5 Subject Name/Code: MICROPROCESSOR & MICROCONTROLLER LAB (KEC-552)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-552.1	Use techniques, skills, modern engineering tools, instrumentation and software/hardware appropriately to list and demonstrate arithmetic and logical operations on 8 bit data using microprocessor 8085.
KEC-552.2	Examine 8085 & 8086 microprocessor and its interfacing with peripheral devices.
KEC-552.3	State various conversion techniques using 8085 & 8086 and generate waveforms using 8085.
KEC-552.4	Implement programming concept of 8051 Microcontroller.
KEC-552.5	Design concepts to Interface peripheral devices with Microcontroller so as to design Microcontroller based projects.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC552.1	3	2	2	-	-	-	-	-	-	-	-	1	2	2	-
KEC552.2	3	3	3	-	-	-	-	-	-	-	-	1	2	2	-
KEC552.3	3	3	3	-	-	-	-	-	-	-	-	1	2	2	-
KEC552.4	3	2	2	-	-	-	-	-	-	-	-	1	2	2	-
KEC552.5	3	2	2	-	-	-	-	-	-	-	-	1	1	1	-
Average	3.00	1.40	1.40	-	-	-	-	-	-	-	-	1.00	1.80	1.80	-





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Semester: 5 Subject Name/Code: Digital Signal Processing Lab (KEC-553)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-553.1	Create and visualize various discrete/digital signals using MATLAB/Scilab.
KEC-553.2	Implement and test the basic operations of Signal processing.
KEC-553.3	Examine and analyse the spectral parameters of window functions.
KEC-553.4	Design IIR and FIR filters for band pass, band stop, low pass and high pass filters.
KEC-553.5	Design the signal processing algorithms using MATLAB/Scilab.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC553.1	3	1	2	-	3	-	-	-	-	-	-	2	3	2	2
KEC553.2	3	2	2	-	3	-	-	-	-	-	-	2	3	2	2
KEC553.3	3	2	2	-	3	-	-	-	-	-	-	2	3	2	2
KEC553.4	3	2	2	-	3	-	-	-	-	-	-	2	3	2	2
KEC553.5	3	3	2	-	3	-	-	-	-	-	-	2	3	2	2
Average	3.00	2.00	2.00	-	3.00	-	-	-	-	-	-	2.00	3.00	2.00	2.00



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Semester: 5 Subject Name/Code: Mini Project or Internship Assessment (KEC554)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC 554.1	To apply the knowledge in real world problems.
KEC 554.2	To demonstrate good verbal and written communication skills
KEC 554.3	To deal with industry professionals and ethical issues in the work environment.
KEC 554.4	To lead the business and career paths in the company.
KEC 554.5	To write & Present mini project report on Proposed development

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 554.1	3	3	3	2	3	3	1	2	3	2	2	3	3	3	2
KEC 554.2	3	2	2	2	3	2	1	2	3	2	1	3	3	3	2
KEC 554.3	3	2	2	2	3	2	-	-	3	2	1	3	2	3	2
KEC 554.4	2	2	2	2	3	2	-	-	-	-	-	3	2	2	2
KEC 554.5	-	3	3	1	3	2	1	-	-	2	-	3	-	-	2
Average	2.75	2.40	2.40	1.80	3.00	2.20	1.00	2.00	3.00	2.00	1.30	3.00	1.50	2.75	2.00

Semester: 6 Subject Name/Code: Constitution of India, Law and Engineering (KNC501)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KNC501.1	Identify and explore the basic features and modalities about Indian constitution.
KNC501.2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
KNC501.3	Differentiate different aspects of Indian Legal System and its related bodies.
KNC501.4	Discover and apply different laws and regulations related to engineering practices.
KNC501.5	Correlate role of engineers with different organizations and governance models.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KNC501.1	-	-	-	-	-	2	2	3	2	-	2	2	2	2	3
KNC501.2	-	-	-	-	-	2	-	3	2	-	1	2	2	2	3
KNC501.3	-	-	-	-	-	2	2	3	2	-	1	2	2	2	3
KNC501.4	-	-	-	-	-	2	1	3	2	1	-	2	2	2	3
KNC501.5	-	-	-	-	-	2	-	3	1	1	-	2	1	1	3
Average	-	-	-	-	-	2.00	2.66	3.00	1.80	1	1.33	2.00	1.80	1.80	3.00





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Semester: 6 Subject Name/Code: DIGITAL COMMUNICATION (KEC-601)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-601.1	To formulate basic statistics involved in communication theory.
KEC-601.2	To demonstrate the concepts involved in digital communication.
KEC-601.3	To explain the concepts of digital modulation schemes.
KEC-601.4	To analyze the performance of digital communication systems.
KEC-601.5	To apply the concept of information theory in digital systems.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 601.1	3	3	1	2	3	3	-	1	3	1	-	2	2	3	-
KEC 601.2	3	3	1	3	3	1	-	-	1	1	-	2	2	3	-
KEC 601.3	3	3	1	1	-	2	2	1	2	1	1	2	2	3	-
KEC 601.4	3	3	1	2	-	2	2	-	2	1	-	2	2	3	-
KEC 601.5	3	3	1	2	3	2	2	1	2	1	1	2	2	3	-
Average	3.00	3.00	1.00	2.00	3.00	2.00	2.00	1.00	2.00	1.00	1.00	2.00	2.00	3.00	-



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Semester: 6 Subject Name/Code: Control System (KEC-602)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-602.1	Describe the basics of control systems along with different types of feedback and its effect. Additionally, they will also be able to explain the techniques such as block diagrams reduction, signal flow graph and modelling of various physical systems along with modelling of DC servomotor.
KEC-602.2	Explain the concept of state variables for the representation of LTI system.
KEC-602.3	Interpret the time domain response analysis for various types of inputs along with the time domain specifications.
KEC-602.4	Distinguish the concepts of absolute and relative stability for continuous data systems along with different methods.
KEC-602.5	Interpret the concept of frequency domain response analysis and their specifications.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 602.1	3	2	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 602.2	3	3	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 602.3	3	3	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 602.4	3	2	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 602.5	3	2	2	-	-	-	-	-	-	-	-	1	3	2	2
Average	3.00	2.40	2.00	-	-	-	-	-	-	-	-	1.00	3.00	2.00	2.00



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Semester: 6 Subject Name/Code: Antenna & Wave Propagation (KEC-603)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-603.1	Identify different coordinate systems and their applications in electromagnetic field theory to establish a relation between any two systems using the vector calculus.
KEC-603.2	Explain the concept of static electric field, current and properties of conductors.
KEC-603.3	Express the basic concepts of ground, space, sky wave propagation mechanism.
KEC-603.4	Demonstrate the knowledge of antenna fundamentals and radiation mechanism of the antenna.
KEC-603.5	Analyze and design different types of basic antennas.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 603.1	3	2	1	-	-	-	-	-	-	-	-	1	3	2	2
KEC 603.2	3	1	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 603.3	3	1	1	-	-	-	-	-	-	-	-	1	3	2	2
KEC 603.4	3	2	2	-	-	-	-	-	-	-	-	1	3	2	2
KEC 603.5	3	1	1	-	-	-	-	-	-	-	-	1	3	2	2
Average	3.00	1.40	1.40	-	-	-	-	-	-	-	-	1.00	3.00	2.00	2.00



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Semester: 6 Subject Name/Code: MICROCONTROLLER & EMBEDDED SYSTEMS DESIGN (KEC-061)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-061.1	Explain the advance concept of 8051 architectures and AVR family architecture and compare them for different applications.
KEC-061.2	To demonstrate the basics of MSP430x5x Microcontroller.
KEC-061.3	To execute the I/O interfacing and peripheral devices associated with Microcontroller SoC (system on chip).
KEC-061.4	Explain the advance concept Arm Cortex-M4 Processor Architecture.
KEC-061.5	Demonstrate the ability to do Demonstrate the basics of Embedded Systems, IoT and its application and design IoT based projects on Arm based development boards.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 061.1	3	3	3	3	2	3	-	-	3	-	-	3	2	3	3
KEC 061.2	3	3	3	3	2	2	-	-	2	-	-	3	2	3	3
KEC 061.3	3	3	3	3	2	2	-	-	2	-	-	3	2	3	3
KEC 061.4	3	3	3	3	2	3	-	-	3	-	-	2	2	3	3
KEC 061.5	3	3	3	3	2	-	-	-	-	-	-	2	2	3	3
Average	3.00	3.00	3.00	3.00	2.00	2.50	-	-	2.50	-	-	2.60	2.00	3.00	3.00

Semester: 6 Subject Name/Code: BASICS OF DATABASE MANAGEMENT SYSTEM (KOE-067)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KOE-067.1	Describe the features of a database system and its application and compare various types of data models.
KOE-067.2	Construct an ER Model for a given problem and transform it into a relation database schema.
KOE-067.3	Formulate solution to a query problem using SQL Commands, relational algebra, tuple calculus and domain calculus.
KOE-067.4	Explain the need of normalization and normalize a given relation to the desired normal form.
KOE-067.5	Explain different approaches of transaction processing and concurrency control.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 067.1	3	3	2	3	2	1	1	1	2	2	2	1	2	3	3
KEC 067.2	3	3	3	2	2	2	1	1	2	1	1	1	2	-	-
KEC 067.3	3	3	3	3	2	1	1	1	2	2	1	1	2	2	2
KEC 067.4	3	3	2	3	2	1	1	-	2	2	1	1	2	2	2
KEC 067.5	3	3	3	2	2	1	1	1	2	2	1	1	1	3	3
Average	3.00	3.00	2.60	2.60	2.00	1.20	1.00	1	2.00	1.80	1.20	1.00	2.20	2.50	2.50





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Semester: 6 Subject Name/Code: DIGITAL COMMUNICATION LAB (KEC-651)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-651.1	To formulate basic concepts of pulse shaping in digital communication.
KEC-651.2	To identify different line coding techniques and demonstrate the concepts.
KEC-651.3	To design equipment's related to digital modulation and demodulation schemes.
KEC-651.4	To analyze the performance of various digital communication systems and evaluate the key parameters.
KEC-651.5	To conceptualize error detection & correction using different coding schemes in digital communication.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 651.1	3	3	2	-	3	-	-	-	-	-	-	1	-	-	-
KEC 651.2	3	3	2	-	2	-	-	-	-	-	-	1	-	-	-
KEC 651.3	3	3	2	-	3	-	-	-	-	-	-	1	-	-	-
KEC 651.4	3	3	2	-	-	-	-	-	-	-	-	1	-	-	-
KEC 651.5	3	3	2	-	-	-	-	-	-	-	-	1	-	-	-
Average	3.00	3.00	2.00	-	2.70	-	-	-	-	-	-	1.00	-	-	-



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Semester: 6 Subject Name/Code: CONTROL SYSTEM LAB (KEC-652)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-652.1	Classify different tools in MATLAB along with the basic matrix operations used in MATLAB.
KEC-652.2	Evaluate the poles and zeros on s-plane along with transfer function of a given system.
KEC-652.3	Construct state space model of a linear continuous system.
KEC-652.4	Evaluate the various specifications of time domain response of a given system.
KEC-652.5	Appraise the steady state error of a given transfer function.
KEC-652.6	Examine the relative stability of a given transfer function using various methods such as root locus, Bode plot and Nyquist plot.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC 652.1	3	3	2	-	3	-	-	-	-	-	-	1	3	3	-
KEC 652.2	3	3	2	-	3	-	-	-	-	-	-	1	3	3	-
KEC 652.3	3	3	2	-	3	-	-	-	-	-	-	1	3	2	-
KEC 652.4	3	3	2	-	3	-	-	-	-	-	-	1	3	2	-
KEC 652.5	3	3	2	-	3	-	-	-	-	-	-	1	3	3	-
KEC-652.6	3	3	2	-	3	-	-	-	-	-	-	1	3	3	-
Average	3.00	3.00	2.00	-	3.00	-	-	-	-	-	-	1.00	3.00	2.40	-

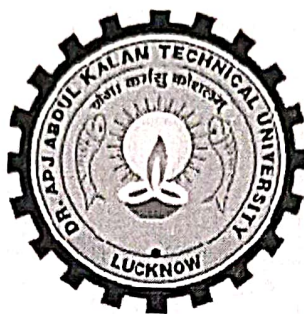
Semester: 6 Subject Name/Code: CAD FOR ELECTRONICS LAB (KEC-653B)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
KEC-653B.1	Design and analyze the performance of different type of inverters.
KEC-653B.2	Design and analyze the performance of the basic logic gates using CMOS inverter circuit.
KEC-653B.3	Design and analyze the performance of the memory based digital circuits using CMOS inverter circuit.
KEC-653B.4	Analyze the performance of the different configuration of MOS amplifier circuits.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
KEC-653B.1	3	3	3	2	3	3	-	3	3	-	-	3	3	2	-
KEC-653B.2	3	2	2	2	2	3	-	3	3	-	-	3	3	2	-
KEC-653B.3	3	2	2	2	3	3	-	3	3	-	-	2	3	2	-
KEC-653B.4	3	-	-	2	-	3	-	3	3	-	-	2	3	2	-
Average	3.00	2.30	2.30	2.00	2.7	3.00	-	3.00	3.00	-	-	2.60	3.00	2.00	-



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EVALUATION SCHEME & SYLLABUS

FOR

B. TECH. FINAL YEAR

**ELECTRONICS ENGINEERING/ ELECTRONICS &
COMMUNICATION ENGINEERING/ ELECTRONICS &
TELECOMMUNICATION ENGINEERING**

ON

CHOICE BASED CREDIT SYSTEM (CBCS)

[Effective from the Session: 2019-20]

EVALUATION SCHEME

B.TECH. ELECTRONICS ENGINEERING, ELECTRONICS & COMMUNICATION ENGINEERING, ELECTRONICS & TELECOMMUNICATION ENGINEERING

YEAR 4th/ SEMESTER VII

Sr. No.	Sub Code	Subject Name	Dept.	L-T-P	Th/Lab Marks	Sessional		Subject Total	Credit
					ESE	CT	TA		
1		Open Elective-I**	Other Dept.	3-0-0	70	20	10	100	3
2		Departmental Elective-III	Core Deptt.	3-0-0	70	20	10	100	3
3		Departmental Elective-IV	Core Deptt.	3-1-0	70	20	10	100	4
4	REC701	Data Communication Networks	Core Deptt.	3-1-0	70	20	10	100	4
5	REC702	VLSI Design	Core Deptt.	3-0-0	70	20	10	100	3
6	REC751	Optical Communication Lab	Core Deptt.	0-0-2	50	-	50	100	1
7	REC752	Electronics Circuit Design Lab	Core Deptt.	0-0-2	50	-	50	100	1
8	REC753	Industrial Training Viva-Voce	Core Deptt.	0-0-3	-	-	100	100	2
9	REC754	Project I	Core Deptt.	0-0-6	-	-	200	200	3
	TOTAL				450	100	450	1000	24

LIST OF DEPTT. ELECTIVES:

Elective – III REC 07* Departmental Elective III

1. REC070 Optical Network
2. REC071 Information Theory & Coding
3. REC072 Digital Image Processing
4. REC073 Advance Programming in Engineering

Elective – IV REC 07* Departmental Elective IV

1. REC075 Optical Communication
2. REC076 Filter Design
3. REC077 Applied Fuzzy Electronic Systems
4. REC078 Computerized Process Control

EVALUATION SCHEME

B.Tech. Electronics Engineering, Electronics & Communication Engineering, Electronics & Telecommunication Engineering

YEAR 4th/ SEMESTER VIII

Sr. No	Sub Code	Subject Name	Dept.	L-T-P	Th/LAB Marks	Sessional		Subject Total	Credit
					ESE	CT	TA		
1		Open Elective-II**	Other Dept.	3-0-0	70	20	10	100	3
2		Departmental Elective-V	Core Deptt.	3-1-0	70	20	10	100	4
3		Departmental Elective-VI	Core Deptt.	3-0-0	70	20	10	100	3
4	REC851	Seminar	Core Deptt.	0-0-3			100	100	2
5	REC852	Project II	Core Deptt.	0-0-12	350	-	250	600	12
	TOTAL				560	60	380	1000	24

LIST OF DEPTT. ELECTIVES:

Elective – IV REC 08* Departmental Elective V

1. REC080 Electronic Switching
2. REC081 Analytical Instrumentation
3. REC082 Advanced Display Technologies & Systems
4. REC083 Satellite & RADAR systems

Elective – VI REC 08* Departmental Elective VI

1. REC085 Wireless & Mobile Communication)
2. REC086 Voice Over IP
3. REC087 Speech Processing
4. REC088 Micro and Smart Systems

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EVALUATION SCHEME & SYLLABUS

FOR

**REVISED OPEN ELECTIVES I
(VII SEMESTER)**

[Effective from the Session: 2020-21]

**B.TECH.
VII SEMESTER 2020-21**

REVISED OPEN ELECTIVE-I

1.	ROE070	HUMAN VALUES IN SANKHAY YOGA AND VEDANTA DARSAN
2.	ROE071	MODELLING AND SIMULATION OF DYNAMIC SYSTEMS
3.	ROE072	INTRODUCTION TO SMART GRID
4.	ROE073	CLOUD COMPUTING
5.	ROE074	UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY - HUMAN ASPIRATIONS AND ITS FULFILLMENT
6.	ROE075	AUTOMATION AND ROBOTICS
7.	ROE076	COMPUTERIZED PROCESS CONTROL
8.	ROE077	MODELING OF FIELD-EFFECT NANO DEVICES
9.	ROE078	QUALITY MANAGEMENT
10.	ROE079	GIS & REMOTE SENSING
11.	ROE080	HUMAN VALUES IN BUDDHA AND JAIN DARSHAN

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Open Electives II
For
VIII Semester
Bachelor of Technology
(Choice Based Credit System)

2020-21

Open Electives II (VIII Semester)		
Sl. No.	Subject Code	Name of Elective(s)
1	ROE081	Digital and Social Media Marketing
2	ROE082	Entrepreneurship Development
3	ROE083	Machine Learning
4	ROE084	Micro and Smart Systems
5	ROE085	Operations Research
6	ROE086	Renewable Energy Resources
7	ROE087	*Human Values in Madhyasth Darshan
8	ROE088	*Values, Relationship & Ethical Human Conduct-For a Happy & Harmonious Society
9	ROE089	Industrial Optimization Techniques

Note:

1. The Student shall choose an open Elective from the list in such a manner that he/she has not studied the same course in any form during the degree programme.
2. * It is mandatory that for these two subjects (ROE087 & ROE088) only trained Faculty (who had done the FDP for these courses) will teach the courses.

Semester: 7 Subject Name/Code: UNDERSTANDING THE HUMAN BEING COMPREHENSIVELY - HUMAN ASPIRATIONS AND ITS FULFILLMENT (ROE074)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ROE074.1	The methodology of this course is explorational and thus universally adaptable. It involves a systematic and rational study of the human being vis-à-vis the rest of existence.
ROE074.2	It is free from any dogma or set of do's and don'ts related to values.
ROE074.3	It is a process of self-investigation and self-exploration, and not of giving sermons. Whatever is found as truth or reality is stated as a proposal and the students are facilitated and encouraged to verify it in their own right, based on their Natural Acceptance and subsequent Experiential Validation.
ROE074.4	This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with, and then to continue within the student leading to continuous self-evolution.
ROE074.5	This self-exploration also enables them to critically evaluate their pre-conditionings and present beliefs.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ROE-074.1	-	-	-	-	-	2	3	3	3	-	-	2	-	2	-
ROE-074.2	-	-	-	-	-	1	3	3	3	-	-	-	-	2	-
ROE-074.3	-	-	-	-	-	-	-	-	2	-	-	2	-	2	-
ROE-074.4	-	-	-	-	-	-	-	3	2	-	-	2	-	2	-
ROE-074.5	-	-	-	-	-	1	3	-	3	-	-	-	-	-	-
Average	-	-	-	-	-	2.30	3.00	3.00	2.60	-	-	2.00	-	2.00	-



Semester: 7 Subject Name/Code: Optical Network (REC070)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC070.1	Familiarize with multiplexing techniques, second generation optical networks, The optical layer, optical packet switching.
REC070.2	Understand the concept of Principles of operation, Conservation of energy, Isolators and circulators: Principles of operation.
REC070.3	Understand the basics of Multiplexing, SONET/SDH layers, SONET Frame structure, SONET/SDH physical layer, Elements of a SONET/SDH infrastructure.
REC070.4	To gain knowledge of Routing and wavelength assignment problems, Dimensioning Wavelength Routing Networks, Network Survivability.
REC070.5	To gain knowledge of working of OTDM, Synchronization, Header Processing, Buffering, Burst Switching, Deployment Considerations-SONET/SDH core Network.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-070.1	3	3	3	-	-	1	-	-	-	1	-	3	2	2	1
REC-070.2	2	3	2	-	-	1	-	-	-	1	-	3	2	3	1
REC-070.3	3	2	-	-	-	1	-	-	-	1	-	3	2	3	1
REC-070.4	2	2	2	-	-	1	-	-	-	1	-	2	2	2	1
REC-070.5	3	-	-	-	-	1	-	-	-	1	-	3	2	2	1
Average	2.60	2.50	2.30	-	-	1.00	-	-	-	1.00	-	2.80	2.00	2.40	1.00



Semester: 7 Subject Name/Code: Optical Communication(REC075)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-075.1	Familiarize with basic concepts and theory of Optical Communication.
REC-075.2	Demonstrate OPCOMM components, assemble them and solve problems on Optical Communication system.
REC-075.3	Able to design, implements, analyse and maintains optical communication system.
REC-075.4	Gain knowledge of different source of light as well as receiver and their comparative study.
REC-075.5	To get idea about power budget and ultimately be an engineer with adequate knowledge in optical domain.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-075.1	3	3	3	-	-	-	-	-	-	-	3	3	3	2	2
REC-075.2	2	3	2	1	-	-	-	-	-	-	2	3	3	3	2
REC-075.3	3	2	2	-	-	-	-	-	-	-	2	2	-	3	-
REC-075.4	3	2	3	-	-	-	-	-	-	-	3	2	3	2	2
REC-075.5	3	2	-	1	-	-	-	-	-	-	-	2	-	2	1
Average	2.80	2.40	1.50	1.00	-	-	-	-	-	-	1.50	2.40	3.00	2.40	1.75





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Semester: 7 Subject Name/Code: Optical Communication(REC075)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-075.1	Familiarize with basic concepts and theory of Optical Communication.
REC-075.2	Demonstrate OPCOMM components, assemble them and solve problems on Optical Communication system.
REC-075.3	Able to design, implements, analyse and maintains optical communication system.
REC-075.4	Gain knowledge of different source of light as well as receiver and their comparative study.
REC-075.5	To get idea about power budget and ultimately be an engineer with adequate knowledge in optical domain.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-075.1	3	3	3	-	-	-	-	-	-	-	3	3	3	2	2
REC-075.2	2	3	2	1	-	-	-	-	-	-	2	3	3	3	2
REC-075.3	3	2	2	-	-	-	-	-	-	-	2	2	-	3	-
REC-075.4	3	2	3	-	-	-	-	-	-	-	3	2	3	2	2
REC-075.5	3	2	-	1	-	-	-	-	-	-	-	2	-	2	1
Average	2.80	2.40	1.50	1.00	-	-	-	-	-	-	1.50	2.40	3.00	2.40	1.75



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Semester: 7 Subject Name/Code: DATA COMMUNICATION NETWORKS (REC701)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC701.1	Identify the issues and challenges in the architecture of a network.
REC701.2	Understand the ISO/OSI seven layers in a network.
REC701.3	Realize protocols at different layers of a network hierarchy.
REC701.4	Recognize security issues in a network.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-701.1	2	2	2	-	-	-	-	-	-	-	-	2	1	2	-
REC-701.2	2	1	-	-	-	-	-	-	-	-	-	-	2	2	-
REC-701.3	2	2	2	-	-	-	-	-	-	-	-	2	1	1	-
REC-701.4	2	2	2	-	-	-	-	-	-	-	-	2	1	1	-
Average	2.00	1.75	2.00	-	-	-	-	-	-	-	-	2.00	1.25	1.5	-



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Semester: 7 Subject Name/Code: VLSI DESIGN (REC702)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC702.1	Model the behaviour of a MOS Transistor.
REC702.2	Design combinational and sequential circuits using CMOS gates.
REC702.3	Identify the sources of power dissipation in a CMOS circuit.
REC702.4	Analyse SRAM cell and memory arrays.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-702.1	2	2	2	-	-	2	-	-	-	-	-	2	2	2	1
REC-702.2	1	2	2	-	-	2	-	-	-	-	-	2	2	2	1
REC-702.3	2	2	2	-	-	2	-	-	-	-	-	2	2	2	-
REC-702.4	2	2	2	-	-	2	-	-	-	-	-	2	2	2	-
Average	1.75	2.00	2.00	-	-	2.00	-	-	-	-	-	2.00	2.00	2.00	1.00

Semester: 7 Subject Name/Code: Optical Communication Lab (REC-751)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-751.1	Demonstration of working and characteristics of Optical Fiber Communication.
REC-751.2	Construction of a fiber optic link, and calculation of the losses and Numerical aperture of a fiber
REC-751.3	Analyzing of TDM and Manchester Coding.
REC-751.4	Measurement of characteristics of fiber optic LED's and photodetector
REC-751.5	Familiarization of networking and different types of cables and different commands used for data networks.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-751.1	2	2	2	1	1	1	1	1	-	1	-	1	1	2	1
REC-751.2	3	3	1	1	1	1	2	1	-	1	-	1	2	1	1
REC-751.3	3	2	1	1	1	1	1	1	-	1	-	1	2	1	1
REC-751.4	2	2	2	1	1	1	1	1	-	1	-	1	2	1	1
REC-751.5	3	2	2	2	1	1	1	1	-	1	-	1	2	1	1
Average	2.60	2.20	1.60	1.20	1.00	1.00	1.20	1.00	-	1.00	-	1.00	1.80	1.20	1.00





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Semester: 7 Subject Name/Code: ELECTRONICS CIRCUIT DESIGN LAB (REC752)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-752.1	Understand Universal op-amp based biquad.
REC-752.2	Identify amplitude control or stabilization applied to any sinusoidal oscillators and Op-amp/ OTA based function generator.
REC-752.3	Design log/antilog circuits and identify applications of analog multiplier/divider.
REC-752.4	Understand digital system design and its hardware implementation using TTL/ CMOS ICs and any circuit idea (not studied in the course) using 555 Timer in conjunction with any other ICs.
REC-752.5	Design the circuit, Make hardware and measure various parameters and Simulation in Spice of the designed circuit.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-752.1	3	2	1	-	1	-	-	-	1	-	-	2	2	1	1
REC-752.2	3	-	1	-	1	-	-	-	1	-	-	2	2	1	1
REC-752.3	3	2	1	-	1	-	-	-	1	-	-	2	2	1	1
REC-752.4	-	2	-	-	1	-	-	-	1	-	-	-	2	1	1
REC-752.5	3	2	-	-	1	-	-	-	1	-	-	2	2	1	1
Average	3.00	2.00	1.00	-	1.00	-	-	-	1.00	-	-	2.00	2.00	1.00	1.00



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Semester: 7 Subject Name/Code: Industrial Training Viva-Voce (REC-753)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-753.1	Understand the organogram of the industry and appreciate the skill enhancement
REC-753.2	Write effective training report
REC-753.3	Deliver an effective presentation
REC-753.4	Prepare well organized training diary

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-753.1	3	2	1	2	3	2	1	3	3	3	2	-	2	1	2
REC-753.2	3	-	1	-	3	-	1	3	3	3	-	-	2	2	2
REC-753.3	3	2	1	2	3	2	1	3	3	3	2	-	2	2	2
REC-753.4	-	2	-	2	3	2	1	3	3	3	2	-	2	1	2
Average	3.00	2.00	1.00	2.00	3.00	2.00	1.00	3.00	3.00	3.00	2.00	-	2.00	1.50	2.00



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Semester: 7 Subject Name/Code: Project-I (REC-754)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC-754.1	Prepare proposal which is relevant to subject of engineering.
REC-754.2	Design the system components and process and identify the engineering tools.
REC-754.3	CO3 Use management skills and implement the task, manages problems encountered, work as a team and present the work progress
REC-754.4	Incorporate the suggestions made and manages resources and work as team.
REC-754.5	Write a document with standard technical report writing procedures

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-754.1	3	3	2	2	2	1	1	2	2	2	2	1	3	3	1
REC-754.2	3	3	1	-	3	1	1	-	2	-	1	2	3	3	1
REC-754.3	3	2	1	3	2	1	1	2	1	2	2	2	3	3	1
REC-754.4	3	2	1	2	3	1	1	2	2	2	2	1	3	3	1
REC-754.5	2	2	1	-	-	1	1	2	2	2	1	1	3	3	1
Average	2.80	2.40	1.60	2.30	2.50	1.00	1.00	2.00	1.80	2.00	1.60	1.40	3.00	3.00	1.00

Semester: 8 Subject Name/Code: RENEWABLE ENERGY RESOURCES (ROE-086)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
ROE-086.1	Learn the concepts, principles and procedures of various non-conventional energy resources.
ROE-086.2	Perform simple techno-economical assessments of non-conventional energy resource systems.
ROE-086.3	Recognize the effects that current energy systems based on fossil fuels have over the environment and the society.
ROE-086.4	Compare different non-conventional energy resources technologies and choose the most appropriate based on local conditions.
ROE-086.5	Discuss how to utilize local energy resources (renewable and non-renewable) to achieve the sustainable energy system.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
ROE-086.1	2	1	1	-	1	1	2	1	1	1	1	2	2	1	1
ROE-086.2	2	1	1	-	1	1	2	-	-	1	1	-	2	-	1
ROE-086.3	2	1	1	-	1	1	2	1	-	1	1	1	2	-	1
ROE-086.4	-	1	1	-	1	1	2	1	2	1	1	-	2	2	1
ROE-086.5	2	1	1	-	1	3	2	1	1	1	1	-	1	1	1
Average	2.00	1.00	1.00	-	1.00	1.60	2.00	1.00	1.30	1.00	1.00	1.50	1.80	1.30	1.00





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Semester: 8 Subject Name/Code: Electronic Switching (REC080)

Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC080.1	Describe and apply fundamentals of telecommunication systems and associated technologies.
REC080.2	Solve problems and design simple systems related to tele-traffic and trunking efficiency.
REC080.3	Understand and explain the reasons for switching, and the relative merits of the possible switching modes, e.g. packet and circuit switching.
REC080.4	Understand the principles of the internal design and operation of telecommunication switches, and the essence of the key signalling systems that are used in telecommunication networks.

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-080.1	2	2	2	-	-	-	-	-	-	-	-	1	2	1	-
REC-080.2	2	2	2	-	-	-	-	-	-	1	-	2	-	1	-
REC-080.3	2	2	2	-	-	-	-	-	-	-	-	1	1	1	-
REC-080.4	2	1	2	-	-	-	-	-	-	1	-	2	1	1	-
Average	2.00	1.75	2.00	-	-	-	-	-	-	1.00	-	1.50	1.30	1.00	-



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Semester: 8 Subject Name/Code: Wireless & Mobile Communication (REC085)	
Course Outcome No.	Course Outcome Description
	After the completion of the course, the student will be able to -
REC085.1	To make students familiar with fundamentals of mobile communication systems.
REC085.2	To choose system (TDMA/FDMA/CDMA) according to the complexity, installation cost, speed of transmission, channel properties etc.
REC085.3	To identify the requirements of mobile communication as compared to static communication.
REC085.4	To identify the limitations of 2G and 2.5G wireless mobile communication and use design of 3G and beyond mobile communication systems.
REC085.5	To identify various modern wireless technologies.



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Semester: 8		Subject Name/Code: Seminar (REC-851)	
Course Outcome No.	Course Outcome Description		
	After the completion of the course, the student will be able to -		
REC-851.1	To widen the scope of knowledge of each student by requiring him/her to participate in seminars of varying research topic.		
REC-851.2	Develop and improve confidence in presentation skills and techniques.		
REC-851.3	To enable students to learn the art of public speaking		
REC-851.4	To enable students to explore their area of interest by allowing them to select any topic of their choice.		
REC-851.5	To enable students to explore the latest trends of electronics & communication engineering.		

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-851.1	-	-	-	-	2	2	3	2	2	3	2	3	2	2	1
REC-851.2	-	-	-	-	1	-	3	1	-	3	1	-	1	2	1
REC-851.3	-	-	-	-	-	2	3	2	2	3	1	3	2	2	1
REC-851.4	-	-	-	-	1	2	1	2	2	1	2	-	2	2	1
REC-851.5	-	-	-	-	-	-	3	1	-	3	-	-	1	2	1
Average	-	-	-	-	1.30	2.00	2.60	1.60	2.00	2.60	1.50	3.00	1.60	2.00	1.00



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Semester: 8		Subject Name/Code: Project-2 (REC-852)	
Course Outcome No.	Course Outcome Description		
	After the completion of the course, the student will be able to -		
REC-852.1	To Work in a group to identify a problem for project work.		
REC-852.2	To review the available literature on the chosen problem.		
REC-852.3	To formulate the methodology and material used, if any to solve the identified problem.		
REC-852.4	To apply the principles, tools and techniques to analyze the problem and understand the scope of the study.		
REC-852.5	To prepare a presentation, a research paper and submit project report.		

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
REC-852.1	3	3	3	3	3	2	1	2	2	2	2	1	3	3	1
REC-852.2	3	3	2	3	3	-	1	2	2	2	1	2	3	3	1
REC-852.3	3	3	2	3	-	2	1	2	2	2	1	1	3	3	1
REC-852.4	2	1	-	1	3	2	1	2	2	2	2	1	3	3	1
REC-852.5	3	3	-	3	-	-	1	2	1	2	2	2	3	3	1
Average	2.80	2.60	2.30	2.60	3.00	2.00	1.00	2.00	1.80	2.00	1.60	1.40	3.00	3.00	1.00

**DEPARTMENT
OF
MECHANICAL
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Course Outcomes and COs-POs Mapping

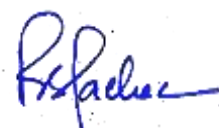
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Human Values(RVE301)

Course Outcomes	
Course Outcome	Subject Code: Human Values(RVE301)
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	3	-	3	-	3
CO2	-	3	-	3	-	-	-	-	-	-	-	-
CO3	-	-	3	3	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	3	-	-	-	-	-
CO5	-	-	-	-	-	-	-	3	-	-	-	-
Average	-	3	3	3	-	3	3	3	-	3	-	3



Course Outcomes and COs-POs Mapping

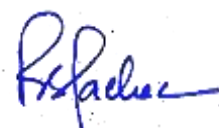
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Fluid Mechanics (RCE303)

Course Outcomes	
Course Outcome	Subject Code: Fluid Mechanics (RCE303)
CO1	Identify and explain various fluid properties and differentiate various type of fluid flow regimes and their kinematics.
CO2	Calculate and analyze forces like pressure and buoyant forces in hydrostatics.
CO3	Explain different types of fluid flows, basic principles of continuity and momentum and apply them to analyze and solve fluid flow problems of practical interest.
CO4	Apply the knowledge of dynamics of fluid flow and predict the flow through pipes in laminar as well turbulent regime also to calculate head loss and power transmitted in pipe flows.
CO5	Apply techniques of dimensional analysis, similitude and modeling, and understand the significance of non-dimensional parameter in fluid mechanics.
CO6	Explain laminar and turbulent boundary layer, boundary layer separation and basic knowledge of drag and lift force.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	2	1	1	1	1	1	2	2
CO2	3	3	2	1	2	2	2	1	1	1	2	3
CO3	3	3	3	1	1	1	1	1	2	2	1	2
CO4	3	3	2	1	2	1	1	1	2	2	2	3
CO5	3	3	3	2	2	2	2	1	2	1	2	2
CO6	3	3	3	2	3	1	1	1	2	2	1	2
Average	3	3	2.67	1.33	2	1.33	1.33	1	1.67	1.5	1.67	2.33



Course Outcomes and COs-POs Mapping

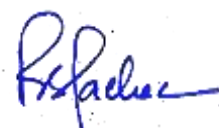
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: HUMAN VALUES(RVE301)

Course Outcomes	
Course Outcome	Subject Code: HUMAN VALUES(RVE301)
CO1	The graduate will be to apply the general concepts of physics and chemistry and to understand the atomic/ molecular structure of materials and to gain knowledge of defects/ dislocations in solids
CO2	The graduate will be able to know about the mechanical properties of materials and they can perform test to calculate them and can see the microstructure of engineering materials
CO3	The graduate will be able to graphically represent the physical state of substance under different condition s of temperature and pressure
CO4	The graduate will be able to alter the physical and chemical properties of materials by application of heat and they will have knowledge of ferrous material and non- ferrous materials and alloy
CO5	The graduate will be able to understand the magnetic and electrical properties of materials
CO6	The graduate will be able to learn and understand about the ceramics, plastics and other advance materials and can analyze their performance in service

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	2	-	-	-	-	2	-	-	3
CO2	3	-	-	2	3	-	-	-	2	-	-	3
CO3	3	-	2	2	-	-	-	-	2	-	-	2
CO4	3	2	3	3	-	-	-	-	2	-	-	3
CO5	3	-	-	2	-	-	-	-	2	-	-	2
CO6	2	-	-	2	3	2	2	2	2	2	2	2
Average	3	2.5	2.5	2	3	2	2	2	2	2	2	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Materials Science(RME301)

Course Outcomes	
Course Outcome	Subject Code: Materials Science(RME301)
CO1	The graduate will be to apply the general concepts of physics and chemistry and to understand the atomic/ molecular structure of materials and to gain knowledge of defects/ dislocations in solids
CO2	The graduate will be able to know about the mechanical properties of materials and they can perform test to calculate them and can see the microstructure of engineering materials
CO3	The graduate will be able to graphically represent the physical state of substance under different condition s of temperature and pressure
CO4	The graduate will be able to alter the physical and chemical properties of materials by application of heat and they will have knowledge of ferrous material and non- ferrous materials and alloy
CO5	The graduate will be able to understand the magnetic and electrical properties of materials
CO6	The graduate will be able to learn and understand about the ceramics, plastics and other advance materials and can analyze their performance in service

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	-	2	-	-	-	-	2	-	-	3
CO2	3	-	-	2	3	-	-	-	2	-	-	3
CO3	3	-	2	2	-	-	-	-	2	-	-	2
CO4	3	2	3	3	-	-	-	-	2	-	-	3
CO5	3	-	-	2	-	-	-	-	2	-	-	2
CO6	2	-	-	2	3	2	2	2	2	2	2	2
Average	3	2.5	2.5	2	1	2	2	2	2	2	2	3



Course Outcomes and COs-POs Mapping

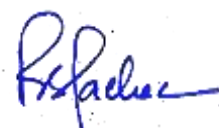
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Thermodynamics (RME302)

Course Outcomes	
Course Outcome	Subject Code: Thermodynamics (RME302)
CO1	Understand the basic concept of Thermodynamic and to understand various thermodynamics processes for pure substances and ideal gases.
CO2	To be able to apply First law of thermodynamics for any closed system.
CO3	To be able to apply the steady-flow energy equation to thermodynamic components (Boilers, Condenser, pumps, turbines, pistons, etc.) to estimate required balances of heat, work and energy flow
CO4	Understand how a heat engines, a refrigerator and a Heat Pump works and Understand the causes of irreversibility in a system.
CO5	Understand concepts of properties of steam and to be able to find condition of steam.
CO6	Understand working of I.C Engine and be able to prepare heat balance sheet.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	-	2	-	-	2	-	3
CO2	3	3	3	3	3	-	2	-	-	2	-	3
CO3	3	3	3	3	3	-	2	-	-	2	-	3
CO4	3	3	3	3	3	-	2	-	-	2	-	3
CO5	3	3	3	3	3	-	2	-	-	2	-	3
CO6	3	3	3	3	3	-	2	-	-	2	-	3
Average	3	3	3	3	3	-	2	-	-	2	-	3



Course Outcomes and COs-POs Mapping

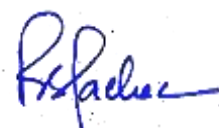
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Mechanics of Solids(RME303)

Course Outcomes	
Course Outcome	Subject Code: Mechanics of Solids(RME303)
CO1	Understand the concepts and solve the problems related to principal stress, principal strain, deformation, strain energy, different types of theory of failure
CO2	Analyze the problem and predict the behavior of different types of loading on various beams.
CO3	Analyze the deformation and stresses induced in helical and laminated spring
CO4	Understand and analyze various types of stresses induced in thick and thin cylinders and it's designing.
CO5	Analyze the behavior of curved beams subjected to different loading conditions.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	-	-	-	2	-	-	3
CO2	3	3	3	3	3	-	-	-	2	-	-	3
CO3	3	3	3	3	3	-	-	-	2	-	-	3
CO4	3	3	3	3	3	-	-	-	2	-	-	3
CO5	3	3	3	3	3	-	-	-	2	-	-	3
Average	3	3	3	3	3	-	-	-	2	-	-	3



Course Outcomes and COs-POs Mapping

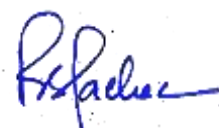
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Fluid Mechanics Lab (RCE353)

Course Outcomes	
Course Outcome	Subject Code: Fluid Mechanics Lab (RCE353)
CO1	To demonstrate practical understanding and application of the bernoulli's equation via experiments like venturimeter and orifice meter.
CO2	To calculate impact of jet on flat and curved plates and flow rate with the help of notch and weirs.
CO3	To calculate major and minor losses in pipe flows.
CO4	To demonstrate regimes of laminar and turbulent flow.
CO5	To analyze the concept of stability and apply it to calculate metacentric height experimentally
CO6	To calculate friction factor and demonstrate the boundary layer.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	2	1	1	2	2	2	3
CO2	3	2	2	2	1	1	1	1	2	1	2	3
CO3	3	3	3	2	2	2	1	1	1	2	1	3
CO4	3	2	3	2	2	1	1	1	2	2	1	3
CO5	3	3	2	2	2	1	1	1	1	2	2	3
CO6	3	2	2	1	1	1	1	1	2	1	1	3
Average	3	2.5	2.5	1.83	1.67	1.33	1	1	1.67	1.67	1.5	3



Course Outcomes and COs-POs Mapping

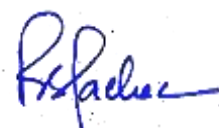
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Materials & Testing Lab(RME351)

Course Outcomes	
Course Outcome	Subject Code: Materials & Testing Lab(RME351)
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	3	-	3	-	3
CO2	-	3	-	3	-	-	-	-	-	-	-	-
CO3	-	-	-	-	-	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	3		-	-	-	-
CO5	-	-	-	-	-			3	-	-	-	-
Average	-	3	3	3		3	3	32	-	3		3



Course Outcomes and COs-POs Mapping

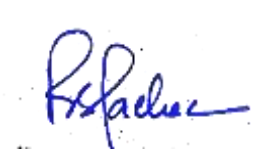
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Thermodynamics LAB (RME352)

Course Outcomes	
Course Outcome	Subject Code: Thermodynamics LAB (RME352)
CO1	To study two and four stroke petrol engine.
CO2	To study two and four stroke diesel engine.
CO3	To study various boilers.
CO4	To Study the working of Impulse and Reaction steam turbines.
CO5	To study of velocity and pressure compounded Steam Turbine.
CO6	To study simple steam engine model.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	3	3	3	-	1	2	3
CO2	3	3	3	3	2	3	3	3	-	1	2	3
CO3	3	2	2	3	2	2	3	3	-	1	2	3
CO4	3	3	2	2	2	3	3	2	-	1	1	3
CO5	3	3	2	2	2	3	3	2	-	1	1	3
CO6	3	3	3	3	2	3	3	3	-	1	2	3
Average	3	3	3	3	2	3	3	3	-	1	2	3



Course Outcomes and COs-POs Mapping

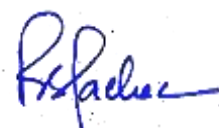
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Computer Aided Machine Drawing-I Lab (RME353)

Course Outcomes	
Course Outcome	Subject Code: Computer Aided Machine Drawing-I Lab (RME353)
CO1	Students will learn classification of machine drawings, principles of drawing, conventional representation of machine components and materials, lines, types of lines, dimensioning types, lines and rules of dimensioning.
CO2	Students will learn classification of machine drawings, principles of drawing, conventional representation of machine components and materials, lines, types of lines, dimensioning types, lines and rules of dimensioning.
CO3	Students will be able to learn and draw fasteners, thread, bolted joints, locking arrangement of nuts, screws, washers, keys, cotter and knuckle joints, riveted joints.
CO4	Students will be able to draw simple machine elements like rigid or flexible coupling, muff coupling, Plummer block, footstep bearing, bracket etc.
CO5	Students will be able to learn and draw free hand sketching of foundation bolts, studs, pulleys, couplings etc.
CO6	Students will be able to explain the advantages and applications of cad, concepts of computer aided 2d drafting using any drafting software like autocad, solid edge, draft sight etc., basic draw and modify commands, making 2d drawings of simple machine parts.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	2	2	-	3
CO2	3	-	-	-	-	-	-	-	2	2	-	3
CO3	3	-	-	-	-	-	-	-	3	2	-	3
CO4	3	-	-	-	-	-	-	-	3	2	-	3
CO5	3	-	3	-	3	-	-	-	2	3	-	3
CO6	3	-	3	-	3	-	-	-	3	2	-	3
Average	3	-	3	-	3	-	-	-	2.5	2.16	-	3



Course Outcomes and COs-POs Mapping

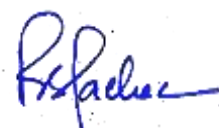
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Environment & Ecology (RAS402)

Course Outcomes	
Course Outcome	Subject Code: Environment & Ecology (RAS402)
CO1	Define chemical and biochemical principles of environmental processes in air, water, and soil and to recognize different types of toxic substances present in environment.
CO2	Explain various types of energy resources and diseases related to them and also will be able to explain various types of conventional and non-conventional energy resources.
CO3	Explain various types of environmental pollution and their effects and also will be able to illustrate various environmental issues.
CO4	Explain various roles of government in protection of environment and also will be able to explain the importance of woman education.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	2	2	2	3	2	3	3
CO2	3	2	2	2	3	2	2	2	3	2	3	3
CO3	3	3	2	2	3	2	2	3	2	2	3	3
CO4	3	1	2	1	2	2	2	2	1	2	1	3
Average	3	3	2.25	1.75	5.5	2	2	2.25	2.25	2	2.5	3



Course Outcomes and COs-POs Mapping

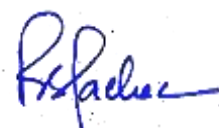
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Measurement Metrology (RME401)

Course Outcomes	
Course Outcome	Subject Code: Measurement Metrology (RME401)
CO1	To educate students on different measurement systems and on common types of errors.
CO2	To introduce different types of sensors, transducers and strain gauges used for measurement. To give knowledge about thermocouples, thermometers and flow meters used for measurements.
CO3	To introduce measuring equipments used for linear and angular measurements.
CO4	To familiarize students with surface roughness measurements on machine components.
CO5	Explain the basic concepts of testing, measuring and gauging procedures used in engineering.
CO6	Perform inspection of linear and angular measurement by using various types of measuring instruments and gauging methods.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2	1	1	1	1	1	1	1	2
CO2	3	2	1	1	1	2	1	1	1	1	1	2
CO3	3	2	1	1	1	2	1	1	1	1	1	2
CO4	3	2	1	1	1	1	1	1	1	1	1	2
CO5	3	2	2	1	1	2	1	1	1	1	1	2
CO6	3	1	1	1	1	2	1	1	1	1	1	2
Average	3	2	1	1	1	2	1	1	1	1	1	2



Course Outcomes and COs-POs Mapping

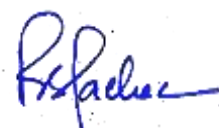
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Manufacturing Science & Technology - I (RME402)

Course Outcomes	
Course Outcome	Subject Code: Manufacturing Science & Technology - I (RME402)
CO1	Equip the students with knowledge of the fundamental concept of manufacturing.
CO2	To understand various forming processes and their analysis, defects and various applications of the respective processes.
CO3	To prepare graduates with fundamental concepts to understand various processes such as Sheet Metal, Bending and Spring Back.
CO4	Let the students to find the probable routes to manufacture a particular engineering component using various foundry methods.
CO5	Basics of unconventional Metal Forming processes and powder metallurgy plastic components also their applications.
CO6	Study various jigs and fixtures and prepare the graduates to select the most economical route to fabricate the required engineering component

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	1	3	3	3	1	2	3	1	3
CO2	3	3	2	2	1	2	2	1	1	1	-	2
CO3	3	3	2	2	1	2	2	1	1	1	-	2
CO4	2	2	3	2	3	3	3	2	2	2	2	2
CO5	2	2	3	1	2	3	2	3	3	2	1	2
CO6	2	2	2	1	3	2	2	3	2	2	1	2
Average	3	2	3	2	2	3	2	2	2	2	1	2



Course Outcomes and COs-POs Mapping

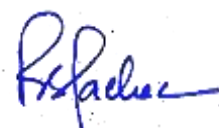
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Applied Thermodynamics (RME401)

Course Outcomes	
Course Outcome	Subject Code: Applied Thermodynamics (RME401)
CO1	To understand and apply thermodynamic relations in various engineering applications.
CO2	To understand the theoretical and numerical aspects of different types of boiler and condenser.
CO3	Study and analysis of various vapor power cycles and steam engine.
CO4	To study and analyze the different types of nozzles, turbines and concept of jet propulsion.
CO5	To study the different types of fuels and their combustion analysis.
CO6	Identify and solve various thermal engineering problems.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	-	-	2	-	2	-	-	3
CO2	3	3	3	3	-	-	2	-	2	-	-	3
CO3	3	3	2	2	-	-	2	-	2	-	-	3
CO4	3	3	2	3	-	-	2	-	2	-	-	3
CO5	3	3	3	2	-	-	2	-	2	-	-	3
CO6	3	3	3	3	-	-	2	-	3	-	-	3
Average	3	3	3	3	-	-	2	-	2	-	-	3



Course Outcomes and COs-POs Mapping

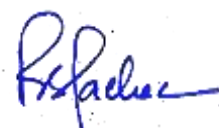
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Measurement Metrology Lab(RME451)

Course Outcomes	
Course Outcome	Subject Code: Measurement Metrology Lab(RME451)
CO1	To Study the working of simple measuring instruments Vernier calipers, micrometer, tachometer, sine bar and slip gauges, limit gauges.
CO2	Measurements of angle using sine bar & slip gauges, and angular measurement using level protector.
CO3	Adjustment of spark plug gap using feeler gauges.
CO4	Use of dial indicator & its constructional details, & v block to check the circularity and polar graph
CO5	Study and understanding of limits fits and tolerances
CO6	Experiment on measurement of pressure.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	-	2	-	-	2	-	-	3
CO2	3	3	3	2	-	2	-	-	2	-	-	3
CO3	3	3	3	2	-	2	-	-	2	-	-	3
CO4	3	3	3	2	-	2	-	-	2	-	-	3
CO5	3	3	3	2	-	2	-	-	2	-	-	3
CO6	3	3	3	2	-	2	-	-	2	-	-	3
Average	3	3	3	2	-	2	-	-	2	-	-	3



Course Outcomes and COs-POs Mapping

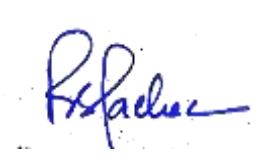
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 3rd Semester

Name of Subject and Subject Code: Manufacturing Technology-I Lab (RME452)

Course Outcomes	
Course Outcome	Subject Code: Subject Name
CO1	Students will be able to learn the various manufacturing processes
CO2	Students will be able to make parts by sand casting
CO3	Students will be able to perform forging operations in detail
CO4	Students will be able to perform sheet metal operations
CO5	Students will be able to make parts with the help of injection molding machine
CO6	Students will be able to perform blanking/piercing operations with the help of Power press machine.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	1	2	1	1	1	1	1	3	1
CO2	3	3	3	2	2	1	1	2	1	1	3	3
CO3	3	3	2	2	2	1	1	2	1	1	3	3
CO4	3	3	3	2	2	1	1	2	1	1	3	3
CO5	3	3	2	2	2	1	1	2	1	1	3	3
CO6	3	2	1	1	2	1	1	2	1	1	3	2
Average	3	2.5	2	1.7	2	1	1	1.8	1	1	3	2.5



Course Outcomes and COs-POs Mapping

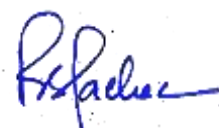
Session: 2020-21

Year and Semester: B.Tech. ME-2nd Year 4th Semester

Name of Subject and Subject Code: Computer Aided Machine Drawing-II Lab (RME453)

Course Outcomes	
Course Outcome	Subject Code: Computer Aided Machine Drawing-II Lab (RME453)
CO1	Students will able to learn the concept in drawing on “conventional representation of machine components and materials, surface finish, roughness number symbol, symbols of machine elements and welded joints”.
CO2	Students will able to learn the classification of drawings, detail drawing and use the bill of materials (bom) in the drawing .
CO3	Students will able to gain the basic concepts of limits, fits and tolerances.
CO4	Students will able to learn commands/ features to develop the part modelling using by software such as catia, pro e, ugnx, autodesk inventor or solidworks
CO5	Students will able to learn and draw with help of commands/ features to develop the part modelling& assemblies of plummer block bearing, machine vice, screw jack, engine stuffing box, lathe tailstock, feed check valve and rams bottom safety valve.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	-	-	-	2	2	-	3
CO2	3	-	-	-	-	-	-	-	2	2	-	3
CO3	3	-	-	-	-	-	-	-	3	2	-	3
CO4	3	-	3	-	3	-	-	-	3	2	-	3
CO5	3	-	3	-	3	-	-	-	2	3	-	3
Average	3	-	3	-	3	-	-	-	2.4	2.2	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: Managerial Economics (RAS501)

Course Outcomes	
Course Outcome	Subject Code: Managerial Economics (RAS501)
CO1	Understand the conceptual aspects of managerial economics
CO2	Evaluate and recommend managerial economics principles, tactics, and systems to ensure companies efficiently and effectively manage their business related activities to ensure optimum utility of available resources.
CO3	Identify and assess tradeoffs between the engineering and managerial economics concepts, and recommend actionable plans and strategies.
CO4	Evaluate both demand and supply related problems and effectively develop and present actionable solutions.
CO5	Apply the managerial principles, practices, and concepts used in production management.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	1	1	1	-	-	1	-	-	-	1	3
CO2	-	2	2	3	-	2	1	1	1	2	3	3
CO3	1	2	2	1	-	2	3	1	1	1	1	3
CO4	-	2	1	2	1	1	2	1	1	2	2	3
CO5	1	2	2	2	1	2	1	3	1	2	1	3
Average	1	3	2	1	1	1	1	2	1	-	2	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: Cyber Security (RUC501)

Course Outcomes	
Course Outcome	Subject Code: Cyber Security (RUC501)
CO1	Prepare the students for developing intelligent systems through case studies, simulation examples and experimental results.
CO2	Explain and apply various soft computing methods—such as fuzzy logic, neural networks, and genetic algorithms—for solving real-world problems.
CO3	Assess the suitability of soft computing methodologies for specific problems in intelligent modeling and non-linear system control.
CO4	Design fuzzy and neural control systems, including rule-based and model-based fuzzy control, and analyze their stability and applications.
CO5	Compare and evaluate the performance of different soft computing techniques for optimization, modeling, and control tasks.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	3	2	1	1	-	1	2	2	2
CO2	3	3	2	3	3	2	3	-	2	2	3	2
CO3	3	3	2	3	3	3	3	-	2	2	3	3
CO4	3	3	2	3	2	1	1	-	1	1	2	2
CO5	3	3	2	3	3	2	3	-	2	2	3	2
Average	3	3	1.8	3	2.7	2	2.3	-	1.8	1.83	2.67	2.33



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: Machine Design-I (RME501)

Course Outcomes	
Course Outcome	Subject Code: Machine Design-I (RME501)
CO1	To explain the basic procedure of designing a machine, use various national and international standards, apply principles involved in design viz. ergonomics, manufacturing considerations etc.
CO2	To design machine elements for static loading using fundamentals of mechanics, material science, manufacturing sciences and mechanics of solids.
CO3	To explain the response of a material subjected to fluctuating stresses and designing of components for real life situation, for finite and infinite life, considering stress concentration.
CO4	To design shafts, keys and couplings for practical situations.
CO5	To explain and select riveted joints, joining methods. Design riveted joint for various applications viz. boiler joint.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2	1	-	-	-	2	-	-	3
CO2	3	2	2	2	3	-	-	-	2	-	2	2
CO3	3	-	2	2	1	-	-	-	2	-	2	2
CO4	3	1	2	2	1	-	-	-	2	-	2	2
CO5	3	2	2	2	1	-	-	-	2	-	2	2
Average	3	2	3	2	1	-	-	-	2	-	2	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: HMT (RME-502)

Course Outcomes	
Course Outcome	Subject Code: HMT (RME-502)
CO1	Demonstrate the fundamentals of heat and mass transfer and its industrial applications.
CO2	Solve the problems of Heat conduction related to plane wall and composite cylinders and spheres and its application in different industry.
CO3	Analyze the theoretical and numerical approach of free and forced convection and its application to industry.
CO4	Calculate the radiation heat transfer problems and analyze its effect on global warming and gas emission.
CO5	Differentiate between concept of boiling and condensation and explain mass transfer.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	1	1	2	1	1	1	1	2
CO2	3	3	2	2	1	1	2	1	2	1	1	2
CO3	3	3	2	2	1	1	2	1	1	1	1	2
CO4	3	3	2	2	1	1	2	1	2	1	1	3
CO5	3	3	2	2	1	1	2	1	1	1	1	3
Average	3	2.83	2	2	1	1	2	1	1.5	1	1	2.33



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: MST-II (RME503)

Course Outcomes	
Course Outcome	Subject Code: MST-II (RME503)
CO1	students will be able to identify and describe the cutting tools and solve the problems related to the metal cutting, mach inability and economics of metal cutting.
CO2	students will be able to describe the various machine tools such as general purpose machine tools, single purpose machine tools and special purpose machine tools and solve the problem related to milling machine.
CO3	students will be able to explain and solve the problem based on grinding operations and identify various super finishing processes
CO4	tudents will be able to explain and analyze various joining processes and solve the problem related to arc welding
CO5	students will be able to describe different types of non-traditional machining and joining processes and solve the problem based on unconventional machining process.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	1	1	1	3	1	-	3	3
CO2	2	3	3	3	1	1	1	3	1	-	3	2
CO3	2	3	3	3	1	2	1	3	1	-	3	2
CO4	2	2	2	2	1	2	1	3	1	-	3	2
CO5	2	1	1	3	1	2	1	3	1	-	3	2
Average	2.2	2.2	2.2	2.8	1	1.6	1	3	1	0	3	2.2



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: IC ENGINES & CMPRESSRS (RME051)

Course Outcomes	
Course Outcome	Subject Code: IC ENGINES & CMPRESSRS (RME051)
CO1	Students will be able to explain, classify and analyze various types of I.C. Engines & thermodynamic cycles.
CO2	Students will be able to discuss and analyze various combustion phenomenon and different components of S.I. Engines and C.I. Engines.
CO3	Students will be able to differentiate and select various types of fuels for I.C. Engines.
CO4	Students will be able to discuss and analyze various engine performance parameters.
CO5	Students will be able to understand different methods of Cooling and Lubrication in I. C. Engine.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	-	-	2	-	2	-	-	3
CO2	3	3	2	2	-	2	2	-	2	2	-	3
CO3	3	3	2	-	2	3	3	2	2	2	-	3
CO4	3	3	2	3	2	2	2	2	2	-	-	3
CO5	2	2	2	-	2	-	3	-	2	2	-	3
Average	3	3	2	2	-	2	2	-	2	-	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: DESGN & SIMULATN LAB I (RME551)

Course Outcomes	
Course Outcome	Subject Code: DESGN & SIMULATN LAB I (RME551)
CO1	Students will learn basics of C++ language.
CO2	Students will be able to make programmes for simple calculations.
CO3	Students will be able to programme various loops to figure out the required number and to perform various operations on them.
CO4	Students will be able to write codes to solve the simple quadratic and subsequently complex equations.
CO5	Students will be able to write code to design the helical and spur gears completely.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	2	-	1	-	-	-	1	-	-	3
CO2	1	-	2	-	1	-	-	-	1	-	-	3
CO3	1	-	2	1	2	-	-	-	1	-	-	3
CO4	1	1	2	1	2	-	-	-	1	-	-	3
CO5	2	2	2	1	3	-	-	-	1	-	-	2
Average	2	2	2	1	3	-	-	-	1	-	-	2



Course Outcomes and COs-POs Mapping

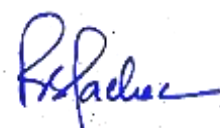
Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: HEAT AND MASS TRANSFER (KME 551)

Course Outcomes	
Course Outcome	Subject Code: HEAT AND MASS TRANSFER (KME 551)
CO1	Formulate and predict heat conduction problems in composite walls and cylinder, determine the conductivity of composite material
CO2	Analyze the heat transfer through extended surface, calculate the temperature distribution, effectiveness for pin fin.
CO3	Determine the thermal conductivity of the liquid and analyze the phenomena of film-wise and drop-wise condensation
CO4	Calculate fluid temperature, heat exchange and effectiveness during parallel and counter flow heat exchanger.
CO5	Calculate the Stefan Boltzmann's Constant and measure emissivity of different surfaces.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1		-	1	-	-	1	2	-	3
CO2	3	3	1		-	1	-	-	2	1	-	3
CO3	3	3	1		-	1	-	-	-	1	-	2
CO4	3	3	1		-	1	-	-	2	1	-	2
CO5	3	3	1		-	1	-	-	1	1	-	2
Average	3	3	1		-	1	-	-	1	1	-	2.33



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 5th Semester

Name of Subject and Subject Code: MST II LAB (RME553)

Course Outcomes	
Course Outcome	Subject Code: MST II LAB (RME553)
CO1	Students will be able to demonstrate Lathe machine Tool and analyze the processes performed on lathe machine.
CO2	Students will be able to demonstrate Milling machine Tool and analyze the indexing processes performed on milling machine.
CO3	Students will be able to demonstrate shaper machine Tool and analyze the processes performed on shaper machine.
CO4	Students will be able to demonstrate Surface grinding machine Tool and analyze the processes performed on Surface machine.
CO5	Students will be able to identify the different welding process and perform different types of welding joints in welding shop.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	1	1	2	1	1	2	2
CO2	2	2	2	1	2	1	1	2	1	1	2	2
CO3	2	2	2	1	2	1	1	1	1	1	2	2
CO4	2	2	2	1	2	1	1	1	1	1	2	2
CO5	2	2	2	1	2	1	1	1	1	1	2	2
Average	2	2	2	1	2	1	1	1.4	1	1	2	2



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: INDUSTRIAL MANGMTN (RAS601)

Course Outcomes	
Course Outcome	Subject Code: INDUSTRIAL MANGMTN (RAS601)
CO1	Student will be able to understand the need and application of different types of tools in industrial management and also to improve production planning and control
CO2	Student will be able to manage and utilize the resources like manpower, material, money, machines and market in any organization.
CO3	Student will be able to analysis and optimize the work study methods like method study, time study and motion study for real life problems in production system.
CO4	Student will be able to use the different types of modern tools like Inventory control, quality control, EOQ and control charts to achieve maximum production.
CO5	Student will be able to analyze and optimize the time and cost by using various project management methods

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2					2	1	2	2	2	3	2
CO2			1			1	1	2	2	1	3	2
CO3		2		1		1	1	1	1	1	2	2
CO4	3	3	1	1		1	1	1	2	2	2	2
CO5	2	2	1	1	2	1	1	1	1	1	3	2
Average	1.4	1.4	0.6	0.6	0.4	1.2	1	1.4	1.6	1.4	2.6	2



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: SOCIOLOGY (RAS602)

Course Outcomes	
Course Outcome	Subject Code: SOCIOLOGY (RAS602)
CO1	To apply a well-developed social imagination to current and historical industrial social issues.
CO2	To sustain individual and group behavior within industrial framework.
CO3	To Compare and contrast industrial social relations.
CO4	To implement the theoretical and practical concepts of industrial sociology.
CO5	To Minimize conflict and maximize productivity in industry.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	1	-	3	3	3	-	3
CO2	-	-	-	-	-	1	-	3	3	-	-	3
CO3	-	-	-	-	-	2	-	3	3	3	-	3
CO4	-	-	-	-	-	2	-	3	3	-	-	3
CO5	-	-	-	-	-	1	-	2	3	3	-	3
Average	-	-	-	-	-	3	-	3	3	-	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: Fluid Machinery (RME 601)

Course Outcomes	
Course Outcome	Subject Code: Fluid Machinery (RME 601)
CO1	To apply the momentum principle for jet and various fluid machines.
CO2	To classify the turbines and calculate power and efficiencies of Impulse Turbine.
CO3	To classify the Reaction turbines and calculate power, efficiencies and design parameters of Francis & Kaplan Turbine.
CO4	To demonstrate various type of pumps and understand the operating mechanism and calculate work done and efficiencies of centrifugal & Reciprocating pump.
CO5	To understand and explain performance characteristic curve for various types of turbine and pump and apply principle of similarity and model testing.
CO6	To explain and demonstrate working principles and operation of hydraulic systems of practical interest.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2	2	1	1	1	2	2	1	2
CO2	3	3	1	1	2	2	2	1	2	2	1	2
CO3	3	3	3	2	2	2	2	1	2	2	1	2
CO4	3	3	3	2	2	2	2	1	2	2	1	2
CO5	3	3	2	1	2	1	1	1	2	2	1	2
CO6	3	3	1	1	2	2	2	1	2	2	1	2
Average	3	3	1.83	1.5	2	1.67	1.67	1	2	2	1	2



Course Outcomes and COs-POs Mapping

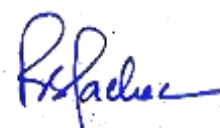
Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: TOM (RME602)

Course Outcomes	
Course Outcome	Subject Code: TOM (RME602)
CO1	Study of terminology associated with the mechanism and machine and their relative motions
CO2	Demonstrate and perform mechanism analysis by using both graphically and analytically to find the position, velocity, acceleration.
CO3	Design linkage or mechanism with their inversions for industrial equipments that meets desired specifications and requirements.
CO4	Demonstrate and calculate the power transmission through the belt and rope drive.
CO5	Design and analysis of basic cam systems for desired motion like S.H.M. uniform velocity, cycloidal motion and etc.
CO6	Study and analysis of gear and gear trains used in various machines.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	-	-	-	2	2	-	3
CO2	3	3	3	3	2	-	-	-	2	2	-	3
CO3	3	3	3	3	2	-	-	-	2	2	-	3
CO4	3	3	3	2	2	-	-	-	2	2	-	3
CO5	3	3	3	3	3	-	-	-	2	2	-	3
CO6	3	3	3	3	3	-	-	-	2	2	-	3
Average	3	3	3	3	2	-	-	-	2	2	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: MACHINE DESING II (RME603)

Course Outcomes	
Course Outcome	Subject Code: MACHINE DESING II (RME603)
CO1	Explain, classify and design spur and helical gears with understanding for appropriate selection of material.
CO2	Design and analysis of worm and bevel gears as per practical requirements.
CO3	Explain and design the various types of rolling element bearings and state their respective suitability for different applications.
CO4	Discuss the design and analysis of various types of sliding type of bearing and its working.
CO5	Design and analyze IC engine parts i.e. cylinder and piston as per the given problems.
CO6	Design and analyze IC engine parts i.e. connecting rod and crank shaft as per requirements.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	1	-	-	-	-	-	2	3
CO2	3	3	3	3	1	-	-	-	-	-	2	3
CO3	3	3	3	3	1	-	-	-	-	-	2	3
CO4	3	3	3	3	1	-	-	-	-	-	2	3
CO5	3	3	3	3	1	-	-	-	-	-	2	3
CO6	3	3	3	3	1	-	-	-	-	-	2	3
Average	3	3	3	3	1	-	-	-	-	-	2	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: FLUID MACHINERY LAB(RME651)

Course Outcomes	
Course Outcome	Subject Code: FLUID MACHINERY LAB(RME651)
CO1	To calculate the hydrodynamic force exerted by jet of water over solid surface.
CO2	To analyse and calculate the power, efficiency and performance of turbines.
CO3	To analyse and calculate the power, efficiency and performance of pumps.
CO4	To calculate the power, efficiency and performance of hydraulic devices i.e Hydraulic jack, Hydraulic Ram etc.
CO5	To understand the working of Air compressor.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	1	2	1	1	1	1	2	2
CO2	3	3	3	2	3	2	2	1	2	1	3	3
CO3	3	3	2	2	2	2	2	1	2	1	2	3
CO4	3	3	3	2	3	2	2	1	2	1	3	2
CO5	3	3	2	1	2	3	3	1	2	1	2	3
Average	3	3	2.4	1.6	2.2	2.2	2	1	1.8	1	2.4	2.6



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: TOM (RME652)

Course Outcomes	
Course Outcome	Subject Code: TOM (RME652)
CO1	To understand the practical knowledge on design and analysis of mechanisms and their inversion for the specified type of motion in a machine.
CO2	Define the fundamental principles of balancing to balance the masses statically & dynamically of a rotating mass system and observe the effect of unbalance in a rotating mass system.
CO3	Demonstrate the torque analysis and measure epicyclic gear ratio on any kind of on engine or machine shaft.
CO4	Demonstrate the working principle of a governor and able to identify different types of governors in actual practice for maintain the constant speed of engine.
CO5	Demonstrate the fundamental principles of gyroscope and observe the gyroscopic effect of a rotating disc.
CO6	To study, observe the effect of longitudinal, transverse and torsional vibration and determine the frequency and time period of oscillation.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	-	2	-	-	2	-	-	3
CO2	3	3	2	2	-	2	2	-	2	-	-	3
CO3	3	3	2	2	-	2	-	-	2	-	-	3
CO4	3	2	2	2	-	2	-	-	2	-	-	3
CO5	3	3	3	2	-	2	-	-	2	-	-	3
CO6	3	3	2	3	-	3	2	-	2	-	-	3
Average	3	3	2	2	-	2	1	-	2	-	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: DESIGN & SIMULATION LAB II (RME653)

Course Outcomes	
Course Outcome	DESIGN & SIMULATION LAB II (RME653)
CO1	Students will learn basics of C++ language.
CO2	Students will be able to make programmes for simple calculations.
CO3	Students will be able to make programmes for simple calculations.
CO4	Students will be able to programme various loops to figure out the required number and to perform various operations on them.
CO5	Students will be able to write codes to solve the simple quadratic and subsequently complex equations.
CO6	Students will be able to write code to design the sliding contact bearings and parts of IC engines.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	2	-	1	-	-	-	1	-	-	3
CO2	1	-	2	-	1	-	-	-	1	-	-	3
CO3	1	-	2	1	2	-	-	-	1	-	-	3
CO4	1	1	2	1	2	-	-	-	1	-	-	3
CO5	2	2	2	1	3	-	-	-	1	-	-	2
CO6	2	2	2	1	3	-	-	-	1	-	-	2
Average	1	2	2	1	2	-	-	-	1	-	-	3



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 3rd Year 6th Semester

Name of Subject and Subject Code: RAC LAB (RME654)

Course Outcomes	
Course Outcome	RAC LAB (RME654)
CO1	Study the construction and working of simple vapour compression refrigeration system.
CO2	Explain, classify and select various components used in refrigeration system.
CO3	Study and calculate the performance of refrigeration test rig.
CO4	Calculate coefficient of performance of air-conditioning test rig.
CO5	study the complete working of window air conditioner.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	2	2	1	2	1	-	3	3
CO2	3	2	1	-	2	2	1	2	1	-	3	3
CO3	3	2	1	-	2	2	1	2	1	-	3	3
CO4	3	2	1	-	2	2	1	2	1	-	3	3
CO5	3	2	1	-	2	2	1	2	1	-	3	3
Average	3	2	1	-	2	2	1	2	1	-	3	3



Course Outcomes and COs-POs Mapping

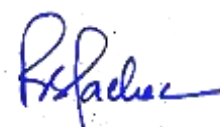
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 7th Semester

Name of Subject and Subject Code: Power Plant Engineering (RME071)

Course Outcomes	
Course Outcome	Power Plant Engineering (RME071)
CO1	To assess the suitability of a site for a power plant.
CO2	To understand power plant economics and calculate load factor, capacity factor, average load and peak load on a power plant.
CO3	To understand and explain general layout and working principle of different type of power plant
CO4	To demonstrate the knowledge of basic components and auxillary systems of different types of power plant.
CO5	To calculate and asses the performance of thermal and diesel power plant.
CO6	To appreciate concern for energy, associated pollution and role of non conventional power plant.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3			2				2		1	2
CO2	3	3	3		2				2		1	2
CO3	3	3	2	2	2				2		1	2
CO4	3	3	2						2		1	2
CO5	3	3	2	2					2		1	
CO6	3	3	1		2	3	3	1	2	2		2
Average	3	3	2	1.6	2	1.6	1.6	1	2	2	1	2



Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 7th Semester

Name of Subject and Subject Code: CAD & CAM (RME701)

Course Outcomes	
Course Outcome	CAD & CAM (RME701)
CO1	Describe basic structure of CAD, Memory types, input/output devices, display devices, computer graphics and evaluate design, making geometric models, analyse and optimize using CAD tools under realistic loading and constraining conditions and apply geometric transformations on the created wireframe, surface and solid models.
CO2	Apply the procedure involved to solve a realistic engineering problem and analyze the design using Finite Element Methods.
CO3	Demonstrate and apply the concepts of machining for the purpose of selection of appropriate machining centers, machining parameters, select appropriate cutting tools and create part program for automation of machining operations required component using CNC.
CO4	Apply the fundamentals concepts of robotics and its components and develop the algorithms for design of robotic work cell controller and its programming for required integrated industrial application in robotics.
CO5	Apply the basic fundamental concept of fabrication techniques and estimate the surface roughness and shrinkage in Rapid Prototyping for product development.
CO6	Illustrate and apply the group technology to design the workstation requirement for operations and optimize the number of machines required for machine cell in a automated production system.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	2	1	1	1	2	3
CO2	3	3	3	3	3	3	1	1	1	1	2	3
CO3	3	3	3	3	3	3	2	1	1	1	2	3
CO4	3	3	3	2	3	3	2	1	1	1	2	3
CO5	3	3	3	2	3	3	1	1	1	1	2	3
CO6	3	3	3	2	2	3	1	1	1	1	2	3
Average	3	3	3	2.5	2.8	3	1.5	1	1	1	2	3

R. S. Yadav

Course Outcomes and COs-POs Mapping

Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 7th Semester

Name of Subject and Subject Code: Automobile Engg. (RME702)

Course Outcomes	
Course Outcome	Automobile Engg. (RME702)
CO1	Understanding of the principles of design, construction and working of mechanical systems and electronic systems in automobiles.
CO2	Producing graduates with a broad understanding of all contextualized elements related to the mechanical and electronic environment.
CO3	Student will be equipped to solve multi-disciplinary problems and will be part of future developments in industries. It is anticipated that student from the course will play a major/lead role in design, management and coordination of multi-disciplinary projects.
CO4	The course imparts knowledge of historical, present and future aspects of automobile engineering.
CO5	It aims to train students in up to date methods of maintenance, repair and adjustment of automotive component.
CO6	At the end of the course students will have at least basic knowledge of automobile components and can maintain and repair their own vehicle in emergency.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	2	2	-	3	2	3	3
CO2	3	2	2	2	3	2	2	-	3	3	3	3
CO3	3	3	2	2	3	2	2	2	2	2	3	3
CO4	3	2	2	1	2	2	2	-	1	3	1	3
CO5	3	2	2	2	3	2	2	2	2	2	2	3
CO6	3	2	2	2	3	2	2	2	2	2	2	3
Average	3	2	2	2	3	2	2	1	2	2	2	3

R. S. Yadav

Course Outcomes and COs-POs Mapping

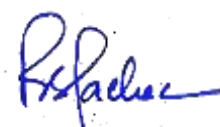
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 7th Semester

Name of Subject and Subject Code: I.C. Engine Lab. (RME752)

Course Outcomes	
Course Outcome	I.C. Engine Lab. (RME752)
CO1	Performance Analysis of Four stroke S.I. Engine to Determine indicated and brake thermal efficiency at specific fuel consumption for various loads.
CO2	Determination of Indicated H.P. of I.C. Engine by Morse Test.
CO3	Performance Analysis of Four stroke C.I. Engine to Determine indicated and brake thermal efficiency at specific fuel consumption for various loads.
CO4	Study of various Gear Boxes & Differential Gear Mechanism
CO5	Study of Fuel Supply System of S.I & C.I. Engines.
CO6	Study of Automobile Braking System

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	-	-	2	1	3	2	-	3
CO2	3	3	3	2	-	-	-	-	3	2	-	3
CO3	3	3	2	2	-	2	2	2	3	2	-	3
CO4	3	3	-	-	-	-	-	-	3	2	-	3
CO5	3	-	-	-	-	2	-	2	3	2	-	3
CO6	3	-	-	-	-	-	-	-	3	2	-	3
Average	3	2	1	1		1	1	1	3	2	-	3



Course Outcomes and COs-POs Mapping

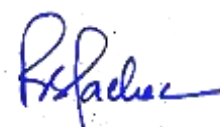
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 7th Semester

Name of Subject and Subject Code: CAD & CAM Lab (RME751)

Course Outcomes	
Course Outcome	CAD & CAM Lab (RME751)
CO1	Students will learn basics of c++ language.
CO2	Students will be able to make programs for Geometric Transformation algorithm.
CO3	Students will be able to make programs for various machine components.
CO4	Students will learn basic of Auto cad and able to design the various mechanical components and assembly.
CO5	Students will learn Pro-E.
CO6	Students will be able to improve visualization ability of machine components and assemblies before their actual fabrication through modeling, animation, shading, lighting and coloring etc.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	-	-	-	-	-	2	-	-	2
CO2	2	2	2	-	1	-	-	-	2	-	-	3
CO3	2	2	2	-	1	-	-	-	2	-	-	3
CO4	3	2	2	-	2	1	-	1	2	-	-	3
CO5	3	2	2	-	2	1	-	1	2	-	-	3
CO6	3	2	2	-	1	1	-	1	-	-	-	3
Average	3	2	2		1	1		1	2			3



Course Outcomes and COs-POs Mapping

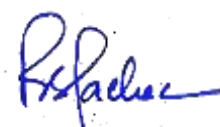
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 8th Semester

Name of Subject and Subject Code: Renewable Energy Resources (ROE086)

Course Outcomes	
Course Outcome	Renewable Energy Resources (ROE086)
CO1	To Understand the need of non-conventional energy recourses.
CO2	To Understand the need of non-conventional energy recourses.
CO3	Scope of Geothermal energy in context of India and to know how to extract geothermal energy.
CO4	Scope of Geothermal energy in context of India and to know how to extract geothermal energy.
CO5	Scope of Geothermal energy in context of India and to know how to extract geothermal energy.
CO6	To understand the process for converting Bio wastes into useful form of energy and apply these concept in practical life.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	-	2	2	3	3	-	-	2	2	3
CO2	3	2	-	2	2	3	3	-	-	2	2	3
CO3	3	2	-	1	1	3	3	-	-	2	2	3
CO4	3	3	-	1	-	3	3	-	-	2	2	3
CO5	3	3	-	1	-	3	3	-	-	2	2	3
CO6	3	2	-	1	-	3	3	-	-	2	2	3
Average	3	2	-	1	1	3	3	-	-	2	2	3



Course Outcomes and COs-POs Mapping

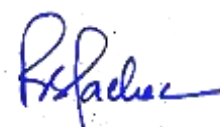
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 8th Semester

Name of Subject and Subject Code: Total Quality Management (RME085)

Course Outcomes	
Course Outcome	Total Quality Management (RME085)
CO1	Understand the principles and concepts inherent in a Total Quality Management (TQM) approach to managing a manufacturing or service organization.
CO2	Understand the philosophies-including similarities and differences-of the gurus of TQM in order to better evaluate TQM implementation proposals offered by quality management organizations and consultants.
CO3	Know the principles of total quality management and peculiarities of their implementation and Understand the essential steps for the successful implementation of Total Quality Management.
CO4	Develop in-depth knowledge on various tools and techniques of quality management.
CO5	Learn the applications of quality tools and techniques in both manufacturing and service industry.
CO6	Assess exactly where an organization stands on quality management with respect to the ISO 9000 quality management standard.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	1	-	-	-	2	-	-	3
CO2	2	1	-	-	1	-	-	-	2	-	-	3
CO3	3	3	-	-	1	-	-	-	2	-	-	3
CO4	3	2	-	-	1	-	-	-	2	-	-	3
CO5	3	2	-	-	2	-	-	-	2	-	-	3
CO6	3	2	1	-	1	-	-	-	2	-	-	3
Average	3	2	0	0	1	0	0	0	2	0	0	3



Course Outcomes and COs-POs Mapping

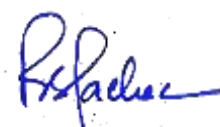
Session: 2020-21

Year and Semester: B. Tech. ME 4th Year 8th Semester

Name of Subject and Subject Code: Advance Welding (RME081)

Course Outcomes	
Course Outcome	Advance Welding (RME081)
CO1	Understand the recent developments in welding technology and where these new processes can be used
CO2	Identify suitable Advanced Welding Techniques for joining of materials
CO3	Understand basic principle of Advanced Welding Techniques and its application.
CO4	Understand the physical and engineering principles behind each application and the methods for maximizing process efficiency
CO5	Understand weldability of cast iron and high carbon steel.
CO6	Understand the importance of grain growth mechanism, HAZ and related properties.

Mapping of Course Outcomes with Program Outcomes												
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2		2					3
CO2	3	2	2	2	2		1					3
CO3	3	2	2	2	2		2					3
CO4	3	2	2	2	2		2					3
CO5	3	2	2	2	2		3					3
CO6	3	2	2	2	2		2					3
Average	3	2	2	2	2		2					3



**DEPARTMENT
OF
BIOTECHNOLOGY**

2.6.1 - Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.

COs- POs with mapping of Session 2020-21

CO PO MAPPING AND CO STATEMENT

(Ist year 2020-2024, II YEAR 2019-23)(III YEAR 2018-22) (IV YEAR 2017-21)

Course Code	AAS0102	
Course Title	Engineering Chemistry	
CO1	Understand the concept of fuel, their calorific value and it's usage	
CO2	Develop the understanding to apply the principles of water chemistry to the water treatment	
CO3	Apply concepts of Electrochemistry, corrosion and their prevention methods with cement manufacturing	
CO4	Understand elementary preparation and application of polymers and Organometallic compounds.	
CO5	Understand Molecular orbital theory and simplified concepts of spectroscopic techniques	

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	3	2		1	-	-	1	1	-	1	1	-	1
CO2	3	2		1	-	-	1	1	-	1	1	-	1
CO3	3	2		1	-	-	1	1	-	1	1	-	1
CO4	2	2		1	-	-	1	1	-	1	1	-	1
CO5	3	2		1	-	2	-	-	-	1	1	-	1
Average	2.8	2		1	-	2	1	1	-	1	1	-	1

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Course Code	AAS0152		
Course Title	Engineering Chemistry Lab		
CO1	Use different analytical instruments.		
CO2	Calculate molecular/system properties such as surface tension, viscosity, conductance of solution, chloride and iron content in water		
CO3	Calculate flash point of fuel and lubricants		
CO4	Estimate the rate constant of reaction.		
CO5			

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO												
CO1	2	2	1	-	2	1	-	2	2	2	-	2
CO2	2	2	-	-	1	1	1	2	2	2	-	2
CO3	2	2	-	-	1	2	2	2	2	2	-	2
CO4	2	1	-	-	1	-	-	2	2	2	-	2
CO5	-	-	-	-	-	-	-	-	-	-	-	-
Average	2	1.8	1	-	1.3	1.3	1.5	2	2	2	-	2

Course Code	AASL0101		
Course Title	Professional Communication		
CO1	Understand the basic objective of the course and comprehend texts for professional reading tasks in preparation for an International Certification in Business English.		
CO2	Write professionally in simple and correct English.		
CO3	Interpret listening tasks for better professional competence.		
CO4	Recognize the elements of effective speaking with emphasis on applied phonetics.		
CO5	Apply the skill of speaking at the workplace.		

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	1	-		-	-	-	-	-	-	-	3	-	2
CO2	-	-		-	-	-	-	-	-	-	3	-	2
CO3	-	-		-	-	-	-	-	-	2	3	-	-
CO4	-	-		-	-	-	-	-	-	-	3	-	-
CO5	-	-		-	-	-	-	-	-	2	3	-	-
Average	1	-		-	-	-	-	-	-	2	3	-	2

PSO	PSO1	PSO2		PSO3
CO				
CO1	-	-		1
CO2	-	-		2
CO3	-	-		2
CO4	-	-		2
CO5	-	-		2
Average	-	-		1.8

Course Code	AASL0151		
Course Title	Professional Communication Lab		
CO1	Learn to use English language for communicating ideas.		
CO2	Develop interpersonal skills and leadership abilities.		
CO3	Practice their public speaking skills and gain confidence in it.		
CO4	Realize the importance of analytical listening during communication.		
CO5	Apply critical thinking skills in interpreting texts and discourses.		

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													



CO1	-	-		-	-	-	-	-	-	2	3	-	1
CO2	-	-		-	-	-	1	-	-	3	2	-	-
CO3	-	-		-	-	-	-	-	-	2	3	-	-
CO4	-	-		-	-	-	-	-	-	2	3	-	1
CO5	-	3		-	-	-	-	-	-	-	2	-	1
Average	-	3		-	-	-	1	-	-	2.25	2.6	-	1

Course Code	ABT0101			
Course Title	Elementary Mathematics			
CO1	Apply concept of equation to solve quadratic equations and system of linear inequality in two variables.			
CO2	Apply the concept of differentiation to find the derivative of different type functions ,rate of change and maxima and minima.			
CO3	Apply concept of integration to evaluate integrals and definite integrals.			
CO4	Apply the concept of differentiation and integration to find the solution of differential equations.			
CO5	Solve the problems of Profit, Loss, Number & Series, Coding & decoding.			

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	2	2		-	2	-	-	-	-	-	-	-	-
CO2	2	3		2	-	-	-	-	-	-	-	-	-
CO3	2	3		-	2	-	-	-	-	-	-	-	-
CO4	2	3		-	3	-	-	-	-	-	-	-	-
CO5	3	3		-	2	-	-	-	-	-	-	-	-
Average	2.2	2.8		2	2.25	-	-	-	-	-	-	-	-

Course Code	ACSE0101			
Course Title	Problem Solving using Python			
CO1	Write simple python programs.			
CO2	Develop python programs using decision control statements			
CO3	Implement user defined functions and modules in python			



CO4	Implement python data structures –lists, tuples, set, dictionaries
CO5	Perform input/output operations with files in python and implement searching, sorting and merging algorithms

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	3	2		-	-	-	-	-	-	-	-	-	-
CO2	3	3		-	-	-	-	-	-	-	-	-	-
CO3	3	2		2	-	-	-	-	-	-	-	-	-
CO4	3	2		-	-	2	-	-	-	-	-	-	-
CO5	3	3		-	2	2	-	-	-	-	-	-	-
Average	3	2.4		2	2	2	-	-	-	-	-	-	-

PSO	PSO1	PSO2		PSO3
CO				
CO1	3	-		2
CO2	3	-		3
CO3	3	-		3
CO4	3	-		3
CO5	3	-		3
Average	3	-		2.8

Course Code	ACSE0151	
Course Title	Problem Solving using Python Lab	
CO1	Write simple python programs.	
CO2	Implement python programs using decision control statements	
CO3	Writing python programs using user defined functions and modules	
CO4	Implement programs using python data structures –lists, tuples, set, dictionaries	
CO5	Write programs to perform input/output operations on files	



PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	3	-		-	-	3	-	-	-	-	-	-	-
CO2	3	2		-	-	-	-	-	-	-	-	-	-
CO3	3	-		2	-	-	-	-	-	-	-	-	-
CO4	3	-		2	-	-	-	-	-	-	-	-	-
CO5	3	-		-	-	3	-	-	-	-	-	-	-
Average	3	-		-	-	3	-	-	-	-	-	-	-

Course Code	AME0151
Course Title	Digital Manufacturing Practices
CO1	Understand various manufacturing process which are applied in the industry.
CO2	Demonstrate the construction and working of conventional machine tools and computer controlled machine tools.
CO3	Understand the programming techniques of CNC machines and Robotic arms.
CO4	Use the different 3D printing techniques.
CO5	

PO	PO1	PO2		PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO													
CO1	3	2		-	-	1	-	-	-	-	-	-	-
CO2	3	-		-	2	3	-	-	-	-	-	-	-
CO3	3	-		2	-	3	-	-	-	-	-	-	-
CO4	3	-		-	2	3	-	-	-	-	-	-	-
CO5													
Average	3	2		2	2	2.5	-	-	-	-	-	-	-

KAS201	Physics
CO1	Solve the classical and wave mechanics problems
CO2	Formulate and solve the engineering problems on Electromagnetism & Electromagnetic Field Theory
CO3	Develop the understanding of laws of optics and their application in various processes

Rahimi


CO4	Learn limits of classical physics & apply the ideas in solving the problems in their parent streams
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Physics	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	2	2	2	-	-	-	-	2
CO2	3	2	1	-	1	2	2	-	-	-	-	2
CO3	3	3	1	-	2	2	2	-	-	-	-	2
CO4	3	2	2	-	2	3	2	-	-	-	-	2
Average	3	2.25	1.25	-	1.75	2.25	2	-	-	-	-	2

KBT201	Elementary mathematics II
CO1	Understand the concept of differentiation and apply for solving differential equations
CO2	Remember the concept of definite integral and apply for evaluating surface areas and volumes.
CO3	Understand the concept of convergence of sequence and series. Also evaluate Fourier series
CO4	Illustrate the working methods of complex functions and apply for finding analytic functions
CO5	Apply the complex functions for finding Taylor's series, Laurent's series and evaluation of definite integrals.

Elementary mathematics II	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	-	-	3	2	3
CO2	3	3	3	2	2	-	-	-	-	3	3	-
CO3	3	2	3	2	3	2	-	-	-	-	3	2
CO4	3	2	3	2	3	3	2	-	-	3	-	3
CO5	3	2	1	2	3	3	2	-	-	3	-	3
Average	3	2.4	2.6	2.2	2.8	2.75	2.3	-	-	3	2.67	2.75

KE E201	Basic electrical engineering
CO1	Apply the concepts of KVL/KCL and network theorems in solving DC circuits.
CO2	Analyze the steady state behavior of single phase and three phase AC electrical circuits.
CO3	Identify the application areas of a single phase two winding transformer as well as an auto transformer and calculate their efficiency. Also identify the connections of a three phase transformer.
CO4	Illustrate the working principles of induction motor, synchronous machine as well as DC machine and employ them in different area of applications.
CO5	Describe the components of low voltage electrical installations and perform elementary calculations for energy consumption.



Basic electrical engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2	-	1	1	1	1	1	1	2
CO2	3	3	1	2	-	1	1	1	1	1	1	2
CO3	3	2	1	2	-	1	1	1	1	2	1	2
CO4	3	2	1	2	-	2	1	1	1	2	1	2
CO5	2	1	2	1	-	2	1	2	1	2	1	2
Average	2.8	2.2	1.2	1.8	-	1.4	1	1.2	1	1.6	1	2

KAS204	Professional english
CO1	Understand the basic objective of the course by being acquainted with specific dimensions of communication skills i.e. Reading, writing, listening, thinking and speaking.
CO2	Create substantial base by the formation of strong professional vocabulary for its application at different platforms and through numerous modes as Comprehension, reading, writing and speaking etc.
CO3	Apply it at their work place for writing purposes such as Presentation/official drafting/administrative communication and use it for document/project/report/research paper writing.
CO4	Evaluate the correct & error-free writing by being well versed in rules of English grammar & cultivate relevant technical style of communication & presentation at their work place & also for academic uses.
CO5	Apply it for practical and oral presentation purposes by being honed up in presentation skills and voice-dynamics. They will apply techniques for developing interpersonal communication skills and positive attitude leading to their professional competence.

Professional english	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	0	1	1	1	1	1	2	2	2	3	2	3
CO2	2	2	2	2	2	2	2	2	2	3	2	3
CO3	1	3	2	3	2	1	2	1	1	3	2	3
CO4	2	3	3	3	2	3	2	1	3	3	2	3
CO5	0	1	1	1	1	2	2	1	3	3	3	3
Average	1	2	1.8	2	1.6	1.8	2	1.4	2.2	3	2.2	3

KAS201P	Physics Lab
CO1	Apply the practical knowledge of the phenomenon of interference, diffraction and polarization.
CO2	Understand energy band gap and resistivity.
CO3	Develop the measurement techniques of magnetism.
CO4	Analyze the flow of liquids.



Physics Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	3	-	1	1	2	1	1	1
CO2	3	-	-	-	2	-	1	1	2	1	1	1
CO3	2	-	-	-	2	-	2	1	2	1	1	1
CO4	2	-	-	-	2	-	1	1	2	1	1	1
Average	2.5	-	-	-	2.25	-	1.25	1	2	1	1	1

12. KEE201 P	Basic electrical engineering LAB
CO1	Conduct experiments illustrating the application of KVL/KCL and network theorems to DC electrical circuits.
CO2	Demonstrate the behavior of AC circuits connected to single phase AC supply and measure power in single phase as well as three phase electrical circuits.
CO3	Calculate efficiency of a single phase transformer and study of single phase Inductive load and power factor improvement.
CO4	Perform experiments on speed measurement and reversal of direction of three phase induction motor and Identify the type of DC and AC machines based on their construction.
CO5	Perform experiment on elementary calculations for energy consumption.

Basic electrical engineering LAB	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	-	1	1	1	2	1	1	2
CO2	2	2	1	1	-	1	1	1	2	1	1	2
CO3	2	2	1	1	-	1	1	1	2	1	1	2
CO4	2	2	1	1	-	1	1	1	2	2	1	2
CO5	2	2	1	1	-	1	1	2	2	2	1	2
Average	2	2	1	1	-	1	1	1.2	2	1.4	1	2

KCE201	Engineering graphics & design
CO1	Understand the visual aspects of engineering design.
CO2	Understand engineering graphics standards and solid modeling.
CO3	Effective communication through graphics.
CO4	Apply modern engineering tools necessary for engineering practice.
CO5	Apply computer-aided geometric design.

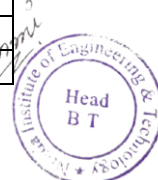
Engineering graphics & design	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	1	1	1	1	2	2	3	1	3
CO2	3	2	3	2	3	2	2	3	2	3	2	3
CO3	3	2	1	1	2	1	1	3	2	3	1	3
CO4	3	3	3	2	3	2	2	2	2	3	2	3
CO5	3	1	2	1	2	1	1	2	2	2	1	2
Average	3	2	2	1.4	2.2	1.4	1.4	2.4	2	2.8	1.4	2.8

KAS304	Maths V
CO1	Understand the concept of fourier transform and z- transform to apply for solving with the help of transform problems.
CO2	Remember the concept of probability to evaluate probability distribution
CO3	Analyze the concept of numerical techniques to evaluate the zero's of the function and interpolation
CO4	Apply the concept of hypothesis to evaluate various hypothesis testing
CO5	Remember the concept of design and statistical quality control to create control charts.

Maths V	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	2	3	3	3	3	3	3	2
CO2	2	2	2	1	2	3	3	3	3	3	3	2
CO3	2	3	3	2	3	3	3	3	3	3	3	2
CO4	2	3	3	2	3	3	3	3	3	2	2	2
CO5	2	3		3		3	3	3	3	3	2	1
Average	2.2	2.6	2.5	1.8	2.5	3	3	3	3	2.8	2.6	1.8

KAS301	Technical communication
CO1	Understand the nature and objective of technical communication relevant for the work place as engineers.
CO2	Utilize the technical writing for the purposes of technical communication and its exposure in various dimensions.
CO3	Imbibe inputs by presentation skills to enhance confidence in face of diverse audience.
CO4	Create a vast know-how of the application of the learning to promote their technical competence.
CO5	Evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.

Technical communication	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	2	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	1	2	1	1	1	1	2	1	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	1	2	1	1	1	1	2	1	3	3	3	3
Average	2.2	2.6	2.2	2.2	2.2	2.2	2.4	2.2	3	3	3	3



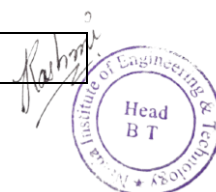
KBT301	Techniques in Biotechnology
CO1	Understand principles and various components of different microscope to analyze and characterize biomolecules.
CO2	Describe the general principle of chromatographic separations; distinguish the chromatography techniques used in the separation of biological molecules; compare each of the techniques based on effectiveness; apply these techniques to the separation of a hypothetical protein sample
CO3	Describe the basic principle of gel electrophoresis; distinguish the different forms of electrophoresis and their applications to biotechnology; analyze and/or interpret data from various forms of electrophoresis.
CO4	Analyse the regions of electromagnetic spectrum and relate it to spectroscopic methods.
CO5	Apply centrifugation techniques to the separation of biological samples; comparing the separation of different biological components.

Techniques in Biotechnology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	3	3	1	2	3	1	1	3
CO2	3	3	2	2	3	1	1	2	3	1	2	3
CO3	3	3	3	3	3	1	1	2	3	1	2	3
CO4	3	3	3	3	3	1	1	2	3	1	1	3
CO5	3	3	3	2	3	2	1	2	3	1	1	3
Average	3	2.8	2.6	2.4	3	1.6	1	2	3	1	1.4	3

KBT302	Microbiology & immunology
CO1	Classify ,culture and preserve bacteria and study microbial growth.
CO2	Classify the structure of virus & viral reproduction and describe bacterial photosynthesis.
CO3	Interpret immunological response and how it is triggered and regulated.
CO4	Apply basic techniques for identifying antigen-antibody interactions and able to provide an overview of complement system and immune tolerance.
CO5	Understand and explain the basis of infectious disease and describe the role of microbes in the context of environmental applications.

Microbiology & immunology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2				2	2	2		2	1	1	2
CO2	2	1	1		1		1		1	1		2
CO3	3	3	3	1		1					1	3
CO4	3	3	3	1	2	2					1	3
CO5	3	3	3	2	2	3	3				1	3
Average	2.6	2.5	2.5	1.33	1.75	2	2		1.5	1	1	2.6

KBT303	Biochemistry
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CO1	Explain chemistry of water and predict the mechanism of biological buffers
CO2	Define the chemistry of carbohydrates and their metabolic pathways.
CO3	Understand the classification and metabolic pathway of lipids.
CO4	Outline the classification, structural organization of proteins and metabolic pathway of amino acids.
CO5	Discuss the metabolic pathways of nucleic acids and disorders of purines and pyrimidines metabolism.

Biochemistry	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	2	2	2	2	2	2	3
CO2	3	3	3	3	3	3	3	3	2	2	2	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	3
CO5	3	2	2	2	3	3	3	3	3	2	3	3
Average	3	2.8	2.8	2.8	3	2.8	2.8	2.8	2.6	2.4	2.4	3

KBT351	Techniques in Biotechnology Lab
CO1	Demonstrate basic concepts of measurements and beer-lambert's law.
CO2	Understand structure & function of basic microscope.
CO3	Perform thin layer chromatography, paper chromatography & column chromatography
CO4	Analyze agarose gel electrophoresis and analysis of protein by sds- page method.
CO5	Illustrate liquid-liquid extraction experiments and membrane separation.

Techniques in Biotechnology Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	2	2	2	3	2	2	3
CO2	3	2	3	2	2	1	3	2	2	2	2	3
CO3	3	3	3	2	2	1	3	3	3	2	3	3
CO4	3	2	3	2	2	2	3	3	3	2	2	3
CO5	3	2	3	3	2	1	3	3	3	2	3	3
Average	3	2.4	3	2.4	2	1.4	2.8	2.6	2.8	2	2.4	3

KBT352	Microbiology & immunology lab
CO1	Use a bright field microscope to view and interpret slides ,correctly set up and focus the microscope, properly handle, clean, and store the microscope, correctly use all lenses and record microscopic observations.
CO2	Use aseptic techniques for the transfer and handling of microorganisms and instruments.
CO3	Use appropriate microbiological media and test systems to isolate individual colonies, maintain pure cultures and accurately record macroscopic observations.
CO4	Determine the blood group of given blood and rh factor of given blood.



CO5	Perform immunological techniques such as immunodiffusion, immune electrophoresis and elisa.
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Microbiology & immunology lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	1		1	1		1	1	1	2
CO2	3	3	3	1	2	1	1		1	1	1	2
CO3	3	3	3	1		1	1		1	1	1	2
CO4	3	3	3			1	1		1	1	1	2
CO5	3	3	3	1	1	1	1		1	1	1	2
Average	3	3	2.6	1	1.5	1	1		1	1	1	2

KBT353	Biochemistry lab
CO1	Demonstrate an understanding of the fundamental principles, including scientific reasoning to solve problems of biochemistry
CO2	Define a comprehensive understanding of the theory and practice of modern instrumentation and apply it to appropriate chemical problems.
CO3	Analyze potential laboratory safety concerns and address them using appropriate techniques.
CO4	Derive the results, conclusions, and relevance of scientific experiments.
CO5	Formulate scientific reports formatted for peer reviewed publication, using the primary literature.

Biochemistry lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	3	3	2	3	3
CO2	3	3	3	3	3	3	2	3	3	2	2	2
CO3	3	3	3	3	3	3	2	3	3	3	3	3
CO4	3	3	3	3	3	2	2	3	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	3	2	3
Average	3	3	3	3	3	2.8	2.4	3	2.8	2.4	2.4	2.8

KBT354	Mini Project or Internship Assessment
CO1	Acquire and apply fundamental principles of engineering
CO2	Become updated with all the latest changes in technological world
CO3	Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.
CO4	Identify, formulate and model problems and find engineering solution based on a systems approach.
CO5	Have Capability and enthusiasm for self-improvement through continuous professional development and life-long learning

Mini Project or	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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Internship Assessment												
CO1	3	3	3	2	3	3	2	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	2	2	3	3	3	3	3	3	3
Average	3	3	2.8	2.6	2.8	3	2.8	3	2.8	3	2.8	3

KNC301	Computer system security
CO1	Discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats
CO2	Discover cyber attack scenarios to web browsers and web servers and to explain how to mitigate such threats.
CO3	Discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.
CO4	Articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios
CO5	List the well known cyber attack incidents, determine the attack scenarios, and explain mitigation techniques

Computer System Security	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		2	1		2			3
CO2	2	1	3			3	1					3
CO3	3	3	2	2		2	2		2			3
CO4			1			3	3					3
CO5			1			3	3		2			3
Average	2.67	2.33	1.8	2		2.6	2		2			3

KOE045	Basics data structure & algorithms
CO1	Describe and analyze the time and space complexity of an algorithm
CO2	Understand and implement fundamental algorithms(including sorting algorithms, graph algorithms, and programming)
CO3	Discuss various algorithm design techniques for developing algorithms
CO4	Discuss various searching, sorting and graph traversal algorithms
CO5	Understand operation on queue, priority queue, d-queue.

Basics Data Structure & Algorithms	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3				3			



CO2	3	3	3	2	3				3			
CO3	3	3	3	2	3				3			
CO4	3	3	3	2	3				3			
CO5	3	3	3	2	3				3			
Average	3	3	3	2	3				3			

KVE401	Universal human values
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the self and the body, understand the meaning of harmony in the self the co-existence of self and body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Classify the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work

Universal Human Values	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						2		3	2	2	2	3
CO2								3	1	2		3
CO3								3	3	2		3
CO4						1	1	3	3	2		3
CO5						2	1	3	3	2		3
Average						1.67	1	3	2.4	2	2	3

KBT401	Bioprocess engineering i
CO1	Define the fluid properties, to classify different type of fluids and to measure pressure in fluid systems using manometers.
CO2	Apply bernoulli's equation in different devices; demonstrate the functioning of different flow measuring instruments and water pumps, to calculate head losses in pipe flows and to apply dimensional analysis.
CO3	Apply the knowledge of heat transfer to solve various problem and to understand working various heat carrying equipment like heat exchanger, condenser and evaporator.
CO4	Understand the concept of mass diffusion and relation between heat and mass transfer.
CO5	Understand the concept of mass transfer in various biomedical and biological engineering application like haemodialysis, diffusion and uptake of ligands by cells.

Bioprocess Engineering I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2	2	1	1	1	2	2	1	3



CO2	3	3	2	2	2	2	2	1	2	2	1	3
CO3	3	3	2	1	1	1	1	1	2	2	1	3
CO4	3	3	2	1	1	2	3	3	2	2	1	3
CO5	3	3	3	3	3	2	3	3	3	2	2	3
Average	3	3	2	1.8	1.8	1.6	2	1.8	2.2	2	1.2	3

KBT402	Genetics & molecular biology
CO1	Learn the fundamental principles of genetics and gene interaction and evaluate the concept of sex influenced and sex limited characters.
CO2	Understand the genome organization of prokaryotes and eukaryotes and learn the c value paradox and methods to measure dna content variation.
CO3	Get the idea of genetic materials, know replication of dna and packaging and learn the gene mapping technique.
CO4	Evaluate genetic mutations and its association with diseases and know the role of promoters and enhancers in the genome. Gene regulation mechanism in detail
CO5	Get insight into the replication process in dna of eukaryotes and prokaryotes, understand the genetic codes and basic principle of gene cloning and understand the role of molecular chaperones and wobble hypothesis.

Genetics & Molecular Biology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	2	2	2	1	2	3	3	2
CO2	1	1	2	3	2	3	2	2	2	2	1	3
CO3	3	3	2	1	2	2	2	3	3	3	2	3
CO4	1	2	3	2	1	3	3	2	2	3	2	3
CO5	2	2	3	3	2	3	3	3	2	2	3	2
Average	2	2.2	2.6	2	1.8	2.6	2.4	2.2	2.2	2.6	2.2	2.6

KBT403	Enzyme engineering
CO1	Understand classification of enzymes & kinetics of single substrate reactions.
CO2	Discuss the factors involving and factors affecting the enzyme catalyzed reaction.
CO3	Perform extraction of enzymes from various sources & their purification by different methods.
CO4	Describe various enzyme immobilization methods and kinetic properties of immobilized enzymes.
CO5	Define enzyme biosensors & design of enzyme electrodes and immobilized enzyme reactors.

Enzyme Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	2	2	2	2	2	2	3



CO2	3	3	3	3	3	2	2	2	2	2	2	3
CO3	3	3	3	3	3	3	3	2	2	2	2	3
CO4	3	3	3	3	2	2	2	2	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	2	2	3
Average	3	3	3	3	2.6	2.4	2.4	2.2	2.2	2	2	3

KBT451	Bioprocess engineering i lab
CO1	Formulate heat conduction problems to determine the conductivity of liquid, metal and gas.
CO2	Differentiate between different types of fluid flow and measure flow parameter like velocity and pressure.
CO3	Analyze a heat exchanger for parallel and counter flow heat exchanger.
CO4	Find the minimum velocity required for fluidization.
CO5	Explain different drying characteristics.

Bioprocess Engineering I Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2							2			2
CO2	3	3							2			2
CO3	3	3							2			2
CO4	3	3							2			2
CO5	3	3							2			2
Average	3	2.8							2			2

KBT452	Genetics & molecular biology lab
CO1	Understand the concept of mendelian laws and its use in the calculation of genetic and allelic frequencies
CO2	Isolate the dna from various sources including plant, e. Coli and bacterial cells
CO3	Handle several instruments including spectrophotometer and gel electrophoresis apparatus

Genetics & Molecular Biology Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	2	3	1	2	3
CO2	3	3	3	3	3	3	3	2	3	1	2	3
CO3	3	3	3	3	3	3	3	1	3	1	2	3
Average	3	3	3	3	3	3	3	1.666666667	3	1	2	3

KBT453	Enzyme engineering lab
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CO1	Analyze and solve problems related to kinetics of enzymatic reactions.
CO2	Determine appropriate methods for isolation, purification and characterization of enzymes and solve related problems.
CO3	Compare and contrast methods in enzyme catalysis and interpret the related data.
CO4	Perform various enzyme immobilization techniques and illustrate their applications
CO5	Design, conduct experiments, analyse and interpret results related to enzyme reaction kinetics.

Enzyme Engineering Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	3	2	3	3	2	3	3
CO2	3	3	3	3	3	2	2	3	3	3	2	3
CO3	3	3	3	2	3	2	2	3	3	2	2	3
CO4	3	3	3	3	2	2	2	3	3	2	2	3
CO5	3	2	2	3	3	3	2	3	2	2	3	3
Average	3	2.8	2.8	2.6	2.6	2.4	2	3	2.8	2.2	2.4	3

KNC402	Python programming
CO1	Read and write simple python programs..
CO2	Determine python programs with conditionals and loops.
CO3	Define python functions and to use python data structures — lists, tuples, dictionaries
CO4	Do input/output with files in python
CO5	Do searching ,sorting and merging in python

Python Programming	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	1				2			3
CO2	3	3	3	2	1				2			3
CO3	3	3	2	2	1				2			3
CO4	3	3	2	2	1				2			3
CO5	3	3	2	2	1				2			3
Average	3	3	2.4	2	1				2			3

KBT501	Genetic engineering
CO1	Understand the basic concept and procedure of gene cloning and the role of enzymes and vectors used for genetic manipulation and genetic engineering
CO2	Acquired theoretical knowledge of PCR technique, their different types and applications.
CO3	Describes the gene expression, their regulation and theoretical knowledge of different analytical techniques used in genetic engineering.
CO4	Get detailed knowledge of applications of genetic engineering in respect to creation of genetically modified organisms.
CO5	Understand the basic concept of cell signaling pathways and key molecules involved.

Genetic Engineering	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	2	3	3	1	3	3
CO2	3	3	3	3	3	3	1	2	3	1	2	3
CO3	3	3	3	3	3	3	2	3	3	1	3	3
CO4	3	3	3	3	3	3	3	3	3	1	3	3
CO5	3	2	2	2	2	2	1	2	3	1	1	3
Average	3	2.8	2.8	2.8	2.8	2.8	1.8	2.6	3	1	2.4	3

KBT502	Fermentation biotechnology
CO1	Understand of the concepts and process technologies of fermentation.
CO2	Apply and use of different raw materials and its use in industrial scale production.
CO3	Know about Regulatory system in the microorganism.
CO4	Understand Strain improvement technologies and its role in Fermentation.
CO5	Know the Concepts of the scale up and scale down criteria of fermentation process and production of metabolites

Fermentation Biotechnology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	2	3	3	1	3	3
CO2	3	3	3	3	3	3	1	2	3	1	2	3
CO3	3	3	3	3	3	3	2	3	3	1	3	3
CO4	3	3	3	3	3	3	3	3	3	1	3	3
CO5	3	3	3	3	3	3	2	2	3	1	3	3
Average	3	3	3	3	3	3	2	2.6	3	1	2.8	3

KBT503	Bioinformatics I
CO1	Understand concepts and application of Bioinformatics, types of databases, sequence similarity, sequence patterns and profiles
CO2	Use sequence alignment techniques, database searching, pairwise and multiple sequence alignment using various tools.
CO3	Understand scoring matrices and its types including PAM , BLOSUM series and matrices for nucleic acid and protein sequences
CO4	Apply phylogeny and its concepts in molecular evolution and different methods of Phylogenetic tree construction
CO5	Understand and apply the protein structure prediction and application of bioinformatics in drug designing

Bioinformatics I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	2	2	1	1	1				2
CO2	1	2	2	1	3	1	1	1				2
CO3	1	2	2	2	3	2	1	1	1			2
CO4	2	3	2	2	3	2	1	1	1			2
CO5	2	1	2	1	3	2	1	1	1			2
Average	1.4	1.8	1.8	1.6	2.8	1.6	1	1	1			2

KBT051	Pharmaceutical biotechnology
CO1	Understand concepts and application of pharmaceutical industry, Therapeutic agents, biopharmaceuticals.
CO2	Understand the process off drug manufacturing, processing, preservation, analytical methods and quality management.
CO3	Apply the knowledge of new drug development, GMP and Economics of drug development in pharma industry
CO4	Use knowledge of Drug regulation and control. Scope and applications of biotechnology in pharmacy.

Pharmaceutical Biotechnology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	2	2	1	2		3	3
CO2	3	3	3	3	3	2	3	1	2		3	3
CO3	3	3	3	3	3	3	2	1	2		3	3
CO4	3	3	3	3	3	3	3	1	2		3	3
Average	3	3	3	3	3	2.5	2.5	1	2		3	3

KBT052	Nano biotechnology
CO1	Demonstrate the understanding of length scales concepts, nanostructures and nanotechnology.
CO2	Identify the principles of processing, manufacturing and characterization of nanomaterials and nanostructures.
CO3	Apply the electronic microscopy, scanning probe microscopy and nanoindentation techniques to characterize the nanomaterials and nanostructures.
CO4	Evaluate and analyse the mechanical properties of bulk nanostructured metals and alloys, nanocomposites and carbon nanotubes.
CO5	Identify current nanotechnology solutions in medical sciences.

Nano Biotechnology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	3	3	2	3	3
CO2	3	3	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	3	3	2	3	3
Average	3	3	3	3	3	3	3	3	3	2	3	3

KBT055	Biofuels and alcohol technology
CO1	Explain basic concepts of metabolism and importance of metabolic engineering
CO2	Understand the production of metabolites and its regulatory mechanism
CO3	Explain the applications, specificity and product inhibition of bioconversion



CO4	Understand Regulation of enzyme production and strain improvement
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Biofuels and alcohol technology	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	3	3	3	3	3					2
CO2	3	2	3	2	3	1	2					2
CO3	2	3	2	3	2	2	2					2
CO4	3	3	3	3	2	3	2					2
Average	2.5	2.25	2.75	2.75	2.5	2.25	2.25					2

KBT057	3-d printing
CO1	Explain basic concepts of 3-D printing technology.
CO2	Understand the application, case studies, working, principles of 3-D printing technology
CO3	Explain the laminated object manufacturing and fused deposition modeling.
CO4	Apply the knowledge of 3-D Printing techniques to develop novel engineering models

3-D Printing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	1	1	2	3	3	3
CO2	3	3	3	3	3	3	1	1	2	3	3	3
CO3	3	3	3	3	3	3	1	1	2	3	3	3
CO4	3	3	3	3	3	3	1	1	2	3	3	3
Average	3	3	3	3	3	3	1	1	2	3	3	3
3-D Printing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

KBT551	Genetic Engineering lab
CO1	Demonstrate the isolation genetic materials
CO2	Perform experiments related to cloning, ligation, restriction digestion and transformation etc.
CO3	Demonstrate the Southern Blotting for identification of desired DNA in a pool DNA samples
CO4	Demonstrate the implications of ligation and cloning
CO5	Perform the bacterial cell competent for transformation

Genetic Engineering lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	2	2	1	3	1	1	3
CO2	3	3	2	2	2	3	2	1	3	1	1	3
CO3	3	3	3	3	2	3	3	1	3	1	1	3



CO4	3	3	3	2	3	3	3	1	3	1	1	3
CO5	3	3	3	2	3	3	2	1	3	1	1	3
Average	3	3	2.8	2.2	2.4	2.8	2.4	1	3	1	1	3

KBT552	Fermentation technology lab
CO1	Learn the process of antibiotics production using microorganisms
CO2	Study the induction effect of β -galactosidase enzyme in E.coli.
CO3	Analyse citric acid production using different methods and different raw materials.
CO4	Understand the process of ethanol and wine production using Saccharomyces cerevisiae.
CO5	Study and analyze the microbial production of biosurfactant and biopolymer by using microbial strains.

Fermentation Technology Lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	2	2	2	1	3	1	1	3
CO2	3	3	2	2	2	3	2	1	3	1	1	3
CO3	3	3	3	3	2	3	3	1	3	1	1	3
CO4	3	3	3	2	3	3	3	1	3	1	1	3
CO5	3	3	3	2	3	3	2	1	3	1	1	3
Average	3	3	2.8	2.2	2.4	2.8	2.4	1	3	1	1	3

KBT553	Bioinformatics- I virtual lab
CO1	Demonstrate the retrieval of sequence data
CO2	Perform experiments related to locating chromosome and gene expression data.
CO3	Demonstrate the data retrieval system of pubmed.
CO4	Perform the ORF finding and retrieval of gene information
CO5	Demonstrate the retrieval of protein structure data from PDB.

Bioinformatics- I virtual lab	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	2	2	1	1	1	1	1		2
CO2	1	2	2	2	3	1	1	1	1	1		2
CO3	1	2	2	2	3	1	1	1	1	1		2
CO4	2	3	2	3	3	1	1	1	1	1		2
CO5	2	2	2		3	1	1	1	1	1		2
Average	1.7	1.9	2	2.56	1.9	1	1	1	1	1	2	2

KBT554	Mini Project or Internship Assessment
CO1	Understand and workout the project problem.
CO2	Gain experience to make a project report.
CO3	Acquire the necessary confidence to carry out main project in the final year.

Mini Project or Internship Assessment	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3

KNC501	Constitution of india, law and engineering
CO1	Identify and explore the basic features and modalities about Indian constitution.
CO2	Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
CO3	Differentiate different aspects of Indian Legal System and its related bodies.
CO4	Discover and apply different laws and regulations related to engineering practices.
CO5	Correlate role of engineers with different organizations and governance models

CONSTITUTION OF INDIA, LAW AND ENGINEERING	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						1		1	2	1		3
CO2						1		1	2	1		3
CO3						1		1	2	1		3
CO4						1		1	2	1		3
CO5						1		1	2	1		3
Average						1		1	2	1		3

KBT601	Bioprocess engineering -ii
CO1	Understand the kinetics of microbial growth and stoichiometry.
CO2	Understand enzyme and ideal reactor operation.
CO3	Discuss the bioreactor control mechanism.
CO4	Understand application of bioprocess engineering.



CO5	Analyze modelling and optimization in bioprocess engineering.
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PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1	2	1	1	1			1	1
CO2	3	3	2	1	2	1		1			1	1
CO3	3	3	2	1	2	1		1			2	1
CO4	3	3	2	1	2	1		1			1	1
CO5	3	3	2	1	2	1		1			1	1
Average	3	3	2	1	2	1	1	1			1.2	1

KBT60 2	Plant biotechnology
CO1	Understand the principle and basic requirements for plant tissue culture.
CO2	Explain the difference between tissue and organ culture and their applicability.
CO3	Understand haploid culture and in vitro selection of mutants and analyze somaclonal variation for improved crop varieties in vitro cultures.
CO4	Identify suitable cryopreservation and reculture technique for the cultured tissue.
CO5	Understand the development of transgenic plants through genetic manipulations.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3

KBT60 3	Bioinformatics -II
CO1	Understand the various tools and techniques related to <i>in silico</i> modeling of biomolecules
CO2	Analyse problems related to collection and analysis of biological data
CO3	Develop steady and time dependent solutions along with their limitations
CO4	Understand the basic concept of modeling of biomolecules
CO5	Understand the methods of drug designing, protein docking

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	2	2	1	1	1	-	-	-	2
CO2	1	2	2	1	3	1	1	1	-	-	-	2
CO3	1	2	2	2	3	2	1	1	1	-	-	2
CO4	2	3	2	2	3	2	1	1	1	-	-	2



CO5	2	1	2	1	3	2	1	1	1	-	-	2
Average	1.4	1.8	1.8	1.6	2.8	1.6	1	1	1			2

KBT06 3	Food biotechnology
CO1	Understand the historical development of microorganisms in food and various food processing methods and unit operations.
CO2	Understand the principles involving fermentation in food processing.
CO3	Conclude the principles that make a food product safe for consumption.
CO4	Identify the conditions under which the important pathogens are commonly inactivated, killed or made harmless in foods.
CO5	Understand the principles and current practices of processing techniques and the effects of processing parameters on product quality.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	3	3	2	3	2	3	3	3
CO2	3	2	3	3	3	3	3	2	3	2	3	3
CO3	3	3	2	3	2	3	2	3	3	3	3	3
CO4	3	2	3	2	3	3	2	3	2	3	3	3
CO5	3	3	2	3	3	3	2	3	3	2	3	3
Average	3	2.4	2.6	2.6	2.8	3	2.2	2.8	2.6	2.6	3	3

KOE06 9	Understanding Human Being, Nature and Existence Comprehensively
CO1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
CO2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
CO3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
CO4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
CO5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						2		3	2	2	2	3
CO2								3	1	2		3
CO3								3	3	2		



CO4						1	1	3	3	2		3
CO5						2	1	3	3	2		3
Average						1.66666667	1	3	2.4	2	2	3

KBT65 1	Bioprocess engineering –ii lab
CO1	Understand importance of enzymes and its immobilization
CO2	Develop the equations for various bioreactors processes
CO3	Understand the importance of mixing and agitation.
CO4	Optimize the bioreactor system for product formation.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1	2	1	1	1			1	1
CO2	1	3	2	1	2	1		1			1	1
CO3	3	3	2	1	2	1		1			2	1
CO4	2	3	2	1	2	1		1			1	1
Average	2	2.75	2	1	2	1	1	1			1.25	1

KBT65 2	Plant biotechnology lab
CO1	Operate and handle the plant biotechnology lab equipments.
CO2	Perform tissue culture media preparation, sterilization and explants selection.
CO3	Understand in vitro cultures through axillary bud induction.
CO4	Analyze plant secondary metabolites from selected medicinal plants.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	3	3	3	3	3	3	3	3	3

KBT65 3	Bioinformatics-ii lab
CO1	Understand the basic software and tools used in structure prediction of biomolecules
CO2	Conduct experimental procedure for Ramachandran plot and its analysis.
CO3	Construct and analyse of restriction maps, QSAR model and homology model



CO4	Identify and structurally modify a natural product, to design a compound with the desired properties and to assess its therapeutic effects, theoretically
CO5	Enhance their practical knowledge and thus their employability.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1	2	2	1	1	1	1	1		2
CO2	1	2	2	2	3	1	1	1	1	1		2
CO3	1	2	2	2	3	1	1	1	1	1		2
CO4	2	3	2	3	3	1	1	1	1	1		2
CO5	2	2	2	1	3	1	1	1	1	1		2
Average	1.4	2	1.8	2	2.8	1	1	1	1	1		2

KNC60 2	Indian tradition, culture and society
CO1	Understand, and connect the present scenario with the evolution of society and political system in India.
CO2	Acquire knowledge about the rich literature of different cultural backgrounds thereby understanding its composite character.
CO3	Realize the roots of religion practices and philosophy followed in India, inferring some of the contemporary issues faced by our nation and try to locate possible solutions to these challenges by digging deep into our past.
CO4	Acquainted with Indian Knowledge System and identify the roots of all the major branches of Science and technology and the related activities in ancient and medieval India.
CO5	Recognize and understand the importance of our rich cultural heritage and performing arts, and their importance in modern society and will be encouraged to contribute towards sustainable development of the society.

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	1	1			2	1	2	2	2	3	3
CO2	1	2	1	1		3	2	2	1	2	1	3
CO3	1	2	1			3	1	3	2	2	2	3
CO4	2	2	1	1	1	2	1	2	2	2	1	3
CO5			1	1		2	3	2	2	1	1	2
Average	1.25	1.75	1	1	1	2.4	1.6	2.2	1.8	1.8	1.6	2.8

Course: Understanding the Human Being Comprehensively – Human Aspirations and its Fulfillment - [ROE074]

Term: 7 - Semester

PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO												
CO1						2		3	3			2
CO2						1	1	3	3			1
CO3						2	1	3	2			2
CO4						2	1	2	2			2
CO5						2	1	2	2			2
Average	0	0	0	0	0	1.8	0.8	2.6	2.4	0	0	1.8

On completion of this course, the students will be able to

CO1: understand the basic human aspirations and their fulfillment through right understanding and resolution..

CO2: understand human being and its expansion.

CO3: understand activities of the self, human being as co-existence of the self and the body.

CO4: understand co-existence with other orders,

CO5: understand expansion of harmony from self to entire existence

Course: Clinical Trials & Management - [RBT073]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	1	-	1	1	-	-	-	1	3
CO2	-	-	-	-	-	-	-	3	-	-	-	3
CO3	2	2	3	3	2	2	1	1	-	1	1	3
CO4	-	-	2	1	-	1	-	-	-	3	1	3
CO5	-	1	1	1	2	2	-	1	-	1	1	3
Average	1	0.8	1.6	1.2	0.8	1.2	0.4	1	0	1	0.8	3

On completion of this course, the students will be able to

CO1: describe the process of drug development and principles of clinical pharmacology.

CO2: develop a clear understanding of why ethics are important in clinical research and be familiar with the regulatory practices in place to protect both the researcher and the subject

CO3:effectively manage the regulatory process from Innovation ☐Discovery ☐ Approval☐ Commercialization to bring the product to the market globally.

CO4:communicate ideas and data in writing, including of scientific concepts and research design of clinical trials.

CO5:describe the various types of clinical studies and the methods used to choose the appropriate design, evaluation and interpretation of clinical trial results.

Course: Bio-materials - [RBT077]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	2	2		2		2	3
CO2	3	3	3	3	3	3	2	1	3	1	2	3
CO3	3		3	3	3	2	2	1	2	1	2	3
CO4	3	3	3	3	3	3	2		3		3	3
CO5	3	3	3	3	3	3	3	3	3	1	3	3
Average	3	2.4	3	3	3	2.6	2.2	1	2.6	0.6	2.4	3

On completion of this course, the students will be able to

CO1: Apply a broad knowledge of materials science and engineering
CO2: Identify bio-materials surface modification methods and characterizations.
CO3: Analyze biocompatibility and tissue-material interaction for different kinds of biomaterials
CO4: Compare the mainstream bio-materials currently used for medical applications.
CO5: Describe different methods for bio compatibility improvement and practical aspects of biomedical devices.

Course: Environmental Biotechnology - [RBT701]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	2	1	2	2	2	2	2
CO2	2	2	1	2	2	2	2	2	2	2	2	2
CO3	2	1	2	2	2	2	1	1	2	2	2	1
CO4	2	1	2	2	2	2	2	2	1	2	2	2
CO5	2	2	2	2	2	2	1	2	2	2	2	2
Average	2	1.6	1.8	2	2	2	1.4	1.8	1.8	2	2	1.8

On completion of this course, the students will be able to

CO1: To provide understanding of type of contamination present in environment, their sources and analysis methods.
CO2: Students will able to expand their background of environmental engineering in the biological aspects of waste remediation and biofuel production.
CO3: Student will able to describe the methods for the treatment of wastewater via bioreactor and their working principle.
CO4: Student will able to describe the economical aspect of waste treatment.
CO5: To undertake explain the the biotechnological aspect in relation to bioleaching and biofuel production.

Course: Bioseparation and downstream processing - [RBT702]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2				1	3
CO2	3	3	3	3	2	1	2				1	3
CO3	3	3	3	3	2	1					1	3
CO4	3	3	3	3	2						1	3
CO5	3	2	2	2	2						1	3
Average	3	2.6	2.6	2.6	2	0.8	0.8	0	0	0	1	3

On completion of this course, the students will be able to

CO1: Understand and explain the role and importance of bioseparation processes and analyze the bioprocess economics.

CO2: Identify, explain and apply the methods of cell disruption and removal of cell debris.

CO3: Recognize, explain and apply the methods of product isolation in research and industry.

CO4: Identify, describe and apply the techniques used in purification of bio products in a bio process industry and research applications.

CO5: Describe , compare and apply the methods of product polishing in a bio-process industry or research lab.

Course: Environmental Biotechnology Lab - [RBT751]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	2	2	1	2	2	2	2	2
CO2	2	2	1	2	2	2	2	2	2	2	2	2
CO3	2	2	1		2		2	2				
CO4	1	2		1	2			2		1		
CO5	2	2	2		1			2				
Average	1.8	2	1.5	1	1.8	0.8	1	2	0.8	1	0.8	0.8

On completion of this course, the students will be able to

CO1: describe about the type of contaminants present in waste water and its analysis method.

CO2: identify and describe the range of practical approaches relevant to environmental microbiology and biotechnology and be able to record, report and discuss data.

CO3: describe the type of method required to remove the contaminant from wastewater.

CO4: describe the bacteria present in the wastewater

CO5: describe the importance of oxygen in wastewater treatment

Course: BIOSEPARATION AND DOWNSTREAM PROCESSING LAB - [RBT752]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	2	2	1				1	3
CO2	3	3	3	3	2		2				1	3
CO3	2	2	2	3	2	1	1				1	3
CO4	3	2	3	3	2	2	2				1	3
Average	2.75	2.5	2.5	3	2	1.67	1.5	0	0	0	1	3

On completion of this course, the students will be able to

CO1: Characterize, classify and separate bio-products using various techniques

CO2: Perform cell disruption using mechanical, enzymatic and chemical approaches and evaluate the application of these methods.

CO3: Explain and analyze different types of bio-product separation processes.

CO4: Analyze the extracted bio-products and create their crystallized and dried forms for final finishing.

Course: Industrial training - [RBT753]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	3	2	3	2	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	2	3
CO5	3	3	2	2	2	3	3	3	3	3	3	3
Average	3	3	2.8	2.6	2.8	3	2.8	3	2.8	3	2.8	3

On completion of this course, the students will be able to

CO1: acquire and apply fundamental principles of engineering

CO2: become updated with all the latest changes in technological world

CO3: Become a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.

CO4: identify and find the solutions of technical problems in industries using systems approach.

CO5: work on self-improvement and adapt to ever-changing technology, through continuous professional development and life-long learning

Course: Project 1 - [RBT754]

Term: 7 - Semester

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
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CO1	2	2	2	2	3	2	2	3	2	2	2	2
CO2	2	2	2	2	2	3	2	3	2	2	2	2
CO3	2	3	2	3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	3	2	2	2	2
CO5	3	3	2	3	2	3	2	3	2	2	2	2
Average	2.2	2.4	2.2	2.4	2.2	2.4	2	3	2	2	2	2

On completion of this course, the students will be able to

CO1: learn the following to carry out literature survey as a team and select a problem statement.

CO2: learn the following perform mass balance calculations for each unit operation and draw flow sheet of the selected bioprocess.

CO3: learn to apply modern software tools including prediction and modelling methods

CO4: design processes for sustainable energy and environment.

CO5: apply advanced biomolecular engineering practises and tools to design a biotechnology process.

Course: Renewable energy resources - [ROE086]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	3	2	2			2	1	3
CO2	3	3	3	2	3	2	3			2	1	3
CO3	3	3	3	1	2	2	3			2	2	3
CO4	3	2	3	2	3	2	3			2	1	3
CO5	3	3	3	2	3	2	3	1		2	2	3
Average	2.8	2.8	3	1.8	2.8	2	2.8	0.2	0	2	1.4	3

On completion of this course, the students will be able to

CO1: understand the availability, merits and demerits of various non conventional energy resources with a focus on solar cells, and hence will be able to analyse and work for the improvement of present technologies towards sustainable and environment freindly energy production.

CO2: understand the use of solar thermal energy in electricity generation, critically analyse its advantages and limitations over other sources and imply the earned knowledge in improving and developing new technology using solar thermal resource.

CO3: understand the source, performance, usage, applications and limitations of technologies using of geothermal energy resources and mhd resources as an alternative to conventional energy resources and also understand the principle and working of fuel cells.

CO4: understand the principle, working, performance and limitation of thermo-electrical and thermionic conversions and also the efficacy of new technologies using wind energy as power source.



CO5: understand the availability of bio-mass and its conversion theory,availability, theory, working principle,performance and limitations.of ocean thermal energy conversion (otec) and wave and tidal wave,waste recycling plants

Course: EXPERIMENTAL BIOTECHNOLOGY (NPTEL) - [RBT081]

Term: 8 - Semester

PO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2		
PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	2	3	3	3	3	3	1	2	1	2	1	3		
CO2	3	3	3	3	3		1			1	1	3		
CO3	3	3	3	3	3		1			1	1	3		
CO4	3	3	3	3	3		1			1	1	3		
CO5	3	3	3	3	3		1			1	1	3		
Average	2.8	3	3	3	3	0.6	1	0.4	0.2	1.2	1	3		

On completion of this course, the students will be able to

CO1: Define and apply good laboratory practices.

CO2: Estimate and characterize biomolecules using spectroscopic methods.

CO3: Perform electrophoretic experiments for separating and characterizing proteins and nucleic acids.

CO4: Classify chromatographic experiments for separating, purifying, and characterizing biomolecules.

CO5: Discuss immunoassay and microscopic methods for studying the cellular structure, their components, as well as the processes they are involved in.

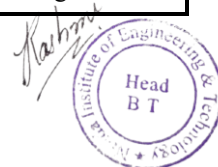
Course: Industrial Biotechnology - [RBT087]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3	3	3
CO5	2	2	2	2	3	3	3	3	3	3	3	3
Average	2.6	2.8	2.6	2.8	3	3	3	2.8	3	3	3	3

On completion of this course, the students will be able to

CO1: understand concept and develop skills for the screening of industrially beneficial strains

CO2: understand principles underlying design of fermentor, fermentation process and downstream processing



CO3: understand various aspects of bioprocess technology for several beneficial purposes including recovery and purification of biomolecules like enzymes, antibiotics, vitamin, beverages

CO4: understand different quality control methods like sterility, toxicity, carcinogenicity testing

CO5: understand concept and features of cost economics and good laboratory practices

Course: SEMINAR - [RBT851]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	2	1	1	2	2	3	1	3
CO2	3	3	3	3	3	2	2	1		3	1	3
CO3	1	3	3	3	3	2	2		1	3	1	3
CO4	2	3	3	2	1	1	1		3	3	2	3
CO5	3	3	3	3	3	3	3	2	3	3	2	3
Average	2.2	2.8	2.6	2.4	2.4	1.8	1.8	1	1.8	3	1.4	3

On completion of this course, the students will be able to

CO1: Identify, understand and discuss current, real –world issues.

CO2: Acquire the knowledge of the techniques, skills, and modern engineering tools necessary for engineering practice.

CO3: Practice finding relevant course material on the internet and incorporate them in their courses.

CO4: Explain the features and strengths of the designed project to the targeted group through written and oral communication.

CO5: Acquire a clear understanding of online instructional design and of the role of technology in education.

Course: Project 2 - [RBT852]

PO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	2	3	2	2	3	2	2	2	2
CO2	2	2	2	2	2	3	2	3	2	2	2	2
CO3	2	3	2	3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	3	2	2	2	2
CO5	3	3	2	3	2	3	2	3	2	2	2	2
Average	2.2	2.4	2.2	2.4	2.2	2.4	2	3	2	2	2	2

On completion of this course, the students will be able to

CO1: learn the following to carry out literature survey as a team and select a problem statement.

CO2: learn the following perform mass balance calculations for each unit operation and draw flow sheet of the selected bioprocess.

CO3: learn to apply modern software tools including prediction and modelling methods



CO4: design processes for sustainable energy and environment

CO5: apply advanced biomolecular engineering practises and tools to design a biotechnology process



**DEPARTMENT
OF
MASTER OF
BUSINESS
ADMINISTRATION**

**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY,
GREATER NOIDA**

Department of MBA

BATCH 2020-21

Semester -I

**Course Outcome for Management Principles & Organisational Behaviour (MPOB)
(AMBA0101)**

Course	Course Outcome No.	Course Outcome
Management Principles & Organisational Behaviour (AMBA0101)	AMBA0101.1	Enable students to understand Management Concepts, managerial practices and their perspectives
	AMBA0101.2	Develop understanding of concepts of organizing and directing
	AMBA0101.3	Equip the students with concepts of motivation and their application.
	AMBA0101.4	Comprehend and interpret the aspects of individual and group behavior
	AMBA0101.5	Inculcate leadership skills and team building capabilities in students

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
AMBA0101.1	3	1	1	2	-
AMBA0101.2	2	2	1	-	2
AMBA0101.3	2	2	-	-	3
AMBA0101.4	3	-	3	1	-
AMBA0101.5	2	-	3	-	-
Average	2.4	1.6	2	1.5	2.5



**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY,
GREATER NOIDA**

Department of MBA

BATCH 2020-21

Course Outcome for MANAGERIAL ECONOMICS (AMBA0102)

Course	Course Outcome No.	Course Outcome
Managerial Economics (AMBA0102)	AMBA0102.1	To remember and understand the concepts of microeconomics to make effective business decisions under conditions of risk and uncertainty.
	AMBA0102.2	To understand the law of demand & supply & their elasticities.
	AMBA0102.3	To analyze production concepts, cost concepts and their impact on business decisions.
	AMBA0102.4	Understand & evaluate pricing decisions under the different market structures.
	AMBA0102.5	To analyze various theories of the firm and how they affect the business decisions.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0102.1	3	2	-	-	-
AMBA0102.2	3	-	2	2	-
AMBA0102.3	-	3	-	2	1
AMBA0102.4	-	3	-	2	-
AMBA0102.5	2	3	-	1	-
Average	2.6	2.7	2	1.7	1



**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY,
GREATER NOIDA**

Department of MBA

BATCH 2020-21

Semester – I|Course Outcome for Introduction to Business Analytics (AMBA0103)

Course	Course Outcome No.	Course Outcome
Introduction to Business Analytics (AMBA0103)	AMBA0103.1	Gain Knowledge of basic concepts / fundamentals of business statistics and its role in descriptive analytics
	AMBA0103.2	Apply Correlation and Regression analysis into business problems and their implication on Business performance.
	AMBA0103.3	Evaluate basic concepts of probability and perform probability theoretical distributions.
	AMBA0103.4	Demonstrate understanding of time series analysis and index numbers.
	AMBA0103.5	Apply various statistical tools and Concepts to solve Business Problems

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
AMBA0103.1	3	1	-	2	1
AMBA0103.2	3	3	-	2	-
AMBA0103.3	3	3	-	2	-
AMBA0103.4	3	3	-	2	2
AMBA0103.5	3	3	1	2	-
Average	3	2.6	1	2	1.5



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Semester - I

Course Outcome for Marketing Management (AMBA0104)

Course	Course Outcome No.	Course Outcome
Marketing Management (AMBA0104)	AMBA0104.1	Remember and comprehend basic marketing concepts.
	AMBA0104.2	Understand and Analyzing Business/ Consumer Markets.
	AMBA0104.3	Apply and develop Marketing Strategies and Plans.
	AMBA0104.4	Understand and Analyze marketing for delivering and communicating value with four P's of marketing.
	AMBA0104.5	Develop marketing strategies in view of contemporary issues.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0104.1	3	-	-	1	1
AMBA0104.2	2	2	2	1	-
AMBA0104.3	1	1	1	2	1
AMBA0104.4	2	1	1	2	2
AMBA0104.5	1	1	1	1	1
Average	1.8	1.2	1.2	1.4	1.2



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Semester - I

Course Outcome for Communication for Managers (AMBA0105)

Course	Course Outcome No.	Course Outcome
Communication for Managers (AMBA0105)	AMBA0105.1	Apply business communication strategies and principles to prepare effective communication for domestic and international business situations.
	AMBA0105.2	Analyse ethical, legal, cultural, and global issues affecting business Communication.
	AMBA0105.3	Develop an understanding of appropriate organizational formats and channels used in business communications.
	AMBA0105.4	Gaining an understanding of emerging electronic modes of Communication.
	AMBA0105.5	Developing effective verbal and non verbal communication skills.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0105.1	3	2	2	3	1
AMBA0105.2	2	-	2	-	2
AMBA0105.3	-	1	2	-	-
AMBA0105.4	1	-	1	2	-
AMBA0105.5	-	-	-	2	-
Average	2	1.5	1.7	2.3	1.5



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Semester – I

Course Outcome for Financial Accounting & Analysis (AMBA0106)

Course	Course Outcome No.	Course Outcome
Financial Accounting & Analysis (AMBA0106)	AMBA0106.1	To understand accounting concepts, principles and conventions for their routine monetary transaction.
	AMBA0106.2	To recognize circumstances providing for increased exposure to fraud and define preventative internal control measures.
	AMBA0106.3	To create and prepare financial statements in accordance with Generally Accepted Accounting Principles.
	AMBA0106.4	To Utilize the technology (such as computers, information databases) in facilitating and enhancing accounting and financial reporting processes.
	AMBA0106.5	To Analyze, interpret and communicate the information contained in basic financial statements and explain the limitations of such statements

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0106.1	3	1	2	1.5	-
AMBA0106.2	2.5	2.5	3	3	3
AMBA0106.3	2	1.5	1	1	-



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AMBA0106.4	2	2	1	1.5	-
AMBA0106.5	1.5	2.5	1	3	-
Average	2.2	1.9	1.6	2	3



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Semester - I

Course Outcome for Design Thinking (AMBA0107)

Course	Course Outcome No.	Course Outcome
Design Thinking (AMBA0107)	AMBA0107.1	Gain in depth knowledge about creative thinking and design thinking in every stage of problem
	AMBA0107.2	Understand the various stages in innovative thinking and to use design thinking to generate innovative ideas
	AMBA0107.3	Applying design thinking to Business problems/situations in order to evolve an innovative and workable solutions
	AMBA0107.4	Have a process and mindset suited to innovation and creative problem-solving
	AMBA0107.5	Apply reverse engineering concepts for solving business problems

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0107.1	3	1	-	2	1
AMBA0107.2	2	-	-	3	-
AMBA0107.3	3	2	2	2	2
AMBA0107.4	2	-	-	-	3
AMBA0107.5	3	2	-	1	-
Average	2.6	1.6	2	2	2



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Semester - I

Course Outcome for Advance Excel for Business Analytics(AEBA) (AMBA0151)

Course	Course Outcome No.	Course Outcome
Advance Excel for Business Analytics(AEBA) (AMBA0151)	AMBA0151.1	Gain in depth knowledge about creative thinking and design thinking in every stage of problem
	AMBA0151.2	Understand the various stages in innovative thinking and to use design thinking to generate innovative ideas
	AMBA0151.3	Applying design thinking to Business problems/situations in order to evolve an innovative and workable solutions
	AMBA0151.4	Have a process and mindset suited to innovation and creative problem-solving
	AMBA0151.5	Apply reverse engineering concepts for solving business problems

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0151.1	3	1	-	2	1
AMBA0151.2	1	-	-	3	-
AMBA0151.3	-	3	2	-	2
AMBA0151.4	2	-	-	-	1
AMBA0151.5	3	2	-	1	3
Average	2.2	2	2	2	1.7



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Semester - I

Course Outcome for Minor Project Report(MPR) (AMBA0152)

Course	Course Outcome No.	Course Outcome
Minor Project Report(MPR) (AMBA0152)	AMBA0152.1	To understand socio-economic issues of Indian economy.
	AMBA0152.2	To develop presentation skills and team spirit among students.
	AMBA0152.3	To apply basic research concepts in the formulation of the project.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
AMBA0152.1	3	3	1	2	1
AMBA0152.2	1	2	3	3	3
AMBA0152.3	2	3	2	2	2
Average	2	2.6	2	2.3	2



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Semester -II

Course Outcome for Business Environment and Legal Aspects of Business (AMBA 0201)

Course	Course Outcome No.	Course Outcome
Business Environment and Legal Aspects of Business (AMBA 0201)	AMBA0201.1	Develop understanding and fundamental knowledge about business environment
	AMBA0201.2	Develop understanding on the concepts of Business Environment and international business environment
	AMBA0201.3	Develop basic understanding of law of contract
	AMBA0201.4	Understanding of provisions of Companies Act concerning incorporation and regulation of business organizations
	AMBA0201.5	Able to analyze case laws in arriving at conclusions facilitating business decisions.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0201.1	3	-	2	3	2



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AMBA0201.2	3	2	-	2	1
AMBA0201.3	2	-	2	3	2
AMBA0201.4	3	3	3	-	3
AMBA0201.5	2	3	-	3	1
Average	2.6	2.7	2.3	2.7	1.8



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Semester - II

Course Outcome for Business Research Methodology(BRM) (AMBA 0202)

Course	Course Outcome No.	Course Outcome
Business Research Methodology(BRM) (AMBA 0202)	AMBA0202.1	Understand concept & fundamentals for different types of research.
	AMBA0202.2	Apply relevant research techniques for problem solving.
	AMBA0202.3	Apply scaling & measurement techniques and should use appropriate sampling techniques
	AMBA0202.4	Analyze different techniques of coding, editing, tabulation in doing research.
	AMBA0202.5	Apply statistical analysis for hypothesis testing using parametric and non-parametric tests and preparing reports.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0202.1	3	2	-	2	2
AMBA0202.2	2	3	2	2	3
AMBA0202.3	2	3	1	3	1
AMBA0202.4	2	3	2	3	1
AMBA0202.5	3	3	1	2	1
Average	2.4	2.8	1.5	2.4	1.6



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Semester - II

Course Outcome for Entrepreneurship Development (AMBA0203)

Course	Course Outcome No.	Course Outcome
Entrepreneurship Development (AMBA0203)	AMBA0203.1	Develop understanding of basic concepts of entrepreneurship.
	AMBA0203.2	Develop an entrepreneurial mindset through knowledge of creativity and innovation
	AMBA0203.3	Evaluating and understanding a holistic approach of launching a new business venture
	AMBA0203.4	Understanding of converting an Idea to an opportunity and various funding sources
	AMBA0203.5	Develop knowledge on Entrepreneurial Finance, Assistance and role of Entrepreneurial Development Agencies

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0203.1	3	1	-	2	1
AMBA0203.2	2	-	-	1	1
AMBA0203.3	3	2	2	1	1



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AMBA0203.4	3	3	-	3	2
AMBA0203.5	3	2	-	1	-
Average	2.8	1.6	2	1.6	1.2



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Semester - II

Course Outcome for Financial Management (AMBA204Z)

Course	Course Outcome No.	Course Outcome
Financial Management (AMBA204Z)	AMBA204Z.1	Understand the different basic concept/ fundamentals of Corporate Finance
	AMBA204Z.2	Calculate time value of money and evaluating long term investment decisions.
	AMBA204Z.3	Developing analytical skills to select the best source of capital, its structure on the basis of cost of capital.
	AMBA204Z.4	Use and apply the different models for firm's optimum dividend payout.
	AMBA204Z.5	Understand the recent trends of primary and secondary market and developing skills for application of various financial services.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA204Z.1	2	2	2	2	2
AMBA204Z.2	2	2	2	-	2
AMBA204Z.3	2	3	1	2	1



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AMBA204Z.4	3	3	1	2	1
AMBA204Z.5	1	1	2	2	-
Average	2	2.2	1.6	2	1.5



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Semester - II

Course Outcome for QUANTITATIVE TECHNIQUES FOR MANAGERS

Course	Course Outcome No.	Course Outcome
AMBA 0205 Quantitative Techniques for Managers(QTM)	AMBA0205.1	Understand the basic operations research concepts and LLP Problems in business modules.
	AMBA0205.2	Understand how to interpret and solve business related problems using transportation problem
	AMBA0205.3	Apply certain mathematical techniques in getting the best possible solution to a problem involving limited resources
	AMBA0205.4	Apply the most widely used quantitative techniques in decision making with the application of Queuing Theory
	AMBA0205.5	Identify project goals, constraints, deliverables, performance criteria, control needs, and resource requirements in order to achieve project success

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA0205.1	2	2	1	1	1
AMBA0205.2	3	2	1	1	1



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AMBA0205.3	2	1	2	-	-
AMBA0205.4	2	2	3	1	1
AMBA0205.5	1	1	1	-	2
Average	2	1.6	1.6	1	1.2



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Semester - II

Course Outcome for Human Resource Management(HRM) (AMBA 0206)

Course	Course Outcome No.	Course Outcome
Human Resource Management(HRM) AMBA 0206	AMBA 0206.1	Apply the strategies on HR to gain competitive advantage over its competitors
	AMBA 0206.2	Analyze and forecast the need of Human Resource Planning
	AMBA 0206.3	Understand the various effective sources and techniques of recruitment and selection of employees
	AMBA 0206.4	Develop an understanding of various techniques of employee training and performance appraisal
	AMBA 0206.5	Develop the compensation of employees and understand the employee grievance handling methods

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
AMBA 0206.1	3	3	1	3	1
AMBA 0206.2	3	2	2	3	1
AMBA 0206.3	3	2	1	3	1
AMBA 0206.4	1	3	1	3	2



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AMBA 0206.5	3	3	2	1	2
Average	2.6	2.6	1.4	2.6	1.4



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Semester - II

Course Outcome for Management Information System (AMBA207)

Course	Course Outcome No.	Course Outcome
Management Information System (AMBA207)	AMBA207.1	Gain in depth knowledge of working of an IT enabled organization.
	AMBA207.2	Learn to use various IT tools for solving Business Problems.
	AMBA207.3	Develop and implement Information Systems for Business Applications.
	AMBA207.4	Learn to increase efficiency of various management processes by using IT enabled technology.
	AMBA207.5	Analyze various security and ethics related issues pertaining to the increasing use of Information Technology.

CO-PO Mapping Correlation Matrix

PO \ CO	PO1	PO2	PO3	PO4	PO5
AMBA207.1	3	3	-	-	1
AMBA207.2	3	3	-	-	-
AMBA207.3	3	3	-	-	-



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AMBA207.4	3	3	2	2	2
AMBA207.5	-	1	-	3	2
Average	3	2.6	2	2.5	1.67



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Semester - II

Course Outcome for Operations and Supply Chain Management(AMBA0208)

Course	Course Outcome No.	Course Outcome
Operations and Supply Chain Management (AMBA0208)	AMBA0208.1	Understand the concepts of operations management and productivity.
	AMBA0208.2	Apply the concepts of operations management in service as well as manufacturing firms.
	AMBA0208.3	Understand and apply material and inventory management concepts in a manufacturing organization.
	AMBA0208.4	Understand and analyze challenges in managing supply chain.
	AMBA0208.5	Apply total quality management concept to produce good quality products and services at competitive prices.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
AMBA0208.1	1	1	2	2	3
AMBA0208.2	2	2	2	2	3



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AMBA0208.3	2	2	2	3	2
AMBA0208.4	1	3	3	3	2
AMBA0208.5	2	3	3	3	3
Average	1.6	2.2	2.4	2.6	2.6



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SEMESTER III

Course Outcome for Strategic Management (KMB301)

Course	Course Outcome No.	Course Outcome
KMB301 Strategic Management	KMB301.1	Formulate organizational vision, mission, goals and values.
	KMB301.2	Develop strategies and action plans to achieve an organization's vision, mission, and goals.
	KMB301.3	Develop powers of managerial judgment and improve ability to make sound decisions and achieve effective outcomes.
	KMB301.4	Evaluate and revise programs and procedures in order to achieve organizational goals.
	KMB301.5	Consider the ethical dimensions of the strategic management process in organization.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB301.1	2	3	1	3	1
KMB301.2	2	2	2	2	3
KMB301.3	2	2	1	3	2
KMB301.4	2	3	2	1.5	2
KMB301.5	1	1	3	2	2
Average	1.8	2.2	1.8	2.3	1.8



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Course Outcome for International Business Management (KMB302)

Course	Course Outcome No.	Course Outcome
KMB302 International Business Management	KMB302.1	To get an overview of the key issues and concepts of International Business.
	KMB302.2	Understand how and why the world's countries differ.
	KMB302.3	Understand the monetary framework in which international business transactions are conducted.
	KMB302.4	Understand the role of International Organizations and Regional Trade blocks.
	KMB302.5	Implement the decisions for international operations in a superior manner.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB302.1	2	1	2	3	-
KMB302.2	2	2	-	2	2
KMB302.3	2	2	2	2	-
KMB302.4	2	2	2	3	2
KMB302.5	2	2	2	2	2
Average	2	1.8	2	2.4	2



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Course Outcome for Summer Internship Project Report (KMB 303)

Course	Course Outcome No.	Course Outcome
KMB303 STPR	KMB303.1	Student will be able to Assess interest and abilities in their field of Study.
	KMB303.2	Student will be able to develop work habits and attitudes necessary for job success.
	KMB303.3	Students will be able to demonstrate an understanding of professional and ethical practice.
	KMB303.4	Students will be able to develop analytical skills including the ability to understand information and interpret data.
	KMB303.5	Student will be able to develop interpersonal skills which will enable them to build professional relationships, work within a team structure and to manage conflict in the workplace.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB303.1	3	2	2	2	1
KMB303.2	2	2	2	2	1
KMB303.3	2	1	3	1	1
KMB303.4	2	3	3	3	1
KMB303.5	2	2	2	1.5	3
Average	2.2	2	2.4	1.9	1.4



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Course Outcome for Talent Management (KMB HR 01)

Course	Course Outcome No.	Course Outcome
Talent Management (KMB HR 01)	KMB HR 01.1	Knowledge of Talent Management Processes
	KMB HR 01.2	Understanding for analysis of the impacts of Talent management in the organization
	KMB HR 01.3	Competency to implement Talent Management practices
	KMB HR 01.4	Competency to develop leadership qualities among subordinate
	KMB HR 01.5	Knowledge about the reward system to support Talent management

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB HR 01.1	3	1	2	2	1
KMB HR 01.2	2	3	1	2	1
KMB HR 01.3	2	3	2	1.5	2
KMB HR 01.4	2	1	2	2	3
KMB HR 01.5	3	2	2	2	1
Average	2.4	2	1.8	1.9	1.6



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Course Outcome for Performance and Reward Management (KMB HR 02)

Course	Course Outcome No.	Course Outcome
KMB HR 02 Performance and reward management	KMB HR 02.1	Students will be able to explain the concept of performance management system and its relevance in the organization.
	KMB HR 02.2	They have the ability to explain the different methods adopted by the organizations and different methods used for different level of employees.
	KMB HR 02.3	They have the ability to explain the relevance of competency mapping and understanding its linkage with career development.
	KMB HR 02.4	They will be able to understand different job evaluation methods applied in organization.
	KMB HR 02.5	They will be able to understand various aspects of compensation system in India and make them understand various issues linked with the process of fixing salary dearness allowance, bonus, incentive scheme and benefits.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB HR 02.1	3	2	1	1	-
KMB HR 02.2	1	3	1	2	2
KMB HR 02.3	2	3	1	1	2
KMB HR 02.4	3	2	1	1	1
KMB HR 02.5	3	3	1	1	1
Average	2.4	2.6	1	1.2	1.5



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Course Outcome for Employee Relation and Labor Laws (KMBHR03)

Course	Course Outcome No.	Course Outcome
KMBHR03 Employee Relation and Labour Laws	KMBHR03.1	Knowledge of Industrial Relation Framework.
	KMBHR03.2	Competency to understand the importance of Employee Relation within the perspective of Industrial Relation.
	KMBHR03.3	Knowledge about relevant Laws of HR management.
	KMBHR03.4	Competency to interpreted and implement the Labour Laws within organization.
	KMBHR03.5	Competency to use Collective Bargaining and Grievance redressal.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBHR03.1	3	1	2	2	1
KMBHR03.2	3	2	2	2	2
KMBHR03.3	3	2	2	2	1
KMBHR03.4	2	3	1	2	2
KMBHR03.5	2	2	1	2	3
Average	2.6	2	1.6	2	1.8



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Course Outcome for Sales & Retail management (KMB MK01)

Course	Course Outcome No.	Course Outcome
KMB MK01 Sales & Retail management	KMB MK01.1	Students will develop knowledge, understanding and skills in Sales force management.
	KMB MK01.2	Acquainted with better understanding of implementation of sales management strategies.
	KMB MK01.3	Develop analytical skills for effective decision alternatives in sales management problems.
	KMB MK01.4	Develop the knowledge, understanding and skills in retail management.
	KMB MK01.5	Acquainted with better understanding of implementation of retail management strategies and develop analytical skills for effective decision alternatives in retail operations

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB MK01.1	3	2	2	2	1
KMB MK01.2	2	2	2	2	1
KMB MK01.3	2	3	2	2	2
KMB MK01.4	2	2	2	3	-
KMB MK01.5	2	3	2	2.5	1
Average	2.2	2.4	2	2.3	1.2



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**Course Outcome for Consumer Behaviour & Marketing Communication
(KMBMK02)**

Course	Course Outcome No.	Course Outcome
KMBMK02 Consumer Behavior & Marketing Communication	KMBMK02.1	To understand consumer behavior and explain the consumer decision making process.
	KMBMK02.2	To define external and internal influences on buying behavior.
	KMBMK02.3	To provide an understanding of integrated marketing communications (IMC) and its influences on other marketing functions and other promotional activities.
	KMBMK02.4	Help to understand what advertising is and its role in advertising and brand promotion.
	KMBMK02 .5	Understand the importance of message design and the creativity involved in message designing.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBMK02.1	3	2	3	2	2
KMBMK02.2	2	2	2	2	1
KMBMK02.3	2	2	2	3	-
KMBMK02.4	1	2	1	2	-
KMBMK02.5	2	2	1	2	1
Average	2	2	1.8	2.2	1.3



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Course Outcome for Digital & Social Media Marketing (KMBMK 03)

Course	Course Outcome No.	Course Outcome
KMBMK03 Digital & Social Media Marketing	KMBMK 03.1	Students will develop an understanding of digital and social media marketing practices.
	KMBMK 03.2	Students will develop understanding of the social media platforms.
	KMBMK 03.3	Students will acquire the skill to acquire and engage consumers online.
	KMBMK 03.4	Students will develop understanding of building organizational competency by way of digital marketing practices and cost considerations.
	KMBMK 03.5	Students will develop understanding of the latest digital practices for marketing and promotion.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBMK03	3	2	1	2	-
KMBMK03	2	2	1	3	-
KMBMK03	2	2	1	3	2
KMBMK03	2	2	2	2	1
KMBMK03	2	2	1	2.5	1
Average	2.2	2	1.2	2.5	1.3



**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY,
GREATER NOIDA**

Department of MBA

BATCH 2020-21

**Course Outcome for Investment Analysis & Portfolio Management
(KMBFM01)**

Course	Course Outcome No.	Course Outcome
KMBFM01 Investment Analysis & Portfolio Management	KMBFM01.1	Understanding of investment theory and techniques for portfolio selection, managing investment portfolios and optimally diversifying portfolios.
	KMBFM01.2	To understand how to value assets such as stocks and bonds
	KMBFM01.3	To understand how to allocate investments into stock and bond portfolios in accordance with a person's risk preferences.
	KMBFM01.4	To apply the concepts, tools and techniques applicable in the field of security analysis and portfolio management.
	KMBFM01.5	Understand and critically evaluate investment advice from brokers and the financial press.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBFM01.1	3	3	1	3	1
KMBFM01.2	3	2	2	3	1
KMBFM01.3	3	2	2	2	1
KMBFM01.4	2	3	2	2	1
KMBFM01.5	2	3	2	2	1
Average	2.6	2.6	1.8	2.4	1



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Department of MBA

BATCH 2020-21

Course Outcome for Tax Planning and Management (KMBFM02)

Course	Course Outcome No.	Course Outcome
KMBFM02 Tax Planning and Management	KMBFM02.1	To familiarize the participants with the principles, problems and structure of different types of taxes in Indian economy.
	KMBFM02.2	To make a detailed study of tax policy and tax provisions in India
	KMBFM02.3	Understanding of the role of taxation in economic and industrial development of an economy.
	KMBFM02.4	To acquaint about the relevance of direct and indirect taxes in taking corporate decisions.
	KMBFM02.5	To familiarize participants about the relevance of GST in taxation policy of the economy.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBFM02.1	2	2	2	1	2
KMBFM02.2	2	2	2	2	2
KMBFM02.3	2	2	1	-	2
KMBFM02.4	2	3	1	-	-
KMBFM02.5	2	2	2	1	1
Average	2	2.2	1.6	1.3	1.7



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BATCH 2020-21

Course Outcome for Financial Market & Services (KMBFM03)

Course	Course Outcome No.	Course Outcome
KMB FM03 Financial Market & Services	KMB FM03.1	Recognize the functioning and working of various financial institutional in India thus in turn connecting it to the working of Indian economy.
	KMB FM03.2	Interpret the knowledge about the working of various financial instruments in the primary and secondary market in India as well as foreign market.
	KMB FM03.3	Classify about the working of micro finance instruments in India as well as foreign market.
	KMB FM03.4	Interpret the knowledge about banking industry and demonstrate the various market demand analysis.
	KMB FM03.5	Interpret the knowledge about various kinds of investment instruments and demonstrate the need of investors.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB FM03.1	2	2	2	3	1
KMB FM03.2	1	3	1	3	1
KMB FM03.3	2	2	1	2	1
KMB FM03.4	2	3	1	2	1
KMB FM03.5	2	3	2	1.5	1
Average	1.8	2.6	1.4	2.3	1



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Department of MBA

BATCH 2020-21

Course Outcome for Enterprise Resource Planning (KMBIT01)

Course	Course Outcome No.	Course Outcome
Enterprise Resource Planning (KMBIT01)	KMBIT01.1	Knowledge of ERP Technology and its importance.
	KMBIT01.2	Able to analyze the organizational readiness for ERP.
	KMBIT01.3	Able to implement ERP in functional area of businesses and management.
	KMBIT01.4	Interpreting the impacts of ERP on business processes.
	KMBIT01.5	Understanding the Market Trends in ERP applications.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBIT01.1	3	2	1	2	-
KMBIT01.2	2	2	2	3	-
KMBIT01.3	2	3	-	2	2
KMBIT01.4	2	3	2	3	-
KMBIT01.5	2	2	-	2	2
Average	2.2	2.4	1.6	2.4	2



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Department of MBA

BATCH 2020-21

Course Outcome for Web Technology and E-Commerce (MBIT02)

Course	Course Outcome No.	Course Outcome
KMBIT02 Web Technology and E- Commerce	KMBIT02.1	Understand the nature of Web Technology.
	KMBIT02.2	Exploring the business potential of Web Technology.
	KMBIT02.3	Planning and executing the web-based business application.
	KMBIT02.4	Knowledge about the information and Web Security.
	KMBIT02.5	Knowledge about the functioning of online payment systems.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBIT02.1	3	-	-	2.5	-
KMBIT02.2	2	3	-	3	2
KMBIT02.3	2	3	-	3	2
KMBIT02.4	3	1	2	3	-
KMBIT02.5	1	3	2	2	-
Average	2.2	2	2	2.7	2



**NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY,
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Department of MBA

BATCH 2020-21

Course Outcome for Production Cloud Computing for Business (KMBIT03)

Course	Course Outcome No.	Course Outcome
Cloud Computing for Business	KMBIT03.1	Understanding the Technologies in Cloud Computing.
	KMBIT03.2	Knowledge about the services of Cloud Computing.
	KMBIT03.3	Interpreting the business values of Cloud Computing.
	KMBIT03.4	Knowledge about the Security in Cloud Computing.
	KMBIT03.5	Knowledge of Virtualization.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBIT03.1	3	-	-	2	-
KMBIT03.2	2	3	-	3	-
KMBIT03.3	2	3	-	2	3
KMBIT03.4	3	1	3	2	-
KMBIT03.5	3	2	-	2.5	-
Average	2.6	2.2	3	2.3	3



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Department of MBA

BATCH 2020-21

SEMESTER IV

Course Outcome for Project Management (KMB401)

Course	Course Outcome No.	Course Outcome
KMB401 Project Management	KMB401.1	Understand the characteristics of Project and Project Management
	KMB401.2	Understand the managerial process along with tools & techniques used in Project management
	KMB401.3	Understand the scheduling and monitoring process in project and apply PERT and CPM method for project scheduling.
	KMB401.4	Understand the perspectives in which optimum decisions are to be taken in case of risks with planned activities in project and referring social cost.
	KMB401.5	Understand the project tracking and termination of project.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB401.1	3	-	1	2	2
KMB401.2	1	3	-	3	1
KMB401.3	1	3	-	-	2
KMB401.4	2	3	3	2	2
KMB401.5	1	2	-	-	2
Average	1.6	2.7	2	2.3	1.8



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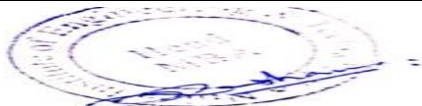
BATCH 2020-21

Course Outcome for Entrepreneurship Development (KMB402)

Course	Course Outcome No.	Course Outcome
KMB402 ENTREPRENEURSHIP DEVELOPMENT	KMB402.1	Developing understanding of basic concepts of entrepreneurship
	KMB402.2	Develop knowledge on Entrepreneurial Finance, Assistance and role of Entrepreneurial Development Agencies
	KMB402.3	Develop understanding of converting an Idea to an opportunity and develop understanding of various funding sources
	KMB402.4	Comprehend and develop skills to Develop a Business Plan
	KMB402.5	Students to have a basic understanding of Launching a New Venture

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB402.1	3	2	2	1	-
KMB402.2	3	2	-	1	-
KMB402.3	2	3	2	1	-
KMB402.4	2	3	-	2	-
KMB402.5	2	3	2	1	2
Average	2.4	2.6	2	1.2	2



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BATCH 2020-21

**Course Outcome for Universal Human Values & Professional Ethics
(KVE401)**

Course	Course Outcome No.	Course Outcome
RVE301 Universal Human Values & Professional Ethics	KVE301.1	Students will be able to understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
	KVE301.2	Students will be able distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
	KVE301.3	Students will be able to Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
	KVE301.4	Students will be able to understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
	KVE301.5	Students will be able to distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO4	PO5	PO6
KVE301.1	2	1	3	-	1
KVE301.2	2	3	3	-	2
KVE301.3	-	2	3	1	1
KVE301.4	2	2	3	1	1
KVE301.5	-	2	3	1	1
Average	2	2	3	1	1.2



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Department of MBA

BATCH 2020-21

Course Outcome for Marketing of services (KMB MK04)

Course	Course Outcome No.	Course Outcome
KMB MK 04 MARKETING OF SERVICES	KMB MK 04	Understand and explain the nature and scope of services marketing.
	KMB MK 04	Use critical analysis to perceive service shortcomings in reference to ingredients to create service excellence.
	KMB MK 04	Be able to identify critical issues related to service design, such as identifying and managing customer service experience, expectations, perceptions and outcomes.
	KMB MK 04	Provide a theoretical and practical basis for assessing service performance using company examples.
	KMB MK 04	Identify and discuss characteristics and challenges of managing service firms in the modern world.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO4	PO5	PO6
KMB MK04.1	3	1	1	3	-
KMB MK04.2	2	3	1	3	-
KMB MK04.3	1	3	1	1	2
KMB MK04.4	1	3	1	-	-
KMB MK04.5	1	2	1	1	-
Average	1.6	2.4	1	2	2



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BATCH 2020-21

Course Outcome for Marketing Analytics (KMBMK05)

Course	Course Outcome No.	Course Outcome
KMBMK05 Marketing Analytics	KMBMK05.1	Students will develop the skills in marketing analytics.
	KMBMK05.2	Students will be acquainted with better understanding of real life marketing data and its analysis.
	KMBMK05.3	Students will develop analytical skill for effective market decision making in real life environment.
	KMBMK05.4	Students will understand the emerging trends in marketing.
	KMBMK05.5	Students will understand the forecasting techniques.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBMK05.1	2	3	2	1	-
KMBMK05.2	2	3	2	3	-
KMBMK05.3	2	3	1	-	-
KMBMK05.4	3	1	-	-	-
KMBMK05.5	1	3	-	2	2
Average	2	2.6	1.6	2	2



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Department of MBA

BATCH 2020-21

Course Outcome for Strategic Human Resource Management (KMB HR04)

Course	Course Outcome No.	Course Outcome
KMB HR04 Strategic Human Resource Management	KMBHR04.1	Understanding the dimensions of Strategic HRM.
	KMBHR04.2	Apply the learning of SHRM in organizational context.
	KMBHR04.3	Able to evaluate the impacts of SHRM on competitive advantages.
	KMBHR04.4	developing desired level of expertise on organizational knowledge management through SHRM.
	KMBHR04.5	Understanding the International culture in SHRM.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBHR04.1	3	2	1	3	1
KMBHR04.2	2	3	1	2	1
KMBHR04.3	1	3	1	3	1
KMBHR04.4	3	2	1	2	3
KMBHR04.5	3	1	1	3	1
Average	2.4	2.2	1	2.6	1.4



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Department of MBA

BATCH 2020-21

Course Outcome for Performance and Reward Management (KMB HR 05)

Course	Course Outcome No.	Course Outcome
KMB HR 05 International Human Resource management	KMB HR 05.1	Understanding the context of international HRM.
	KMB HR 05.2	Knowledge about HR process in international context.
	KMB HR 05.3	Able to evaluate the impact of Globalization on HRM.
	KMB HR 05.4	Developing desired level of expertise on organizational context.
	KMB HR 05.5	Understanding the international culture in SHRM.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB HR 05.1	3	1	2	2	2
KMB HR 05.2	2	1	-	2	2
KMB HR 05.3	2	3	3	2	-
KMB HR 05.4	2	2	1	2	1
KMB HR 05.5	3	1	2	2	1
Average	2.4	1.6	2	2	1.5



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Department of MBA

BATCH 2020-21

Course Outcome for Working Capital Management (KMBFM04)

Course	Course Outcome No.	Course Outcome
Working Capital Management KMBFM04	KMBFM04.1	To evaluate comparative working capital management policies and their impact on the firm's profitability, liquidity, risk and operating flexibility.
	KMBFM04.2	To evaluate the importance of effective working capital management and its role in meeting the firm's strategic objectives and its impact in value creation.
	KMBFM04.3	To investigate funds flow cycles and their impact on working capital management objectives.
	KMBFM04.4	To compare and contrast the relative merits of alternative working capital policies and the likely short-term and long-term impact on the firm.
	KMBFM04.5	To formulate appropriate working capital management policies to achieve corporate objectives.
	KMBFM04.6	To apply corporate cash management, accounts receivable management, bank relations, and inventory management techniques to maximize the share holders' value.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBFM04.1	3	3	1	2	2
KMBFM04.2	2	3	1	-	-
KMBFM04.3	2	3	1	1	-
KMBFM04.4	2	2	1	-	-
KMBFM04.5	2	2	2	1	-
KMBFM04.6	2	3	2	1	2
Average	2.1	2.6	1.3	1.2	2



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Department of MBA

BATCH 2020-21

Course Outcome for Financial Derivatives (KMBFM05)

Course	Course Outcome No.	Course Outcome
KMB FM05 Financial Derivatives	KMB FM05.1	Understand how derivative securities work and how they are traded.
	KMB FM05.2	Understand the principles of derivatives pricing, including the implications of arbitrage.
	KMB FM05.3	Be able to price forward and futures contracts using the cost of carry model.
	KMB FM05.4	Be able to value options using the binomial and Black-Scholes option pricing models.
	KMB FM05.5	Be prepared to use futures and options in financial risk management, speculation and arbitrage.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB FM05.1	3	3	1	3	2
KMB FM05.2	3	2	1	3	1
KMB FM05.3	2	3	1	2	3
KMB FM05.4	2	3	1	3	-
KMB FM05.5	2	2	1	3	1
Average	2.4	2.6	1	2.8	1.7



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Department of MBA

BATCH 2020-21

Course Outcome for Database Management System (KMBIT04)

Course	Course Outcome No.	Course Outcome
(KMBIT04) Database Management System	KMBIT04.1	Knowledge about the DBMS Technology.
	KMBIT04.2	Understanding the business application of DBMS.
	KMBIT04.3	Application of DBMS for business process.
	KMBIT04.4	Knowledge and uses of Data mining techniques.
	KMBIT04.5	Working knowledge of DBMS Software ORACLE.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBIT04.1	3	1	1	2	2
KMBIT04.2	2	3	2	3	2
KMBIT04.3	2	3	-	2	2
KMBIT04.4	-	2	3	2	-
KMBIT04.5	2	3	-	-	1
Average	2.2	2.4	2	2.2	1.7



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Department of MBA

BATCH 2020-21

Course Outcome for System Analysis and Design (KMBIT05)

Course	Course Outcome No.	Course Outcome
(KMBIT05) System Analysis And Design	KMBIT05.1	Understand the Systems and its characteristics.
	KMBIT05.2	Knowledge about the Information Systems.
	KMBIT05.3	Knowledge of System Development Life Cycle.
	KMBIT05.4	Applying the phases of SDLC in business information system development.
	KMBIT05.5	Analyzing the impacts of information system on business.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMBIT05.1	2	1	-	3	1
KMBIT05.2	3	2	1	2	-
KMBIT05.3	2	3	1	2	1
KMBIT05.4	2	3	1	2	2
KMBIT05.5	2	3	2	2	2
Average	2.2	2.4	1.2	2.2	1.5



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Department of MBA

BATCH 2020-21

Research Project Report and Viva Voce (KMB 451)

Course	Course Outcome No.	Course Outcome
RMB 451 Research Project Report and Viva Voce	KMB 451.1	Understand and describe the research topic and objectives for the research project.
	KMB 451.2	Comprehend and analyze the existing literature.
	KMB 451.3	Identification of research gap and detailed analysis.
	KMB 451.4	Design and apply the research design.
	KMB 451.5	Identify and analyze the project based findings and develop the recommendations for the organization.

CO-PO Mapping Correlation Matrix

PO CO	PO1	PO2	PO3	PO4	PO5
KMB 451.1	2	3	1	2	2
KMB 451.2	2	2	2	-	2
KMB 451.3	2	3	2	-	-
KMB 451.4	2	3	2	2	-
KMB 451.5	2	3	2	1	1
Average	2	2.8	1.8	1.6	1.6



**DEPARTMENT
OF
MASTER OF
COMPUTER
APPLICATIONS**

2020-2021

Programme Outcomes (POs) for MCA are as follows:

PO1: Computational Knowledge: Develop knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge for solving real world problems.

PO2: Problem Analysis: Identify formulate review research literature and analyze complex problems reaching substantial conclusions using first fundamental principles of mathematics, computing science and relevant domain discipline.

PO3: Design /Development of Solutions: Ability to design and evaluate system, components or processes for complex computing problems that meets specified needs with appropriate consideration for the public health and safety and cultural societal and environmental consideration.

PO4: Conduct investigations of complex Computing problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, adapt, and apply appropriate techniques, resources, and modern computing tools including prediction and modeling to complex computing activities, with an understanding of the limitations.

PO6: Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.

PO7: Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual preparation and development as a computing professional for broadest content of technological change.

PO8: Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO9: Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO10: Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practices.

PO11: Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO12: Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-2022

**Subject Name & Code : Fundamental of Computers & Programming in C
(AMCA0101)**

The Students will able to:-

CO1	Develop simple algorithms for arithmetic and logical problems.
CO2	Implement and trace the execution of programs written in C language.
CO3	Implement conditional branching and iteration.
CO4	Create User define functions and pointers to develop algorithms and programs.
CO5	Write searching and sorting algorithm to arrange data and use file handling for developing real life projects.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	-	3	1	2	1	3	2
CO2	3	3	3	3	2	-	3	2	1	1	3	1
CO3	3	3	3	3	1	1	2	1	-	1	1	1
CO4	3	3	3	3	2	2	3	1	-	1	1	1
CO5	3	3	3	3	2	3	1	1	1	1	2	1

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-2022

Subject Name & Code : Operating System (AMCA0102)

The Students will able to:-

CO1	Demonstrate main components, services, types and structure of Operating Systems.
CO2	Apply the algorithms and techniques to handle the various concurrency control issues.
CO3	Compare and apply CPU scheduling algorithms for process execution.
CO4	Identify occurrence of deadlock and describe ways to handle it.
CO5	Implement memory allocation algorithm, disk scheduling algorithm and I/O system.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	-	3	-	3	-	3	-
CO2	3	3	3	3	2	-	3	-	3	-	3	-
CO3	3	3	3	3	3	-	3	-	3	-	3	-
CO4	3	3	3	3	3	-	3	-	3	-	3	-
CO5	3	3	3	2	3	-	3	-	3	-	3	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-2022

Subject Name & Code : Principles of Communication and Management

(AMCA0103)

The Students will able to:-

CO1	Understand the fundamentals of communication.
CO2	Understand and apply reading and listening tasks for better professional competence.
CO3	Write professionally in simple and correct English.
CO4	Apply speaking skills in various professional situations.
CO5	Understand and apply the concepts of planning and organizing.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	-	-	-	3	1	1	3	3	3	3
CO2	2	-	-	-	2	2	2	2	3	2	3	3
CO3	1	-	-	-	3	2	1	1	3	2	3	3
CO4	1	-	-	-	3	2	1	2	3	3	3	3
CO5	1	-	-	-	1	-	2	2	3	1	2	3

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : Computer System Organization (AMCA0104)

The Students will able to:-

CO1	Implement computer arithmetic Operations, logic gates, Boolean algebra, Minimization techniques.
CO2	Discuss about the different binary codes and arithmetic operations.
CO3	Elaborate about the register transfer operations and construction of buses by using different digital components.
CO4	Analyze the functional units of the processor such a register file, arithmetic-logical unit, and control unit.
CO5	Demonstrate cache subsystem, memory mapping techniques and Input-Output subsystem and protocols for data communication.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	-	-	3	3	-	-	-
CO2	3	3	2	3	2	-	-	3	3	-	-	-
CO3	3	2	3	3	3	-	-	3	3	-	-	-
CO4	2	3	3	2	3	-	-	3	3	-	-	-
CO5	3	2	3	3	3	-	-	3	3	-	-	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : Discrete Mathematics (AMCA0105)

The Students will able to:-

CO1	Apply mathematical and logical notations to define and formally justify fundamental discrete structures such as Sets, Relations, Functions, and Inductions.
CO2	Apply mathematical arguments using logical connectives and quantifiers to check the validity of an argument using truth tables, propositional and predicate logic.
CO3	Identify and prove properties of Algebraic Structures like Groups, Rings and Fields.
CO4	Apply the concept of combinatorics to solve basic problems in discrete mathematics.
CO5	Formulate and solve recurrences and recursive functions.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	-	-	2	-	2	2	2	-
CO2	3	3	2	3	-	-	3	-	2	2	2	-
CO3	3	3	3	3	2	-	3	-	2	2	2	-
CO4	3	3	3	3	2	-	3	-	2	3	2	-
CO5	3	3	3	2	-	-	2	-	2	3	2	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : C Programming Lab (AMCA0151)

The Students will able to:-

CO1	Write the algorithm and draw a flow chart of a given problem.
CO2	Recognize and understand the syntax and construction of C programming code.
CO3	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	1	3	2	2	1	3	2	3	3
CO2	3	3	3	2	3	1	2	1	3	2	3	3
CO3	3	3	3	2	3	1	1	1	3	2	3	3

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : Operating system Lab(AMCA0152)

The Students will able to:-

CO1	Analyze and simulate CPU Scheduling Algorithms like FCFS, Round Robin, SJF, and Priority.
CO2	Implement page replacement schemes.
CO3	Implement deadlock handling method such as deadlock prevention, deadlock avoidance and deadlock detection.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	2	-	3	-	3	-	3	-
CO2	3	3	3	3	2	-	3	-	3	-	3	-
CO3	3	3	3	3	3	-	3	-	3	-	3	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : Professional Communication Lab(AMCA0153)

The Students will able to:-

CO1	Understand the basic nuances of interpersonal and organizational communication.
CO2	Enunciate individual speech sounds clearly.
CO3	Express themselves effectively using appropriate vocabulary.
CO4	Apply the knowledge of basic phonetics to speak more effectively and fluently.
CO5	Demonstrate interview skills with effective body language.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	-	-	-	3	3	1	3	3	3	3
CO2	2	-	-	-	2	2	2	2	3	2	3	3
CO3	1	-	-	-	3	2	1	1	3	2	3	3
CO4	1	-	-	-	3	2	1	2	3	3	3	3
CO5	1	-	-	-	1	-	2	2	3	1	2	3

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/I

Batch : 2020-

2022 Subject Name & Code : Computer Organization Lab (AMCA0154)

The Students will able to:-

CO1	Design and verify combinational circuits (adder, code converter, decoder, multiplexer) using basic gates.
CO2	Design and verify various flip-flops.
CO3	Demonstrate combinational circuit using simulator.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	3	3	1	1	3	3	-	3	2	3
CO2	1	3	3	3	1	1	3	3	-	3	2	3
CO3	1	3	3	3	1	1	3	3	-	3	2	3

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Object Oriented Programming (AMCA0201)

The Students will able to:-

CO1	Identify the concepts of object-oriented programming and relationships among them needed in modeling.
CO2	Demonstrate the Java programs using OOP principles with various types of classes and implement the concepts of lambda expressions.
CO3	Implement packages with different protection level resolving namespace collision and evaluate the error handling concepts for uninterrupted execution of Java program.
CO4	Implement Concurrency control, I/O Streams and Annotations concepts and its types by using Java program.
CO5	Design and develop the GUI based application, Generics, Collections and JDBC applications in Java programming language to solve the real-world problem.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	3	1	1	1	3	2
CO2	3	3	3	3	3	1	3	1	1	1	3	2
CO3	3	3	3	3	3	1	3	1	1	1	3	2
CO4	3	3	3	3	3	1	3	1	2	1	3	2
CO5	3	3	3	3	3	1	3	1	1	1	3	2

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Database Management System (AMCA0202)

The Students will able to:-

CO1	Describe the features of a database system and its application and compare and identify hierarchical, network and relational database models.
CO2	Design and Construct entity relationship diagram and convert entity relationship diagram into relational database schema.
CO3	Write complex queries to formulate solutions of a problem using SQL, Relational Algebra and Relational Calculus.
CO4	Discuss the need of normalization and apply normalization techniques to improve database design.
CO5	Analyze different approaches of transaction processing, concurrency control and NOSQL.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	1	2	3	2	1	2	1
CO2	3	3	3	2	3	1	2	3	3	1	2	1
CO3	3	3	3	3	3	1	2	3	2	1	2	1
CO4	3	2	2	2	2	1	2	2	2	1	1	1
CO5	3	2	2	2	2	1	2	2	2	1	1	1

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Data Structures (AMCA0203)

The Students will able to:-

CO1	Describe the concepts of data structure, abstract data types, algorithms, analysis of algorithms and basic data organization schemes such as arrays and linked lists.
CO2	Describe the applications of stacks, queues and implement their operations using arrays and linked lists.
CO3	Describe the properties of graphs and trees and implement searching and traversal operations.
CO4	Apply divide-and-conquer approaches of designing algorithms for problems such as sorting and searching.
CO5	Apply and analyze design approaches such as Divide-and-Conquer, greedy approach and dynamic programming for problem solving.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	-	2	-	1	-	2	-
CO2	3	3	2	1	1	-	2	-	1	-	1	1
CO3	3	2	1	-	-	-	1	-	1	-	1	-
CO4	3	3	2	2	2	1	3	2	2	1	2	1
CO5	3	3	2	3	2	1	2	2	2	1	2	2

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Theory of Automata and Formal Languages

(AMCA0204)

The Students will able to:-

CO1	Apply the basic properties of finite automata without output.
CO2	Apply the concepts of regular expression and finite automata with output.
CO3	Apply the concepts of Context free grammars for Normalizing and construct the pushdown automata.
CO4	Construct the Turing machines for computing the problem.
CO5	Understand the concepts of tractability and decidability, NP-completeness and NP-hard problems.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2	-	-	3	-	2	2	3	-
CO2	3	2	3	3	-	-	3	-	2	2	3	-
CO3	3	3	3	3	-	-	3	-	2	2	3	-
CO4	3	3	3	3	-	-	3	-	2	2	3	-
CO5	3	3	3	3	-	-	3	-	2	2	3	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : RPA Design & Development (AMCA0211)

The Students will able to:-

CO1	Apply basic concepts and methods from design engineering to explore creative solutions of real world problems.
CO2	To understand what Robotic Process Automation, and massive career opportunity in this field.
CO3	Apply the knowledge of RPA tools, functions in various industries and Perform, control various tasks using RPA bots.
CO4	Gain expertise in Desktop, Web & Citrix Automation and use Reframe work to build a structured business automation process.
CO5	To organize a real-world workflow automation project and develop skills in debugging a workflow.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	1	-	3	2	1	2	2	2
CO2	3	3	2	3	3	-	2	3	1	2	2	3
CO3	3	3	3	3	3	-	3	3	1	2	3	2
CO4	3	3	3	3	3	-	3	3	1	2	3	2
CO5	3	3	3	3	3	-	3	3	1	2	3	3

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : CRM using Salesforce (AMCA0212)

The Students will able to:-

CO1	Understand the concepts and Importance of CRM.
CO2	Describe the importance of Salesforce and its features.
CO3	Identify Security and Governance in industry using salesforce platform.
CO4	Gather the need of Communication and Leadership.
CO5	Apply Virtual Collaboration Concepts for skill development of manager.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	2	-	3	2	3	2	2	2	2	1
CO2	2	2	2	-	3	2	3	2	2	2	2	1
CO3	2	2	1	-	1	2	3	1	2	2	-	-
CO4	2	2	2	-	1	2	3	-	2	2	2	2
CO5	3	3	1	-	2	2	3	2	2	2	2	2

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Computer Networks (AMCA0213)

The Students will able to:-

CO1	Configure switches and end devices to provide access to local and remote network resources.
CO2	Explain how physical and data link layer protocols support the operation of Ethernet in a switched network.
CO3	Configure routers to enable end-to-end connectivity between remote devices.
CO4	Create IPv4 and IPv6 addressing schemes and verifies network connectivity between devices.
CO5	Explain how the upper layers of the OSI model support network applications. Configure a small network with security best practices. Troubleshoot connectivity in a small network.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	3	3	2	2	3	3	2	-
CO2	2	2	3	2	3	3	2	2	3	3	2	-
CO3	3	3	3	2	3	3	2	2	3	3	2	-
CO4	2	2	3	2	3	3	2	2	3	3	2	-
CO5	3	3	3	2	3	3	2	2	3	3	2	-

Scale H – High (3) , M – Medium (2) , L – Low (1)



COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Object Oriented Programming Lab (AMCA0251)

The Students will able to:-

CO1	Understand how to design, implement, test, debug, and document programs that use basic data types and computation, simple I/O, conditional and control structures, string handling and functions.
CO2	Identify classes, objects, members of a class and the relationships among them needed for finding the solution to specific problem.
CO3	Demonstrate reusability using inheritance, interfaces, and packages for rapid application development.
CO4	Demonstrate exception handling mechanisms and concept of multithreading for robust faster and more efficient application development.
CO5	Demonstrate the event handling process in GUI and Java application connectivity with databases using JDBC.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	-	1	-	2	-	-	-	1	-
CO2	3	1	1	-	-	1	1	-	-	-	1	-
CO3	3	1	1	-	1	1	1	-	1	-	1	-
CO4	3	2	2	1	2	1	2	1	1	-	2	2
CO5	3	2	2	2	3	2	3	2	2	1	2	2

Scale H – High (3) , M – Medium (2) , L – Low (1)

COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Database Lab(AMCA0252)

The Students will able to:-

CO1	Design and implement a database schema for a given problem-domain using SQL and execute complex queries on it.
CO2	Implement the database connectivity with application.
CO3	Create and maintain tables using PL/SQL and design the unstructured data model using NoSQL.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3	1	2	2	2	1	3	1
CO2	3	3	3	3	3	1	2	2	2	1	3	1
CO3	3	3	3	3	3	1	2	2	2	1	3	1

Scale H – High (3) , M – Medium (2) , L – Low (1)

COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Data Structures Lab(AMCA0253)

The Students will able to:-

CO1	Design C programs for solving mathematical problems, array processing problems, taking care of all input, output possibilities and error conditions.
CO2	Design visual representations of various states of data structures.
CO3	Design various data structures like stacks, queue, linked lists, trees, sparse matrices, graphs using various strategies involving use of arrays.
CO4	Calculate the time taken by a program practically.
CO5	Create sorting and searching programs.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	1	2	1	2	-	-	-	2	2
CO2	3	2	2	2	2	1	2	-	-	-	2	2
CO3	3	2	2	2	2	2	2	1	1	1	2	2
CO4	3	2	2	1	2	2	2	1	1	1	2	2
CO5	3	2	2	2	2	1	2	1	1	1	2	2

Scale H – High (3) , M – Medium (2) , L – Low (1)

COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-

2022 Subject Name & Code : Mini Project (AMCA0254)

The Students will able to:-

CO1	Identify and formulate problem statement by surveying variety of domain.
CO2	Analyze the requirements and identify design methodologies.
CO3	Apply advanced programming techniques and modern tools for project development and communicate them through technical report writing.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	2	1	1	1	2	1	3	2
CO2	3	2	2	2	3	1	2	2	3	1	3	3
CO3	3	3	3	2	3	1	1	2	3	1	2	2

Scale H – High (3) , M – Medium (2) , L – Low (1)

COURSE OUTCOME

Program : MCA

Year/Sem : 1/II

Batch : 2020-2022 Subject Name &

Code : Cyber Security (AMCANC0201)

The Students will able to:-

CO1	Analyze and evaluate the cyber security needs of an organization.
CO2	Determine and analyze software vulnerabilities and security solutions.
CO3	Comprehend IT Assets security (hardware and Software) and performance indicators.
CO4	Measure the performance and encryption strategies of security systems.
CO5	Design operation cyber security methods and policies to improve the security of the current scenarios.

Mapping of CO's with PO's :-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	3	2	2	2
CO2	2	2	2	-	-	2	2	2	3	2	2	1
CO3	2	2	2	2	2	-	2	2	3	-	2	2
CO4	2	2	2	2	-	2	2	3	3	2	2	-
CO5	-	-	-	-	-	2	2	2	3	2	2	-

Scale H – High (3) , M – Medium (2) , L – Low (1)