Course Outcome

Session 2020-21

Department of Information Technology

Index

3rd Semester		
S No.	**Subject Code**	**Subject Name**
1	KAS-302	Maths IV
2	KAS-301	Technical Communication
3	KCS-301	Data Structure
4	KCS-302	Computer Organization and Architecture
5	KCS-303	Discrete Structures & Theory of Logic
6	KNC-301	Computer System Security
7	KCS-351	Data Structures Using C Lab
8	KCS-352	Computer Organization Lab
9	KCS-353	Discrete Structure & Logic Lab
10	KCS-354	Mini Project or Internship Assessment

5th Semester		
S No.	**Subject Code**	**Subject Name**
1	KCS 055	Machine Learning Techniques
2	KNC 502	Indian Tradition, Culture and Society
3	KCS 501	Database Management Systems
4	KCS 503	Design And Analysis Of Algorithm
5	KCS 054	Object Oriented System Design
6	KIT 501	Web Technologies
7	KCS 551	Database Management Systems Lab
8	KCS 553	Design and Analysis of Algorithm Lab
9	KIT 551	Web Technologies Lab
10	KCS554	Skill Development. & Mini Project

7th Semester		
S No.	**Subject Code**	**Subject Name**
1	RCS-071	Application of Soft Computing
2	RCS-075	Cloud Computing
3	RIT-701	Cryptography & Network Security
4	RCS-702	Artificial Intelligence
5	ROE-074	Understanding the human being Comprehensively Human Aspiration audits fulfillment
6	RIT-751	Cryptography & Network Security Lab
7	RCS-752	Artificial Intelligence Lab
8	RIT-753	Industrial Training
9	RIT-754	Project

CO PO and Mapping of CO PO 2nd Year

(2019-2023 BATCH)

Session:- 2020-21 Semester:- 3rd

S.No.	Subject	Code
1	Math-IV	KAS 302
2	Technical Communication	KAS 301
3	Data Structure	KCS 301
4	Computer Organization and Architecture	KCS 302
5	Discrete Structures & Theory of Logic	KCS 303
6	Computer System Security	KNC 301
7	Data Structures Using C Lab	KCS351
8	Computer Organization Lab	KCS352
9	Discrete Structure & Logic Lab	KCS353
10	Mini Project or Internship Assessment	KCS354

Theory

Mathematics -IV (KAS 302)	CO1	Identify the application of partial differential equations and apply for solving linear and non-linear partial differential equation.	K1,K3
	CO2	Understand the classification of second order partial differential equations and by using the method of separation of variables to evaluate the general solution of Heat, Wave, Laplace equations and Transmission lines.	K1,K3
	CO3	Remember the concept of moments, skewers, moment generating function, curve fitting and analyze the correlation and regression.	K1,K4
	CO4	Remember the concept of probability, random variable and apply for solving the problem related to discrete and continuous probability distributions.	K1,K3
	CO5	Understand the statistical method of data samples , hypothesis testing and applying the study of control chart and their properties.	K2,K3

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	2	3	2	3	2						3	2
CO2	3	3	3	3	2	3	1				1	3	3	3
CO3	3	3	2	2	3	3	1				1	3	3	2
CO4	3	3	3	2	3	3	2				2	3	3	2
CO5	3	3	3	3	3	3	1				1	3	3	3
Avg	**3**	**3**	**2.6**	**2.6**	**2.6**	**3**	**1.4**				**1.25**	**3**	**3**	**2.4**

Technical Communication (KAS301)	CO1	Students will be enabled to understand the nature and objective of Technical Communication relevant for the work place as Engineers.	K1,K2
	CO2	Students will utilize the technical writing for the purposes of Technical Communication and its exposure in various dimensions.	K3
	CO3	Students would imbibe inputs by presentation skills to enhance confidence in face of diverse audience.	K3
	CO4	Technical communication skills will create a vast know-how of the application of the learning to promote their technical competence	K6
	CO5	It would enable them to evaluate their efficacy as fluent & efficient communicators by learning the voice-dynamics.	K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1						1	1	1	2	2	2	2	2	1
CO2								1	1	3	3	2	1	2
CO3								1	2	3	2	2	1	1
CO4						2	1		1	3	2	3	2	2
CO5									2	3	1	1	1	1
Avg						**1.5**	**1**	**1**	**1.6**	**2.8**	**2**	**2**	**1.4**	**1.4**

Data Structures (KCS 301)	CO1	Understand the complexity of algorithms utilizing various data structures and their representations in memory along with their common applications.	K1,K2
	CO2	Describe the concept of recursion and its implementation on various data structures.	K2,K3
	CO3	Apply various searching and sorting algorithms.	K3
	CO4	Analyze the algorithm and implementation of non-linear data structures such as searching and sorting by comparing their computational efficiency.	K4
	CO5	Evaluate the various solutions of a real-world problem using data structures and algorithms.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	2	2	1							2		
CO2	2	2	2	2	2							1		
CO3	3	2	2	2	1				1		1	2	1	
CO4	3	3	2	3					1		1	1	2	1
CO5	3	3	2	3	1				1		2	2	2	2
Avg	**2.6**	**2.4**	**2**	**2.4**	**1.25**				**1**		**1.33**	**1.6**	**2.6**	**2.4**

Computer Organization and Architecture (KCS 302)	CO1	Describe the basic organization and operation of the components of a digital computer system.	K1,K2
	CO2	Illustrate various arithmetic and logical operations on different types of numbers to design an arithmetic and logic unit.	K4
	CO3	Analyze the performance issues of the processor and classify the control unit implementation techniques.	K4
	CO4	Categorize the hierarchical memory system and examine the virtual memory implementation techniques.	K3,K4
	CO5	Compare the different I/O data transfer techniques, and describe the different ways of communication among I/O devices and standard I/O interfaces	K2,K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	1	1								1	1	
CO2	3	2	2	1								1	1	
CO3	3	2	2	1								1	2	1
CO4	2	2	2	1								1	1	1
CO5	3	2	2	1								1	1	1
Avg	**2.6**	**2**	**1.8**	**1**								**1**	**1.2**	**1**

Discrete Structure and Theory of Logic (KCS-303)	CO1	**Acquire** Knowledge of Logical Notations which is used to define and understand the basic fundamental mathematical concepts such as sets, relations, functions, and integers.	K3
	CO2	**Apply** various structures and properties of modern algebra.	K3
	CO3	**Employ** logical abilities such as reasoning to set up mathematical models for real life problems by applying advanced counting and computing techniques like generating function and recurrence relation.	K_3
	CO4	**Explore** various problems in the field of computer science using trees and graphs.	K4
	CO5	**Determine** a solution with the help of induction hypotheses, simple induction proofs and recurrences.	K5

CO \ PO Mapping	**PO1**	**PO 2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	2	2	1	2	-	-	-	-	-	2	1	
CO2	2	2	1	1	2	1	-	-	-	-	-	2	1	
CO3	2	2	2	3	2	1	-	-	-	-	-	2	2	1
CO4	3	3	3	3	3	3	-	-	-	-	-	3	2	3
CO5	2	1	2	2	3	2	-	-	-	-	-	2	3	3
Avg.	**2.4**	**1.8**	**2**	**2.2**	**2.2**	**1.8**						**2.2**	**1.8**	**2.33**

Computer System Security (KNC-301)	CO1	To discover software bugs that pose cyber security threats and to explain how to fix the bugs to mitigate such threats	K1,K2
	CO2	To discover cyber-attack scenarios to web browsers and web servers and to explain how to mitigate such threats	K2
	CO3	To discover and explain mobile software bugs posing cyber security threats, explain and recreate exploits, and to explain mitigation techniques.	K3
	CO4	To articulate the urgent need for cyber security in critical computer systems, networks, and world wide web, and to explain various threat scenarios	K4
	CO5	To articulate the well-knowncyber-attack incidents, explain the attack scenarios, and explain mitigation techniques.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	3	2	2	2	2	3	3	2	1	3	2	1
CO2	2	3	1	3	3	2	1	3	2	2	1	3	1	2
CO3	2	2	3	2	3	2	1	3	1	3	1	3	2	3
CO4	3	2	3	3	2	3	1	3	3	2	1	3	1	2
CO5	3	2	2	3	3	1	2	3	3	2	1	3	3	1
Avg	2.6	2	2.4	2.6	2.6	2	1.4	3	2.4	2.2	1	3	1.8	1.8

Practical

Data Structures Using C Lab (KCS 351)	CO1	Implement various Sorting and Searching Algorithms.	K3
	CO2	Analyze the recursive implementation of different sorting and searching algorithms.	K4
	CO3	Implement various data Structure using static and dynamic memory allocation.	K3,K4
	CO4	Demonstrate various operations like traversal, insertion, deletion on tree data structure.	K3
	CO5	Design and Implement practical applications based on graphs and shortest paths.	K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	3	2					1	1		2		
CO2	2	2	3	2					1	1		2		
CO3	3	2	3	2					1	1		2	2	
CO4	3	3	3	2					1	1		2	2	2
CO5	3	3	3	2					1	1		3	3	2
Avg	**2.6**	**2.4**	**3**	**2**					**1**	**1**		**2.2**	**2.33**	**2**

Computer Organization Lab (KCS 352)	CO1	Examine the output of the basic logic gates for different combinations of input.	K3
	CO2	Design and simulate the combinational circuits for binary arithmetic (such as adders, subtractors, and multiplier) and code converter	K5
	CO3	Design and simulate combinational circuits for encoders/decoders and selection devices multiplexers/demultiplexers using logic gates	K5
	CO4	Design and simulate the basic building block of the sequential circuits (i.e. SR and D Flip Flops) using logic gates.	K5
	CO5	Design and simulate the 2-bit Arithmetic Logic Unit using logic gates.	K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	2	1					1	1		-	-	-
CO2	3	3	3	2					1	1		1	-	-
CO3	2	3	3	2					1	1		1	1	1
CO4	2	3	3	2					1	1		1	2	1
CO5	2	3	3	2					1	1		1	2	1
Avg	**2.2**	**2.8**	**2.8**	**1.8**					**1**	**1**		**1**	**1.67**	**1**

Discrete Structure and Logic Lab (KCS-353)	CO1	To Implement various Set operations.	K2,K3
	CO2	To Demonstrate various basic Maple commands.	K_1,K_2
	CO3	To Implement various Inductive techniques, Recursive Techniques and expected value problems using Maple script.	K_3,K_4
	CO4	To Design and Implement practical applications based on graphs and shortest paths.	K5
	CO5	To Implement various programming problems based on binary search.	K3, K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	2	3	2	-	-	-	-	1	-	1	1	-
CO2	3	3	3	3	2	-	-	-	-	1	-	1	1	-
CO3	3	2	2	3	3	-	-	-	-	1	-	1	1	-
CO4	3	3	2	2	3	-	-	-	-	1	-	2	2	1
CO5	3	2	2	2	3	-	-	-	-	1	-	2	2	1
Avg	**3**	**2.4**	**2.2**	**2.6**	**2.6**					**1**		**1.4**	**1.4**	**1**

Mini Project or Internship Assessment (KCS354)	CO1	Analyze and understand the real life problem and apply their knowledge to get programming solution	K1,K2,K4
	CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues.	K2,K3
	CO3	Use the various tools and techniques, coding practices for developing real life solutions to the problem.	K2,K4
	CO4	Write the powerpoint presentation about what they are doing in the project.	K1,K5
	CO5	Find out the errors in application solutions and its implementations.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	2	2	2	2	3	1	2	3	3	3
CO2	3	3	3	2	3	3	2	2	3	3	2	3	3	3
CO3	3	3	3	3	3	3	2	2	3	-	-	3	3	3
CO4	3	3	2	2	3	3	2	2	3	3	-	3	1	1
CO5	3	3	2	2	3	3	2	2	3	-	-	2	2	2
Avg	**3**	**3**	**2.6**	**2.2**	**2.8**	**2.8**	**2**	**2**	**3**	**2.33**	**2**	**2.8**	**2.4**	**2.4**

CO PO and Mapping of CO PO 3rd Year

(2018-2022 BATCH)

Session:- 2020-21 Semester:- 5th

S.No.	Subject	Code
1	Machine Learning Techniques	KCS 055
2	Database Management System	KCS 501
3	Design and Analysis of Algorithm	KCS 503
4	Web Technology	KIT 501
5	Object Oriented System Design	KCS 054
6	Indian Tradition, Culture and Society	KNC 502
7	Database Management System Lab	KCS 551
8	Design and Analysis of Algorithm Lab	KCS 553
9	Web Technology Lab	KIT 551

Theory

Machine Learning Techniques (KCS 055)	CO1	Understand the need for machine learning for various problem solving	K_2
	CO2	Understand a wide variety of learning algorithms and how to solve computing problems.	K_2 , K_3
	CO3	Design appropriate machine learning algorithms and apply the algorithms to real-world problems.	K_3, K_5
	CO4	Understand the neural nets for solving real time problems and evaluating the performance.	K_5 , K_6
	CO5	Optimize the models learned and report on the expected accuracy that can be achieved by analyzing the models..	K4, K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	2	1	2	1	1					1	2	
CO2	2	3	2	2	3	2	1		1			2	2	1
CO3	3	3	3	3	3	2	1		1		1	2	3	2
CO4	3	3	3	3	3	2	1		1		1	2	3	2
CO5	3	3	3	3	3	2	1		1		1	2	3	2
Avg	**2.8**	**3**	**2.6**	**2.4**	**2.8**	**1.8**	**1**		**1**		**1**	**1.8**	**2.6**	**1.75**

	CO1	Acquire the knowledge of database design methodology for implementing real life applications.	K3
Database Management Systems (KCS 501)	CO2	Design an information model expressed in the form of ER diagram.	K6
	CO3	Apply real time problems of structured query language to databases.	K3
	CO4	Analyze the redundancy problem in database tables using normalization.	K4
	CO5	Identify the broad range of database management issues including data integrity, security and recovery in terms of transactions.	K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**

CO1	3	-	-	-	3	-	-	1	1	-	1	2	-	1
CO2	2	1	3	2	3	-	-	1	1	3	2	1	3	2
CO3	3	-	-	-	3	-	-	1	-	1	1	1	3	1
CO4	2	3	-	3	-	-	-	1	-	-	-	1	2	1
CO5	2	3	-	3	-	-	-	1	-	-	-	1	1	2
Avg	**2.4**	**2.33**	**3**	**2.67**	**3**			**1**	**1**	**2**	**1.33**	**1.2**	**2.25**	**1.4**

Design and Analysis of Algorithm (KCS 503)	CO1	Analyze running time of algorithms using asymptotic methods.	K4
	CO2	Analyze advanced data structure algorithms to calculate their complexities	K4
	CO3	Create solutions of Optimization problems using Dynamic Programming and Greedy Approach.	K6
	CO4	Apply backtracking and branch & bound approaches for finding efficient solutions.	K3
	CO5	Understand the concepts of NP Completeness and find alternate solutions using Randomized and Approximation Algorithms.	K2

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	3	2	2	2							2	2	2
CO2	2	3	2	3	2							2	2	2
CO3	2	2	3	2	2				1			2	2	2
CO4	2	3	2	3	2				1			1	2	2
CO5	2	2	1	1	1				1			1	1	1
Avg	**2**	**2.6**	**2**	**2.2**	**1.8**				**1**			**1.6**	**1.8**	**1.8**

Web Technology (KIT 501)	CO1	Apply the knowledge of the internet and related concepts vital in understanding web application development.	K3,K6
	CO2	Analyze the role of markup languages like HTML, DHTML, and XML in the web and its applications.	K2,K3
	CO3	Apply web application development tools like XML, Apache Tomcat etc. and identify the environments currently available in the market to design web sites.	K3,K6
	CO4	Analyze dynamic web pages using client-side programming JavaScript and develop the web application using servlet and JSP.	K2,K4, K6
	CO5	Understand the impact of database connectivity with JDBC on web designing.	K2, K3, K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	3	3	3	3	2	-		2	2	2	2	1	2
CO2	2	3	2	3	3	2	-		2	2	2	2	2	3
CO3	2	3	3	3	3	1	-		2	2	3	3	3	3
CO4	3	3	3	3	3	2			1	2	1	3	3	3
CO5	3	3	3	3	3	2			1	1	2	3	1	1
Avg	**2.4**	**3**	**2.8**	**3**	**3**	**1.8**			**1.6**	**1.8**	**2**	**2.6**	**2**	**2.4**

Object Oriented System Design (KCS 054)	CO1	Understand the application development and analyze the insights of object-oriented programming to implement application.	K_1,K_2,K_4
	CO2	Understand, analyze and apply the role of overall modeling concepts (i.e., System, structural).	K_2,K_3,K_4
	CO3	Learn the structured analysis / structured design and analyze the oops programming style.	K_2,K_4
	CO4	Apply and evaluate the concepts of C++ for the implementation of object-oriented concepts.	K3, K5
	CO5	Design and evaluate the programming concepts to implement object-oriented modeling in C++.	K5, K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	2	3	3	2	-	2	2	1	2	3	2	2
CO2	3	3	2	3	3	3	-	2	3	2	3	3	3	3
CO3	3	2	2	2	3	3	-	2	2	2	2	3	2	2
CO4	3	3	3	3	3	3	-	2	3	2	3	3	2	2
CO5	3	3	3	3	3	3	-	2	3	2	3	3	2	2
Avg	3	2.6	2.4	2.8	3	2.8		2	2.6	1.8	2.6	3	2.2	2.2

Indian Tradition, Culture and Society (KNC 502)	CO1	To identify and understand the roots and details of Society State and Polity in India.	K1, K2
	CO2	To understand the importance of Indian Literature, Culture, Tradition, Practices and to apply in the present system.	K2, K3
	CO3	To analyze the Indian Religion, Philosophy, Practices and in shadow of Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy and to apply in present system	K3, K4
	CO4	To analyze the Science, Management and Indian Knowledge System and to apply in the present system.	K3, K4
	CO5	To evaluate the Indian Architect, Engineering and Architecture in Ancient India, Indian's Cultural Contribution to the World and to create environment in Arts and Cultural for the present system.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	2	2	2	2	1	2	1	1	2	2	1	1
CO2	2	2	2	2	2	2	2	2	1	1	2	2	1	1
CO3	2	2	1	2	2	2	1	2	1	1	2	2	1	1
CO4	3	1	1	1	1	1	1	1	1	1	3	3	2	1
CO5	2	1	1	1	1	1	1	1	1	1	2	2	2	1
Avg	**2.2**	**1.6**	**1.4**	**1.6**	**1.6**	**1.6**	**1.2**	**1.6**	**1**	**1**	**2.2**	**2.2**	**1.4**	**1**

Practical

Database Management Systems Lab (KCS 551)	CO1	Understand and apply MYSQL products for creating tables, views, indexes, sequences and other database objects.	K1,K2,K3
	CO2	Design and implement a database schema for company data base, banking data base, library information system, payroll processing system, student information system.	K4,K5
	CO3	Design and implement simple and complex queries using DDL, DML, DCL and TCL.	K4,K5
	CO4	Implement PL/SQL blocks, procedure functions, packages and triggers, cursors.	K5
	CO5	Demonstrate entity integrity, referential integrity, key constraints, and domain constraints on database.	K1,K3

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	2	3	2	2	2	1	1	2	1	2	2	2	2
CO2	3	3	2	2	3	1	2	1	2	2	3	3	2	2
CO3	3	2	2	2	2	2	1	1	2	1	2	2	2	2
CO4	2	2	3	2	2	2	2	1	2	2	3	2	1	1
CO5	3	3	2	2	3	1	1	1	2	1	2	3	1	1
Avg	**2.6**	**2.4**	**2.4**	**2**	**2.4**	**1.6**	**1.4**	**1**	**2**	**1.4**	**2.4**	**2.4**	**1.6**	**1.6**

Design and Analysis of Algorithm Lab (KCS 553)	CO1	Implement algorithm to solve problems by iterative approach.	K3,K4
	CO2	Implement algorithm to solve problems by divide and conquer approach	K3,K4
	CO3	Implement algorithm to solve problems by Greedy algorithm approach.	K6
	CO4	Implement algorithm to solve problems by Dynamic programming, backtracking, branch and bound approach	K2,K3
	CO5	Implement algorithm to solve problems by branch and bound approach	K2,K3

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	1	3	2	2	1							3	1	1
CO2	2	3	2	3	2							2	1	2
CO3	3	2	2	1	2							2	1	2
CO4	2	2	2	1	2							2	2	2
CO5	2	2	2	2	1							2	2	2
Avg	**2**	**2.4**	**2**	**1.8**	**1.6**							**2.2**	**1.4**	**1.8**

Web Technology Lab (KIT 551)	CO1	Understand fundamentals of web development and Java, including defining classes, invoking methods, using class libraries, Applet, AWT.	K2,K4
	CO2	Understand, analyze, and apply the role of scripts/languages like HTML, DHTML, CSS, XML, DOM, and SAX to solve real world problems.	K2,K3,K5
	CO3	Understand, analyze, and design the role of JavaScript for dynamic web pages.	K2,K4,K5
	CO4	Design and deploy different components using EJB, and database tables using JDBC and produce various results based on given query.	K4,K5
	CO5	Design and deploy a server-side java application called Servlet & JSP tools to catch form data sent from client, process it and store it on database.	K3,K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	3	3	3	3	2	-		2	2	2	2	2	2
CO2	2	3	2	3	3	2	-		2	2	2	2	2	2
CO3	2	3	3	3	3	1	-		2	2	3	3	2	2
CO4	3	3	3	3	3	2			1	2	1	3	2	2
CO5	3	3	3	3	3	2			1	1	2	3	2	2
Avg	**2.4**	**3**	**2.8**	**3**	**3**	**1.8**			**1.6**	**1.8**	**2**	**2.6**	**2**	**2**

Skill Development. & Mini Project (KCS554)	CO1	Analyze and understand the real life problem and apply their knowledge to get programming solution.	K3, K4
	CO2	Engage in the creative design process through the integration and application of diverse technical knowledge and expertise to meet customer needs and address social issues	K3,K4,K5
	CO3	Use the various tools and techniques, coding practices for developing real life solution to the problem.	K3,K4,K5
	CO4	Writing and presentation skill by using report about what they are doing in mini project.	K3,K4
	CO5	Find out the errors in application solutions and its implementations.	K3,K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	3	2	2		3	2	3	3	3	3
CO2	3	3	3	2	3	3	2	2	3		2	3	3	3
CO3	3	3	3	3	3				2	3	3	2	3	3
CO4	2	2	2	2	3	2			3	3	3	3	3	3
CO5	3	3	2	3	3	2			3		3	2	3	3
Avg	**2.8**	**2.8**	**2.6**	**2.4**	**3**	**2.25**	**2**	**2**	**2.8**	**2.67**	**2.8**	**2.6**	**3**	**3**

CO PO and Mapping of CO PO 4th Year

(2017-2021 BATCH)

Session:- 2020-21 Semester:- 7th

S.No.	Subject	Code
1	Cryptography & Network Security	RIT 701
2	Artificial Intelligence	RCS 702
3	Application of Soft Computing	RCS 071
4	Understanding the human being Comprehensively Human	ROE 074
5	Cloud Computing	RCS 075
6	Cryptography & Network Security Lab	RIT 751
7	Artificial Intelligence Lab	RCS 752
8	Project	RIT 754
9	Industrial Training	RIT 753

Theory

Cryptography & Network Security (RIT 701)	CO1	Understand the basic concepts and principles used in cryptography.	K_1,K_2
	CO2	Apply the number theory in cryptography.	K_3,K_4
	CO3	Understand the concept of MAC, hash functions and digital signature.	K_6
	CO4	Analyze the concept of key management, distribution and its application.	K_4
	CO5	Assess the security issues and their implementation at IP and system level.	K_5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	1	2	1	1	1	1	3	-	-	-	2	1	1
CO2	3	3	2	2	1	3	1	1	-	-	-	2	1	1
CO3	3	3	2	2	1	3	1	2	-	-	-	2	1	1
CO4	3	1	1	1	1	1	1	1	-	-	-	2	1	1
CO5	3	3	2	2	1	3	1	2	-	-	-	2	1	1
Avg	**3**	**2.2**	**1.8**	**1.6**	**1**	**2.2**	**1**	**1.8**				**2**	**1**	**1**

Artificial Intelligence (RCS 702)	CO1	Understand the concept of artificial intelligence, intelligent agents, Computer vision, Natural Language Processing, Uniformed and Informed search strategies, Search for games and Design principles of pattern recognition system.	K1, K2
	CO2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.	K3
	CO3	Explain the concepts of supervised, unsupervised and reinforcement learning.	K2, K4
	CO4	Evaluate Probabilistic reasoning for uncertainty, parameter estimation methods and various classification techniques of pattern reorganization.	K5
	CO5	Analyze various searching for solutions, machine learning techniques and classification techniques.	K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	2	3	2			2		3	3	3
CO2	3	3	3	3	3	3						3	3	3
CO3	3	3	2	3	3	2				2		3	3	2
CO4	2	2	2	3	3	2						3	3	2
CO5	2	3	3	3	2	2	2					3	3	3
Avg	**2.6**	**2.8**	**2.6**	**3**	**2.6**	**2.4**	**2**			**2**		**3**	**3**	**2.6**

Application of Soft Computing (RCS 071)	CO1	Understand the feasibility of applying a soft computing methodology for a particular problem.	K_1,K_2
	CO2	Apply the techniques of soft computing and foster their abilities in designing and implementing soft computing based solutions for real-world engineering problems.	K_3,K_4
	CO3	Analyze neural networks to pattern recognition, classification and regression problems to evaluate solutions by various soft computing approaches.	K_4,K_5
	CO4	Apply and design fuzzy logic and reasoning to handle uncertainty and solve engineering problems.	K3, K5
	CO5	Examine and formulate genetic algorithm to combinatorial optimization problems.	K3, K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	3	2	2	1	1		1	3	3	3
CO2	3	3	3	3	3	2	2		1		1	3	3	3
CO3	3	3	3	3	3	2	2		1		1	2	3	3
CO4	3	3	3	3	3	2	2		1		1	1	3	3
CO5	3	3	3	3	3	2	2		1		1	1	3	3
Avg	**3**	**3**	**3**	**2.8**	**3**	**3**	**2**	**1**	**1**		**1**	**2**	**3**	**3**

Understanding the human being Comprehensively Human Aspiration aud its Fulfillment (ROE 074)	CO1	Identify basic human aspirations and their fulfillment through right understanding and different aspects of All- encompassing Resolution.	K1,K2
	CO2	Acquire knowledge about the role of human being in existence, activities, and potentialities of the self, awakening to activities of the Self and harmony from self to entire	K1,K2
	CO3	Analyze and apply right understanding to identify the interconnectedness and co-existence in existence.	K3,K4
	CO4	Analyze and evaluate transformation in thoughts through knowledge and in expressions as humane conduct (behavior, work/participation) in the light of Resolution.	K5,K6
	CO5	Demonstrate the understanding of human tradition and its components by expanding participation in a way leading to Universal human order.	K5,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	1	1	1	1	1	2	2	3	2	1	2	1	1	1
CO2	1	1	1	1	1	2	2	3	2	1	2	1	1	1
CO3	1	1	1	1	1	2	2	3	3	1	2	1	1	1
CO4	1	1	1	1	1	2	2	3	3	1	2	1	1	1
CO5	1	1	1	1	1	2	2	3	3	1	3	1	1	1
Avg	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**3**	**2.6**	**1**	**2.2**	**1**	**1**	**1**

Cloud Computing (RCS 075)	CO1	Understand basic concept and evolution of Cloud Computing.	K1,K2
	CO2	Understand the importance of different Cloud enabling technologies and apply their application in real world.	K2,K3
	CO3	Understand and analyze multi layered cloud architecture design along with their applications and challenges.	K2,K4
	CO4	Understand and Apply Resource management and analyze security systems in cloud.	K3,K4
	CO5	Analyze and Evaluate the components of open stack, Google Cloud platform, Hadoop, Virtual Box and Amazon web Service.	K4,K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	2	1	1	1	2	1	1	1	1	1	1	2	1	2
CO2	2	2	2	2	2	1	1	1	2	2	2	2	1	2
CO3	2	2	2	2	2	2	1	1	2	2	2	2	1	2
CO4	2	2	2	2	2	2	2	2	2	2	2	2	1	2
CO5	3	3	3	2	3	2	2	2	2	2	2	2	2	2
Avg	**2.2**	**2**	**2**	**1.8**	**2.2**	**1.6**	**1.4**	**1.4**	**1.8**	**1.8**	**1.8**	**2**	**1.2**	**2**

Practical

Cryptography & Network Security Lab (RIT 751)	CO1	Apply classical encryption techniques on text.	K1,K2, K3
	CO2	Learn the implementation of mathematical theorems.	K2, K4, K5
	CO3	Learn the implementation of asymmetric encryption technique and apply key exchange algorithm.	K2, K3
	CO4	Learn implementation of message authentication and digital signature.	K2, K6
	CO5	Learn simulation of Elliptic Curve Cryptography.	K3, K4

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	2	2	1	3	3	1	1	2	2	1	1
CO2	3	3	3	2	2	1	2	1	1	1	2	2	1	1
CO3	3	3	3	2	2	1	3	3	1	1	2	2	1	1
CO4	3	3	3	2	2	1	3	3	1	1	2	2	1	1
CO5	3	3	3	2	2	1	3	2	1	1	2	2	1	1
Avg	**3**	**3**	**3**	**2**	**2**	**1**	**2.8**	**2.4**	**1**	**1**	**2**	**2**	**1**	**1**

Artificial Intelligence Lab (RCS 752)	CO1	Explore the features of PROLOG programming language, including basic syntax, selection and search strategies of PROLOG.	K1,K2
	CO2	Understand syntax, semantics and natural deduction proof system of propositional and predicate logic.	K2,K5
	CO3	Implement the recursion and sequences using prolog programming.	K3,K5
	CO4	Demonstrate the PROLOG programming language skills in implementing various real-life problems.	K3,K6
	CO5	Demonstrate LISP programming language skills by solving real life problems through AI prospect.	K3,K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	2	2	2	2	2	1		1	2		2	2	2
CO2	3	3	3	3	3	2	1		1	2		2	2	2
CO3	3	3	3	3	3	2	1		2	2	1	2	2	2
CO4	3	3	3	3	3	3	3		2	2	2	2	3	3
CO5	3	3	3	3	3	3	3		2	2	2	2	3	3
Avg	**3**	**2.8**	**2.8**	**2.8**	**2.8**	**2.4**	**1.8**		**1.6**	**2**	**1.67**	**2**	**2.4**	**2.4**

Industrial Training (RIT753)	CO1	Analyze and understand the real life problem in industry and apply their knowledge to get programming solution.	K2,K3, K4
	CO2	Engage in the creative design process through the diverse technical knowledge and expertise to meet customer needs and address social issues.	K3, K, K6
	CO3	Use and apply the various tools and techniques, coding practices for developing real life solution to the problem.	K3
	CO4	Write the report about what are industry person doing in project.	K4,K5
	CO5	Find out the errors in software solutions of real-life projects and implementations.	K5

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2	-	-	-	3	-	2	1	1
CO2	3	3	3	3	2	2	-	-	1	2	2	2	2	2
CO3	2	2	3	3	3	2	-	-	1	2	2	2	2	2
CO4	2	1	1	3	2	1	-	-	-	3	1	2	1	1
CO5	3	3	2	3	3	1	-	-	1	3	2	2	1	1
Avg	**2.6**	**2.4**	**2.4**	**3**	**2.6**	**1.6**			**1**	**2.6**	**1.75**	**2**	**1.4**	**1.4**

Project (RIT 754)	CO1	**Select** and **summarize** all aspects of the real life problem through survey.	K1,K2
	CO2	**Apply** acquired knowledge to develop working model and plan different phases for its execution.	K3
	CO3	**Analyze** outcome of each phase using various tools, techniques, and coding practices.	K4
	CO4	**Justfy/defend** opinions, validity of ideas or quality of work based on a set of criteria.	K5
	CO5	**Test** the working model and modify related phase accordingly. Finally integrate all phases	K6

CO \ PO Mapping	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
CO1	3	3	3	3	3	2	1	1	3	3	3	3	1	1
CO2	3	3	3	3	2	2	1	1	3	2	3	3	2	2
CO3	3	3	3	3	2	2	1	1	3	2	3	3	2	3
CO4	3	3	3	3	2	2	1	1	3	2	2	3	2	3
CO5	3	3	3	3	2	2	1	1	3	2	1	2	2	3
Avg	**3**	**3**	**3**	**3**	**2.2**	**2**	**1**	**1**	**3**	**2.2**	**2.4**	**2.8**	**1.8**	**2.4**