K L E F Department Of Computer Science and Applications

MAPPING OF COURSE OUTCOMES WITH PROGRAM OUTCOMES (POs) and OGRAM SPECIFIC OUTCOMES (PSOs)

S	Course	Course	СО	Description of the Course Outcome	Pro	ogra	m	Out	tcor	nes			P	<mark>SO</mark>
No	Code	Title	NO		1	2	3	4	5	6	7	8	1	2
1	20UC1101	Integrated Professional English	CO1	Understand the concepts of grammar to improve communication, reading, and writing skills								2	1	
			CO2	Demonstrate required knowledge over Dos and Don'ts of speaking in the corporate context. Demonstrate ability to face formal situations / interactions.							2			
			СОЗ	Understand the varieties of reading and comprehend the tone and style of the author. Skim and scan effectively and appreciate rhetorical devices						2			1	
			CO4	Apply the concepts of writing to draft corporate letters, emails, and memos					3					
2	21CA1104	Mathematics for Computer	CO1	Fundamental concept .Solve problems of matrices		2							1	
		Science	CO2	hulate differential calculus, differentiation rules and identify a method for solving and interpreting the results.		2							1	
	Science		СОЗ	hulate physical laws and relations mathematically in the form of second/higher order differential equations and identify a method for solving and interpreting the results.		3								2
			CO4	Formulate partial differential equations and identify method for solving PDE's		3								2
			CO5	Verify the solution of problems through MATLAB.							3	T	Γ	2
3	21CA1101	Programming Solving	C01	Explain different concepts of C programming, used to create programs.	2								Π	2
		Through Programming	CO2	Discuss about different data types and control structures	2								Π	2
			соз	Demonstrate the working of functions, arrays and pointers		3							1	
			CO4	Identify the working of different file handling methods	3							1	1	
			CO5	Develop programs using basic and advanced concepts of C language		3						$\left[\right]$	1	
4	21CA1205	Operating Systems	CO1	Discuss the working of an operating system, with its features, uses, and other functionalities.	2								1	

	Describe process and storage management and how OS performs various functionalities	2				1
	Identify the purpose of different process synchronization and management methods		3			1
	Organize security and file system management in an operating system.	3				

5	21Ca2109	Software Engineering	CO1	Discuss the need for following a well structured format for the development of	2						1	٦
				software applications								
			CO2	Illustrate how to reduce the complexity to transition from one phase in software			3				1	
				development to another.								
			соз	Summarize different testing concepts				3			1	
			CO4	Identify how to manage a software development project				3			1	
6	21CA1102	Computer Organization &	CO1	Understand basic of computer and number system	2						1	
		Architecture	CO2	Understanding of Boolean Algebra and Logic gates			2				1	I
			CO3	Understanding of K Map 2				3			1	
			CO4	Understanding of Combinational and Sequential Circuits 2				3			1	
7	21UC0009	Ecology & Environment	CO1	Understand the importance of Environmental education and conservation of natural resources.					1			
			CO2	erstand the importance of ecosystems and biodiversity.								
			СОЗ	y the environmental science knowledge on solid waste management, disaster management and EIA process.					3			
8	20UC1202	English Proficiency	CO1	Demonstrating different interpersonal skills for employability	6					2		
			CO2	Distinguishing business essential skills					2			
			СОЗ	Classifying social media and corporate communication skills					2			
			CO4	Applying analytical thinking skills								
9	21CA1207	Object Oriented	CO1	Discuss different object oriented concepts, features and its application through java.	2						1	
		Programming Using Java	CO2	Apply the java concepts to create standalone desktop applications.		3					1	
			CO3	Identify the different predefined classes and methods in packages			3				1	
			CO4	Apply java concepts to create UI oriented applications, along with database manipulation.		2					1	
			CO5	Develop applications using java concepts, swings and JDBC			3				1	
10	21CA1206	Data Structures	CO1		2						1	
			CO2	Identify the pros and cons of different searching and sorting algorithms	2						1	

			CO3	Experiment with working of different data		3	П			1	
			CO4	structures and their applications Summarize the working of linked lists, trees		2				1	
			CO5	and graphs Develop programs to demonstrate the functionality of different data structures, sorting algorithms, searching algorithms.			3			1	
11	21CA2111	Computer Networks	CO1	Discuss how to establish a connection among various devices. Explain the different networking concepts and devices that are used today for establishing connectivity.		2	2			1	
			CO2	ine the functionalities of different network protocols		2	2			1	
			CO3	Describe different WAN technologies, topologies and other basic networking concepts.		2	2			1	
			CO4	Explain how to troubleshoot a network.		2	2	Τ		1	Τ
12	21UC0010	Universal Human Values & Professional	CO1	Understand and identify the basic aspiration of human beings					2		
		Ethics	CO2	Envisage the roadmap to fulfill the basic aspiration of human beings.					3		
			CO3	Analyze the profession and his role in this existence.					4		
13	21CA2110	Database Management	CO1	Discuss the importance of creating and maintaining an error free database.		2					
		System	CO2	Apply different SQL commands to manipulate a database			3				
			соз	· · · ·	3						
			CO4	Apply transaction concepts in a database		3					
			CO5	Develop database tables and manipulate them using SQL queries			3				
14	21CA2112	Web Development	CO1	Understand basic programming skills in core Python		2				1	
		using Python	CO2	Apply basic principles of Python programming language			1			1	
			СОЗ		3					1	
			CO4	Develop program Python applications			3			1	
			CO5	Develop the skill of designing Graphical user Interfaces in Python			3			1	
15	21CA1103	Essentials of Information Technology	CO1	Understand the architectural design of a computer, hardware peripherals and various concepts of Operating systems		2				1	
		gj	CO2	Understand Programming fundamentals Analyze User interface designs			1	T		1	
			CO3	Understanding concepts and fundamentals of Computer networks.	3	\square		ϯ		1	\dagger
			CO4	Understanding Software attributes, Specifications and Software Requirement			3			1	
			CO5	Specification Document Analyze and Explore data through Word Processing, Spreadsheet applications and Presentations			3			1	

16	21CA1209	Web AND		To design web pages using HTML, CSS	3						1
		Social Media	CO 5	and makes use of social media platforms							
		Technologies		for creating accounts.							
17	21CA1208		CO1	Identify various concepts of mobile	-	2	┝┼	_		 	1
				programming that make it unique from							
		Mobile Application		programming for other platforms							
		Development	CO2	Critique mobile applications on their			H				1
			02	design pros and cons			1				-
			CO3		3		\square				1
			CUS	Utilize rapid prototyping techniques to	3						L
				design and develop sophisticated mobile							
				interfaces							
			CO4	Program mobile applications for the			3			-	<u>l</u>
				Android operating system that use basic							
				and advanced phone features			Ш				
			CO5	Deploy applications to the Android			3			-	L
				marketplace for distribution.							
18	21CA2213	Java Full Stack Development	CO1	Apply JDBC API and JUnit Testing		2					L
		Development		Framework to build Console and Web							
				Applications							
			CO2	Understand the concepts of XML and			1				L
				Implement Servlets and JSP to build web							
				applications. Implement Spring and Spring Boot							
				Concepts with GraphQL to build							
				Enterprise Level applications.							
			602				\square				
			CO3	Analyze the design of linear data	3					-	L
				structures for real world problems.							
			CO4	Analyze alternate algorithm techniques			3			-	1
				to solve optimization related problems							
				in the real-world scenario.							
			CO5	Create real time applications using JAVA API			3				L
19	21CA2214	Object	CO1	Have Knowledge in evolution and	3		5				
		Oriented Analysis &		foundations of OO Model and its							
		Design		elements.							
			CO2	Identify relationship between classes		┝	┢┼┨	-	3	\dashv	
				and objects.							
			CO3	Know importance of classification and		-	┢┼┨	-	3	\dashv	_
				can identify classes and objects							
			CO4	Knowledge in syntax and semantics of		3	┝┼	-	$\left - \right $	\dashv	
				The mode in Syntax and Semantics Of		Ĩ					

				UML									Π	٦
			CO5	Create real time applications using UM:L	3									
		Major Project/ Internship1/	CO1	Apply basic concepts learnt to solve real- time problems		3							1	
	21CA21N1	Internship2	CO2	Discuss the IT organization hierarchy and working							3		1	
			соз	Identify the tools/network and their functionalities to create and test application/connectivity							3		1	
			CO4	Summarize the procedures used for creating and testing applications			3						1	
			CO5	Create real time applications		3							1	
21		Cloud Architecture	CO 1	Understand the main concepts, key technologies, strengths and limitations of cloud computing.		2							2	
			CO 2	Understanding the Cloud Architecture and infrastructure of cloud computing	2								2	
			CO 3	Understanding the cloud services.	2								1	
			CO 4	Will be able to understand and define the multi-tenant cloud architecture, its advantage and requirements.			2						2	
			CO 5	Will be able to explain the core issues of cloud computing such as security and service management.			2						1	
22	21CA211 9 (PE1)	DATA WAREHOU	CO1	Understand stages in building a Data Warehouse	2								2	
		SING & MINING	CO2	Apply pre processing techniques for data cleansing and Analyze multi-dimensional modelling techniques			2						2	
			CO3	Analyze and evaluate performance of algorithms for Association Rules.				2					1	
			CO4	Analyze Classification and Clustering algorithms				2					2	
			CO5	Evaluate mining techniques like classification, clustering and association rules on data objects					2				2	
23	· · · ·	Cloud Information Security	CO 1	Explain importance of Information Security in the Cloud Context		2							2	
		Security	CO 2	Discuss various concepts of cloud security						2			2	
			CO 3	Develop the cloud vulnerabilities and threats							2		1	
			CO 4	Identify how cloud and Security works in a seamless model								2	2	
24	21CA222 0(PE2)	Statistics For Data Science	CO1	Understand the basic concepts of statistics and explains the various methods of descriptive data collection and analysis	2								2	
			CO2	Understand the probability distribution of a random variable, based on real- world situation, and use it to compute expectation and variance			2						2	
			CO3	Construct the relationship between two variables and construct the linear and	2								1	

				non-linear regression lines for the given data							\Box
			CO4	Apply basic concepts of statistics and explains the various methods of descriptive data collection and analysis		2				2	
25	21CA312 7(PE3)	Ethical Hacking	CO 1	Explain the concepts and types of Ethical Hacking			2			2	
			CO 2	Using tools create hack in scenarios		2				2	
			CO 3	Experiment with how to perform web hacking			2			1	
			CO 4	Develop report writing and mitigation			2			2	
			CO 5	Apply the concepts of ethical hacking using tools and techniques			2			2	
26	21CA313 0(PE3)	Big Data Analytics	CO1	To understand the basic concept of BigData, different types of Data	2					2	
			CO2	To understand architecture of Hadoop and YARz			2			2	
			CO3	To understand about Processing and Storage Layer of Hadoop, internal concept of MapReduce				2		2	
			CO4	You will understand the concept of Master and Slave Architecture				2		1	
			CO5	You will learn about cluster management using YARN				2		2	

27		Cloud Web Services	CO 1	Understand the model of Cloud Computing As A Service		2			2	
			CO 2	Understand the Networking Basics required for cloud services				2	2	
			CO 3	Demonstrate the Control of workflow in cloud services		2			2	
			CO 4	Explain the method of fault tolerance in cloud				2	1	
			CO 5	Experiment with the cloud				2	2	
28	21CA322 9(PE5)	Design and Developmen t of Cloud	CO 1	Understand the basic concept of hybrid cloud	2	2			2	
		Application	CO 2	Understand the management of hybrid cloud in terms of development and deployment		2		2	2	
			CO 3	Plan the establishment of hybrid plan		2			2	
			CO 4	Apply the usage of Azure as a platform for hybrid cloud		2		2	1	
			CO 5	Create Applications using AWS cloud		2			2	

29	21CA323 2(PE5)	Machine Learning	CO1	To understand the basic concepts of statistical learning methods and models	2					2
			CO2	To understand the importance of supervised learning in classifying class labels for prediction		2				2
			CO3	To understand the different algorithms related to classification techniques			2			2
			CO4	To Understand the assumptions in estimating regression coefficients using OLS		2			2	1
			CO5	Create			2			2

C NO	COURSE	COURCE NAME	CATECODY	Ţ	Т	Р	C			Р	O's	5				PS	O's
S.NO.	CODE	COURSE NAME	CATEGORY	L		P	S	1	2	3	4	5	6	7	8	1	2
1	20UC1101	Integrated Professional English(HSS1)	HSS	0	0	4	2	2				2			2		2
2	21CA1104	Mathematics for Computer Science(BS1)	BS	3	0	2	4	2									2
3	21CA1101	Problem Solving through Programming	Prof.Core	3	0	2	4	2							2	2	
4	21CA1205	Operating Systems	Prof.Core	2	1	2	4	2	3							3	
5	21CA2110	Database Management System	Prof.Core	3	0	2	4	2	2							2	
6	21CA1102	Computer Organization & Architecture	Prof.Core	3	0	0	3	2	2							2	
7	21UC0009	Ecology & Environment(BS2)	HSS	2	0	0	2						2		2		2
8	20UC1202	English Proficiency	HSS	0	0	4	2	2				2					2
9	21CA1207	Object Oriented Programming	Prof.Core	2	0	4	4	2	3					3		3	
10	21CA1206	Data Structures	Prof.Core	2	0	4	4	2	3							3	
11	21CA2111	Computer Networks	Prof.Core	3	1	0	4	2								2	
12	21CA2109	Software Engineering	Prof.Core	4	0	0	0	2			2		2			2	
13	21CA2112	Web Development using Python	Prof.Core	2	0	2	3	1	2							2	
14	21UC0010	Universal Human Values & Professional Ethics	HSS	1	0	2	2						2			2	

15	21CA1103	Essentials of Information Technology	Prof. Core	3	0	2	4	2	3	3							3
16	21CA1209	Web AND Social Media Technologies	Prof.Core	3	0	0	3	2	2				2			2	
17	21CA1208	Mobile Application Development	Prof.Core	2	0	2	3	3		2	2				2	3	
18	21CA2213	Java Full Stack Development	Prof.Core	3	1	0	4	2		1			2			2	
19	21CA2214	Object Oriented Analysis & Design	Prof.Core	2	0	2	3	2			2		2			2	
20	21UC2103	Design Thinking & Innovation(HSS3)	HSS	1	0	0	4	2			2					2	
21	21CA2115	Cloud Architecture	Prof.Elec	2	0	2	0	2		2				2		2	
22	21CA2119	Data Warehousing & Mining	Prof.Elec	2	0	2	0			2					2		2
23	21CA2216	Cloud Information Security	Prof.Elec	4	0	0	0	2			2					2	
24	21CA2220	Probability and Statistics	Prof.Elec	4	0	0	0		2			2				2	
25	21CA3127	Ethical Hacking	Prof.Elec	2	0	2	0	2		2							2
26	21CA3130	Big Data Analytics	Prof.Elec	2	0	2	0	2			2					2	
27	21CA3228	Cloud Web Services	Prof.Elec	2	0	2	4	2		2				2		2	
28	21CA3231	Data Visualization	Prof.Elec	2	0	2	4	2		2			2			2	
29	21CA3229	Design and Development of	Prof.Elec	2	0	2	4	2		2					2	2	

Cloud Application									Program Articulation
									Matrix

(Mapping of courses with POs)