









РО	PO1- Student should be able to apply knowledge of Mathematics, Programming languages, Software Engineering and Technical communication to update him with current technology	PO2- Apply the knowledge of core computer subjects in order to get good command on software designing and development.	PO3- Demonstrate the understanding of concepts of core computer application areas.	PO4- Student should be able to apply basic knowledge, analyze and synthesize information, access the value of information and communicate effectively.	PO5- Student should be able to apply critical thinking and logical skills for real time applications.	PO6- Student should be able to function effectively as an individual as a team member in different work culture.	PO7 -Student should be able to apply Professional ethics & values in IT solutions.	PO8- Student should be able to demonstrate his technical skills to fulfill the requirements of the Industry at national as well as International level	PO9- Student should possess aptitude for mathematics, ability to learn and memorize programming languages, ability to handle multitasking, be able to develop programming skills to meet the current standard of Industry.
Course Code: BCA 101		1			Mathematics-I				
CO-1Student will be able to understand the basics of conceptual math and relations.	-	-	3	3	I .	3	2	1	2
CO-2 Student will be able to apply partial order recurrence relation and their operations.	- 3	-	3	3 2	2	3	2	1 2	1
CO-3: Student will be able to compare and design sorting and hashing techniques.	3	3	3	2	2		2	2	1
CO-4:Student will be able to appraise and determine the correct logic and solutions for any given real world problem.	3	2	3	3	3	3	3	2	2
	3.00	2.50	3.00	2.75	1.75	3.00	2.25	1.50	1.50
Average  Course Code:BCA 103	3.00	2.30	3.00	2.73	Technicial Communicati		2.23	1.50	1.50
					Techniciai Communicati	OII			
CO-1:Student will able to understand the basics of communication and its importance in the organizational world.	3	-	-	1	1	-	-	2	1
world. CO2:Student will able to develop technical writing skills to write resume, memorandum, notices etc.	2	3	-	_	1		_	_	1
CO2:Student will able to develop technical writing skills to write resume, memorandum, notices etc.  CO-3: Student will able to use effective listening skills, know how to negotiate and give effective	_	3			1	-			-
CO-3: Student will able to use effective listening skills, know how to negotiate and give effective presentations.	3	-	2	3	-	-	0	3	2
CO-4: Student will able to use effective business language and give a professional look to oneself.		1	1	1		1			1
CO-4: Student will able to use effective business language and give a professional look to oneself.  Average	2.67	2.00	1.50	1.67	1.00	1.00	0.00	2.50	1.25
Course Code:BCA 105	2:07	2.00	1.50		ion to Programming Lang		0.00	2.30	1.23
COURSE CODE:BCA 105  CO1. Student will be able to define own logic for a given problem and finally develop one's own programs in				Introduct					
COT.Student will be able to define own logic for a given problem and finally develop one's own programs in C language.	2	3	2	1	2	3	3	3	3
CO2.Student will be able to understand basic programs using selection and iteration logic	2	3	2	2	3	3	2	3	3
CO2.Student will be able to understand basic programs using selection and iteration logic  CO3.Student will be able to analyze programs using arrays, strings, structures, unions, functions and									
pointers	2	3	2	2	3	3	3	3	3
CO4. Student will be able to Implement the concept of dynamic memory allocation, structures, unions, bit									
fields and perform various operations on files.	2	3	2	2	3	2	3	3	3
Average	2.00	3.00	2.00	1.75	2.75	2.75	2.75	3.00	3.00
Course Code:BCA 107	2.00	3.00	2.00		ntroduction to Computers		2.13	3.00	3.00
COURSE COURSE CA 107  CO1Student will be able to memorize computer Basics	3	2	2	-	introduction to Computers	-	-	-	_
CO2. Student will be able to understand different types of Computer Software and working of MS Office	,	2			-		-		
applications	-	-	2	2	2	-	-	-	-
CO3.Student will be able to solve numerical problems on Computer Number System	_	-	-	2	_	2	3	_	
CO4. Student will be able to use Computer Network systems and Internet Applications	3				2.	<u>-</u>		2	3
Average	3.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00
Course Code:BCA 109	5.00	2.00	2.00	2.00	Physics	2.00	5.00	2.00	5.00
Course Code:BCA 109					1 Hysics				
CO1.Student will be able to define the basic principles of physics in order to explain general phenomena	-	-	-	2	-	-	-	-	-
CO2. Student will be able to describe the concepts of physics to gain an understanding of working of	1		1						
cO2. Student will be able to describe the concepts of physics to gain an understanding of working of computer components	2	-	2	-	-	-	-	-	-
CO3.Student will be able to apply the principles of physics to design scientific applications		2	_	_	_	0	1	2	0
CO3. Student will be able to apply the principles of physics to design scientific applications  CO4. Student will be able to solve problems related to functioning of computer systems based on	-	2	· ·	-		· ·	1	-	- 0
understanding of concepts related to electricity and magnetism.	-	-	-	-	2	-	-	-	-
Average	2.00	2.00	2.00	2.00	2.00	0.00	1.00	2.00	0.00
Course Code:BCA 151	2.00	2.00	2.00		ractical -I, C Programmin		1.00	2.00	0.00
CO1.Develop programming skills by learning the fundamentals of structured programming using C	_	_	_			~	_		
Language.	2	3	2	1	2	3	3	3	3
CO2.Design and develop programs using arrays, storage classes, functions and to understand memory									
management through pointers	2	3	2	2	3	3	2	3	3
CO3. Critically analyze real world problems using structures, unions and develop applications for handling									
text and binary files.	2	3	2	2	3	3	3	3	3
CO4.Explore the use of command line arguments, string manipulation and standard libraries.	2.	3	2	2	3	2.	3	3	3
Average	2	3	2	1.75	2.75	2.75	2.75	3	3
Course Code:BCA 153	2		-	1.75	Practical-II, IT Lab	2.13	2.13	,	
CO1. Work with basic DOS Commands and Windows Explorer	3	2	2	-		-	-	-	-
CO2. Create Word Documents using advanced features of MS Word.	-	-	2	2	2	-	-	_	_
CO3. Create Worksheet using advanced features of MS Excel	-	-	-	2		2	3	-	-
CO4.Create interactive Presentation using advanced features of MS Power-Point.	3		-		2		-	2	3
Average	3.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	3.00
The state of the s						100		1	

Course Code:BCA 102		,		1	Mathematics-II			1	
CO1.Student will be able to memorize the knowledge about Set, Relations and Functions.	3	-	-	1	1	-	-	1	2
CO2.Student will be able to understand the basic concepts of Partial Ordering and Lattices	3	-	-	2	1	1	0	-	1
CO3 Student will be able to describe the basics of Graphs & Trees	3	0	0	3	1	1	-	-	1
CO4. Student will be able to apply the concept of Peopositional Logic.	3	-	-	-	-	1	-	-	1
Average	3.00	0.00	0.00	2.00	1.00	1.00	0.00	1.00	1.25
Course Code:BCA 104					Principles of Manageme	ent			
CO1.Student will be able to explore the evolution of the concepts of management	2	1	1	1	-	-	-	1	1
CO2. Student will be able to examine the relevance of the theories of motivation	1	-	2	1	-	-	-	1	2
CO3. Student will be able to analyze the significance of Organisation and Individual Behaviour	1	1	2	2	1	1	2	1	1
CO4.Student will be able to analyse and relate individual, team and group behaviour	2	2	1	2	1	2	1	2	1
CO5.Student will be able to exhibt leadership qualities by building effective teams	2	1	1	2	-	1	1	2	2
CO6.Student will be able to comprehend dynamics of human behaviour	2	2	1	1	1	1	2	2	1
Average	1.67	1.40	1.33	1.50	1.00	1.25	1.50	1.50	1.33
Course Code:BCA 106					Digital Electronics				
CO1. Student will be able to draw any circuit diagram using basic logic gates and Universal gates.	2	3	1	2	1	2	-	2	2
CO2. Student will be able to solve any Boolean equation using different methods.	1	-	-	1	1	2	2	2	1
CO3.Student will be able to Implement different types of number systems, and their conversions.	1	1	2	2	2	1	1	2	2
CO4.Student will be able to analyze and design various combinational and sequential circuits.	2	3	3	3	1	3	1	2	1
Average	1.50	2.33	2.00	2.00	1.25	2.00	1.33	2.00	1.50
Course Code: BCA 108					Data Structure using	С			
CO1.Student will be able to understand the use of basic data structures along with their applications	2	1	1	1	1	1	-	1	1
CO2. Student will be able to summarize algorithms and algorithm correctness.	3	1	2	3	2	-		2	1
CO3. Student will be able to execute searching and sorting techniques on data	3	3	3	3	3	1	1	2	2
CO4. Student will be able to Implement stack, queue and linked list operations.	3	3	3	3	3	2	2	2	2
Average	2.75	2.00	2.25	2.50	2.25	1.33	1.50	1.75	1.50
Course Code:BCA 110					Data Base Management Sy				
CO1. Student will be able to identify and link user needs and take them into account in the selection,	1	2	3	2	2			1	2
Creation, evaluation and administration of computer-based systems	1	2	3	2	2	1	=	1	2
CO2. Student will be able to understand database concepts, structures and query language	2	2	2	2	2	-	-	2	2
CO3. Student will be able to understand the E R model and relational model	2	3	3	3	3	1	1	2	2
CO4. Student will be able to design and build a simple database system and demonstrate competence with									
the fundamental tasks involved with modelling, designing, and implementing a DBMS.	3	3	3	3	3	2	2	2	2
Average	2.00	2.50	2.75	2.50	2.50	1.33	1.50	1.75	2.00
Course Code:BCA 152	2.00	2.50	2.73		ractical-III, Data Structu		1.50		2.00
CO1. Implement basic operations on static linear data structures.	2.	1	1	1	1	1		1	1
CO2. Implement various operations on dynamic linear data structures.	3	i	2	3	2	-	-	2	1
CO3. Implement basic operations on non-linear data structures	3	3	3	3	3	1	1	2	2
CO4. Implement searching techniques on linear and nonlinear data structures	3	3	3	3	3	2	2	2	2
Average	2.75	2.00	2.25	2.50	2.25	1.33	1.50	1.75	1.50
Course Code:BCA 154				Practical	- IV, Database Manageme	ent System Lab			
CO1. Understand the structure and design of relational databases	1	2	3	2	2	1	0	1	2
CO1. Understand the structure and design of relational databases	1 2	2 2	3 2	2 2	2 2	1 0	0	1 2	2 2
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects				2	2	0			_
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database			2	2	2	1 0 1 2		2	_
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database	2 2 3	2 3	2 3 3	2 2 3 3	2 2 3	1 2	0 1 2	2 2 2	2 2 2
COI. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average	2 2	2 3 3	2 3	2 2 3	2 2 3 3 2.50	1	0	2 2	2 2
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201	2 2 3	2 3 3	2 3 3	2 2 3 3	2 2 3 3	1 2	0 1 2	2 2 2	2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion	2 2 2 3 2.00	2 3 3 2.50	2 3 3 2.75	2 2 3 3	2 2 3 3 2.50	1 2	0 1 2 0.75	2 2 2 2 2 1.75	2 2 2 2 2.00
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code: BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re	2 2 3	2 3 3	2 3 3	2 2 3 3	2 2 3 3 2.50	1 2	0 1 2 0.75	2 2 2	2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simples Problems	2 2 3 2.00	2 3 3 2.50	2 3 3 2.75	2 2 3 3 2.50	2 2 3 3 2.50 Mathematics-III	1 2 1.00	0 1 2 0.75	2 2 2 2 1.75	2 2 2 2 2.00 2.00
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Analyze the transportation and ssignment problem and solve real examples based on it.	2 2 3 2.00 3 3 2 2 3	2 3 3 2.50	2 3 3 2.75 1 1 2 2	2 2 3 3 2.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1	1 2 1.00	0 1 2 0.75	2 2 2 2 1.75	2 2 2 2 2.000
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average	2 2 3 2.00 3 3 2.20	2 3 3 2.50	2 3 3 2.75	2 2 3 3 2.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1.00	1 2 1.00	0 1 2 0.75	2 2 2 1.75 1 2 1	2 2 2 2 2.00 2.00
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove database objects CO3. Use index and Views in database CO4. Use index and Views in database  CO4. Use index and Views in database  CO5. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203	2 2 3 2.00 3 3 2 3 2 3 2.75	2 3 3 2.50	2 3 3 2.75 1 1 2 2 2 1.50	2 2 3 3 2.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1	1 2 1.00	0 1 2 0.75 - - 1 1 2 1.50	2 2 2 1.75 1 1 2 1 1 1,25	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201  CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203  CO1.Perform basic operations with different number systems and Understand concepts of register transfer	2 2 3 2.00 3 3 2 2 3	2 3 3 2.50	2 3 3 2.75 1 1 2 2	2 2 3 3 2.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1.00	1 2 1.00	0 1 2 0.75	2 2 2 2 1.75	2 2 2 2 2.000
CO1. Understand the structure and design of relational databases CO2. Write DDL statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203 CO1.Perform basic operations with different number systems and Understand concepts of register transfer Language	2 2 3 2.00 3 3 2 3 2 3 2.75	2 3 3 2.50	2 3 3 2.75 1 1 2 2 2 1.50	2 2 3 3 2.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1.00	1 2 1.00	0 1 2 0.75 - - 1 1 2 1.50	2 2 2 1.75 1 1 2 1 1 1,25	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203  CO1.Perform basic operations with different number systems and Understand concepts of register transfer Language CO2. Understand the architecture and functionality of cpu and memory Organization	2 2 3 2,000 3 3 2 2 3 2,75	2 3 3 2.50	2 3 3 2.75 1 1 2 2 2 1.50	2 2 3 3 2.50 	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1.00	1 2 1.00 1 - 1 - 2 1.33 re	0 1 2 0.75 - - 1 2 1.50	2 2 2 1.75 1 2 1 1 1.25	2 2 2 2 2 2 000 2 2 2 2 2 2 2 2,000 2 2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203 CO1.Perform basic operations with different number systems and Understand concepts of register transfer Language CO2. Understand the architecture and functionality of cpu and memory Organization CO3. Understand the Concept of Parallel computing and its applications	2 2 3 2.000 3 3 2 3 2.75	2 3 3 2.50	2 3 3 2.75 1 1 2 2 2 1.50	2 2 3 3 2.50 	2 2 3 3 3 2.50 Mathematics-III 1 1 1.00 Computer Architectus 1 1	1 2 1.00 1 1 1 2 2 1.33 re 2 2 2	0 1 2 0.75 	2 2 2 1.75 1 2 1 1 1.25	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
COL. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  Course Code:BCA 201 CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simplex Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203 CO1.Perform basic operations with different number systems and Understand concepts of register transfer Language CO2. Understand the architecture and functionality of cpu and memory Organization CO3. Understand the Concept of Parallel computing and its applications CO4.Learn the concepts of pipielined processors and interprocessor communication	2 2 3 3 2.000 3 3 2 3 3 2.75 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 3 2 2 3	2 3 3 2.50 1 1 2 1 1 1.25 3 1 2 1.25	2 3 3 2.75 1 1 2 2 2 1.50 2 2 3 3 2 2	2 2 3 3 2.50 	2 2 3 3 3 2.50 Mathematics-III 1 1 1.00 Computer Architectur 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 1.00 1 1 2 1.33 re 2 1 1 2 2 1 2 2 2 2 1 1 2 2 2 2 1 1 3 3 1 1 2 2 2 2	0 1 2 0.75 	2 2 2 2 1.75 1.75 1 2 1 1 1 1.25 1 1 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database CO4. Use index and Views in database  CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Orderstand various corelation and regression techniques and apply them to solve re Student will able to Solve the Graphical and Simples Problems Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  CO1. Perform basic operations with different number systems and Understand concepts of register transfer Language CO2. Understand the architecture and functionality of cpu and memory Organization CO3. Understand the Concept of Parallel computing and its applications CO3. Understand the Concept of Parallel computing and its applications CO4. Learn the concepts of pipelined processors and interprocessor communication	2 2 3 2,000 3 3 2 3 2,75	2 3 3 2.50 1 1 2 1 1,25	2 3 3 2,75 1 1 2 2 2 1,50	2 3 3 3 2.50  1 1 1.00  1 2 1 2 1.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1 1 1.00 Computer Architectur 1 1 1 1.00 1.00 Computer Architectur 1 1.00 1.00 Computer Architectur 1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	1 2 1.000	0 1 2 0.75 	2 2 2 1.75 1 1 1 1.25	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2,000
CO1. Understand the structure and design of relational databases  CO2. Write DML statements in SQL to creat Modify and remove database objects  CO3. Write DML statements in SQL to insert, Modify and remove database objects  CO4. Use index and Views in database  CO4. Use index and Views in database  CO5. Use index and Views in database  CO5. Student will able to Define the various approaches dealing the data using central tendency dispersion  CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re  Student will able to Solve the Graphical and Simples Problems  Student will able to Analyze the transportation and assignment problem and solve real examples based on it.  Average  Co1. Perform basic operations with different number systems and Understand concepts of register transfer  Language  CO2. Understand the architecture and functionality of op and memory Organization  CO3. Understand the Concept of Parallel computing and its applications  CO4-Learn the concepts of pipelined processors and interprocessor communication  Average  Course Code: BCA 205	2 2 3 3 2.000 3 3 2 3 3 2.75 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 2 2 3 3 3 3 2 2 3	2 3 3 2.50 1 1 2 1 1 1.25 3 1 2 1.25	2 3 3 2.75 1 1 2 2 2 1.50 2 2 3 3 2 2	2 3 3 3 2.50  1 1 1.00  1 2 1 2 1.50	2 2 3 3 3 2.50 Mathematics-III 1 1 1.00 Computer Architectur 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 1.000	0 1 2 0.75 	2 2 2 2 1.75 1.75 1 2 1 1 1 1.25 1 1 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
CO1. Understand the structure and design of relational databases CO2. Write DML statements in SQL to create, Modify and remove database objects CO3. Write DML statements in SQL to insert, Modify and remove data from database CO4. Use index and Views in database Average  CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re Student will able to Analyze the transportation and assignment problem and solve real examples based on it. Average  Course Code:BCA 203  CO1. Perform basic operations with different number systems and Understand concepts of register transfer Language CO2. Understand the architecture and functionality of cpu and memory Organization CO3. Understand the architecture and functionality of cpu and memory Organization CO4. Learn the concept of Parallel computing and its applications CO4. Learn the concepts of pipelined processors and interprocessor communication Average  Course Code:BCA 205  CO1. Students will be able to use Visual Basic.net IDE to design simple applications	2 2 3 2,000 3 3 2 2 3 2,75 3 2,75	2 3 3 2.50 1 1 1 2 1 1.25 3 1 2 1 1.25	2 3 3 2.75 1 1 2 2 1.50	2 3 3 3 2.50  1 1 1.00  1 2 1 2 1.50	2 2 3 3 2.50 Mathematics-III 1 1 1 1 1 0 Computer Architectur 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2 1.000	0 1 2 0.75 - 1 1 2 1.50	2 2 2 1.75 1 1 1 1.25 1 1 1 2 2 1 1 1 2 2 1 2 1 2 1 2 1 2 1 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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Commercial DCA 200				Objec	t Oriented Programming	Heina C±±			
CO1. Students will be able to understand OOPs concepts and the difference between procedure oriented and					orienteu r rogramming				
Object-oriented approach	3	3	2	2	1	1	-	1	1
CO2. Create classes, constructors, friend functions, opearator overloading etc.	3	2	3	3	3		-	2	3
CO3.Design and implement various forms of inheritance and polymorphism	3	3	3	3	2	1	1	2	3
CO4.Implement the concepts of generic programming and use stream classes for file handling	3	3	3	3	3	2	2	2	2
Average	3.00	2.75	2.75	2.75	2.25	1.33	1.50	1.75	2.25
Course Code:BCA 251					Practical-V .NET Lab		•		
CO1. Students will be able to use Visual Basic.net IDE to design simple applications	3	3	3	3	3	1	2	3	1
CO2. Use basic VB.net controls to develop simple applications	2	3	3	2	3	1	2	3	1
CO3. Implement lists and loops with VB.NET controls and iteration	2	2	2	1	2	1	2	2	1
CO4. Create VB.NET programs using multiple array techniques	1	2	2	2	2	1	2	2	1
CO5. Use advanced VB.net controls with events	1	2	2	1	2	1	2	2	1
CO6.Create an interface the front-end and back-end (data) in Visual Basic	I	3	3	1	3	1	2	3	1
CO7.To create Crystal Report using VB.NET	1.57	2.43	3	1.57	2.43	1.00	2.00	3	1 1.00
Average  Course Code:BCA 253	1.57	2.43	2.57	1.5/	2.43 C++ Lab	1.00	2.00	2.57	1.00
COURSE CODE:BCA 253  CO1. Implement basic concepts of Object Oriented Programming	3	3	2	2	1	1	0	1	1 1
CO2. Implement the concept of Classes and Objects	3	2	3	3	3	0	0	2	3
CO3. Analyses and apply various polymorphism techniques to solve real life problems	3	3	3	3	2	1	1	2	3
CO3. Analyses and apply various polymorphism techniques to sorte rear the problems  CO4. Implement Generic Classes, Exception Handling and various file operations	3	3	3	3	3	2	2	2	2.
Average	3.00	2.75	2.75	2.75	2.25	1.00	0.75	1.75	2.25
Course Code:BCA 202	•	. "			Mathematics-IV		· · · · · · · · · · · · · · · · · · ·		
CO1. Student will able to Define the various approaches dealing the data using theory of Probability	3	1	-	-	-	-	-	1	2
CO2. Student will able to Understand various numerical techniques and apply them to solve real life problem	3	1	-	-	-	-	-	1	2
CO3.Student will able to Solve the accuracy of common Numerical Methods	3	1	1	1	-	0	1	2	2
CO4. Student will able to Develop a mathematical model for real life situation and solving it Using Linear pro	3	2	1	1	1		1	2	3
Average	3.00	1.25	1.00	1.00	1.00	0.00	1.00	1.50	2.25
Course Code:BCA 204					Web Technologies				2
CO1. Understand and define www, email protocols and web pages with its working	3	2	2	2	1	1	1	1	2
CO2. Write a well defined XML document and chhose appropriate parser techniques	2	2	2	2	2	2	- 1	2	1 3
CO3.Develop static and dynamic web pages using HTML, DHTML and Javascipt CO4. Apply various elements of form design to create a small web application using Dreamweaver or similar	-	3		3			-	=	-
c.04. Apply various elements of form design to create a small web application using Dreamweaver or similar software	3	3	3	3	2	2	2	2	3
Average	2.75	2.50	2.50	2.50	1.50	1.67	1.33	1.50	2.25
Course Code:BCA 206	2.73	2.50	2.50	2.30	Java Programming	1.07	1.00	1.50	2.23
CO1. List object oriented concepts such as abstraction, polymorphism, inheritance, exception handling for									
solving real world problems.	2	3	3	3	2	2	1	1	1
CO2. Illustrate the basic concepts and discuss the internal organization of Java virtual machine	3	3	3	2	1	1		2	1
CO3.Apply functionalities of java such as - creating packages, implementing interfaces and strings etc	3	2	2	3	3	2		1	1
CO4. Analyze concepts involving java database connectivity (JDBC), networking and remote method	3	3	3	2	2	1	_	_	2
invocation (RMI)									
Average	2.75	2.75	2.75	2.50	2.00	1.50	1.00	1.33	1.25
Course Code:BCA 208					Software Engineering				
CO1. Students will be able to apply the software engineering lifecycle by demonstrating competence in	3	3	3	2	2	_	1	1	1
analysis, design, construction of SRS				_	-		•	•	-
CO2. Work as an individual and as part of a multidisciplinary team to develop and deliver software projects		-	1	1	1	3	3	3	_
							· ·		
CO3. Understand and apply the software metrics and module design techniques like cohesion and coupling	3	2	2	3	2	-	3	3	3
	2.	1	3	3	1	1	1	2.	2.
CO4. To perform testing techniques using tools necessary for engineering practice  Average	2.67	2.00	2.25	2.25	1.50	2.00	2.00	2.25	2.00
Average  Course Code:BCA 210	2.07	2.00	2.23	د.د.	Computer Networks	2.00	2.00	4.43	2.00
COL. Students will be able to understand basics of computer networks and various protocols.	2.	3	3	3	2.	2	j	2	1
CO2. Students will be able to illustrate functionalities and services of OSI and TCP/ IP layer.	3	3	3	2	1	1			1
CO3. Students will be able to compare different routing protocols	3	2	2	3	3	2	-	-	1
CO4.Students will be able to choose appropriate protocol for desired communication service	3	3	3	2	2	1	-	2	2
Average	2.75	2.75	2.75	2.50	2.00	1.50	1.00	2.00	1.25
Course Code:BCA 252					Practical-VII Java				
CO1. Illustrate the Object-Oriented paradigm and Java language constructs	2	3	3	3	2	2	1	1	1
CO2. To inculcate concepts of inheritance to create new classes from existing ones and design the classes	3	3	3	2	1	1	-	2	1
needed given a problem specification					-				
CO3. To apply various functions of String class	3	2	2	3	3	2	-	1	1
CO4. To facilitate students in handling exceptions and defining their own exceptions.	3 275	3	3	2	2 2 00	1 1.50	1.00	1 22	2
Average Course Code:BCA 254	2.75	2.75	2.75	2.50	2.00 Practical-VIII Web Tech	1.50	1.00	1.33	1.25
Course Code:BCA 254  CO1. Develop static web pages through HTML, CSS, JavaScript, bootstrap and XML.	- 2	2	2	2	1 140.0001-1111 1101) 1001	1	1	1	,
CO1. Develop static web pages through H1ML, CSS, JavaScript, bootstrap and XML.  CO2. Implement different constructs and programming techniques provided by JavaScript.	2	2	2	2	1	0	0	1	1
CO2. Implement different constructs and programming techniques provided by JavaScript.  CO3. Adapt HTML, CSS, javascript, bootstrap and XML syntax and semantics to build web pages	3	3	3	3	2	2.	1	2	3
CO3. Adapt HTML, CS5, Javascript, bootstrap and XML syntax and semantics to build web pages CO4. Develop Client-Side Scripts using JavaScript to display the contents dynamically	3	3	3	3	2	2	2	2	3
Average	2.75	2.50	2.50	2.50	1.50	1.25	1.00	1.50	2.25
Course Code:BCA 301					Operating System			***	
CO1. Understand the concepts of OS, the basic principles used in the design of modern operating system and		2	2		,	2	2	,	2
process.	1	3	3	2	1	2	3	1	3
CO2. Understand the concepts of threads and mechanisms for synchronization.		-	1	-	1	2		1	-
CO3.Understand the concepts related to deadlock and memory management.	1	3	-	-	1	2	3	2	-
CO4. Understand the concepts of virtual memory management, file system.	1	3	-		1	2	,	1	-
CO5.Understand the concepts of secondary storage structure, protection and case study of Linux operating	1	3	_	2	1	2	3	2	_
system.	-								
Average	1.00	3.00	2.00	2.00	1.00	2.00	3.00	1.40	3.00

Course Code:BCA 303					Computer Graphics				
COI. Understand the basics of computer graphics, its applications and software used for computer graphics	1	_	1	1	- Computer Grapmes		_	3	2
CO2. Perform scan conversion and geometric transformations on graphic objects	2	2	3	1	1	2	3	-	-
CO3. Extract parts of graphic objects using clipping and geometric projections	2	2	3	1	1	2	3	-	-
CO4. Create graphic objects using solid modelling and hidden surface removal techniques  Average	1.75	2.00	3 2.50	1 1.00	1 1.00	2.00	3 3.00	2 2.50	2 2.00
Course Code:BCA 305	1.73	2.00	2.30	1.00	E- Commerce	2.00	3.00	2.50	2.00
CO1. Examines Strengths and weakness of digital profiles of Business organizations.	2	3	2	2	3	-	2	2	2
CO2. Explore ways to enhance online visibility of organizations.  CO3. Analyze Challenges of Security, privacy and legal jurisidactions in organizations.	2	2	-	1	3	3	-	1	1
CO4. Examine Barriers to Sucessful online positioning of Businessness.	2	2	2	2	2	2	2	1	2
Average  Course Code:BCA 307	2.25	2.25	2.00	1.50	2.50 Software Testing	2.50	2.00	1.50	1.50
CO1. Understand the basic concepts of software testing and various testing approaches	2	3	2	2	3	-	2	2	2
CO2. Explain important concepts of cyclomatic complexity and graph metrics	3	2	-	1	2	-	-	2	1
CO3. Demonstrate functional and structural testing techniques and other testing activities CO4. Explore object oriented testing techniques to test applications	2 2	2	2	1 2	2	2	2	1	2
Average	2.25	2.25	2.00	1.50	2.50	2.50	2.00	1.50	1.50
Course Code:BCA 313	,	1	2	2.	Web Based Programmin	g1	2.	,	2
CO1. Students will have a good understanding of Web Application terminologies CO2. Students will be able to design and develop dynamic web pages with good aesthetic sense of designing	2	1	1	2	2	3	3	1	2
and latest technical tool using php							-	-	2
CO3. Students will learn how to link and publish web sites CO4. Students will be able to design a usable Database using SQL	1	2	1	1	2	3	3	1	- 1
Average	1.25	1.25	1.33	1.67	1.67	2.25	2.50	1.00	1.67
Course Code:BCA 351		,		1	Practical-IX CG Lab		I		
CO1. Understand the basics of computer graphics, its applications and software used for computer graphics	1	-	1	1	-	-	-	3	2
CO2. Perform scan conversion and geometric transformations on graphic objects	2	2	3	1	1	2	3	-	-
CO3. Extract parts of graphic objects using clipping and geometric projections	2	2	3	1	1	2	3	- 2	- 2
CO4. Create graphic objects using solid modelling and hidden surface removal techniques  Average	1.75	2.00	3 2.50	1 1.00	1 1.00	2.00	3 3.00	2 2.50	2.00
Course Code:BCA 357	1.73	2.00	2.30	1.00	Minor Project	2.00	5.00	2.50	2.00
Demonstrate the ability to apply theoretical knowledge and skills acquired during the course of study to solve real-world problems within the project scope.	1	-	1	1	-	-	-	3	2
Develop proficiency in project planning, execution, monitoring, and control, including resource allocation, risk assessment, and time management.	2	2	3	1	1	2	3	-	-
Enhance critical thinking abilities by identifying and analyzing complex problems within the project and devising effective solutions.	2	2	3	1	1	2	3	-	-
Foster effective teamwork skills by working collaboratively with team members, communicating ideas,	2	2	3	1	1	2	3	2	2
resolving conflicts, and leveraging diverse perspectives to achieve project goals.  Develop adaptability to changing project requirements, unexpected challenges, and dynamic environments,									
showcasing flexibility in adjusting strategies and approaches.	2	1	1	1	1	-	2	-	2
Average  Course Code:BCA 302	1.80	1.75	2.20	1.00	1.00 ata Mining & Data Wareho	2.00	2.75	2.50	2.00
COLDetermine data warehouse architecture for organizing huge data and deduce association rules for			2	2	ata Miling & Data Waren		2	1	2
mining relevant patterns	1	1	1	2	- 2	1 3	3	1	2
CO2. Analyze and compare various data mining techniques for finding intersting patterns in data		1	•				-		
CO3. Explain different classification and clustering algorithms used for predictions in various applications	1	2	1	1	2	3	3	1	-
CO4. Explore data mining on complex data objects, multidimensional databases, spatial data etc.	1	1	-	-	1	2	2	1	1
Average Course Code:BCA 304	1.25	1.25	1.33	1.67	1.67 Mobile Computing	2.25	2.50	1.00	1.67
CO1. Understand the basics of wireless communications, mobile Internet services, radio transmission and	1	1	2	3	2	_	1	1	_
satellite systems  CO2. Understand and Compare different types modulation techniques, multiplexing, media access control	1	1	3	3	2	2	1	-	
techniques  CO3. Understand the basics of Wireless Access Protocol, Wireless Markup Language and the use of	2	2	2	1	2	1	3	1	_
datatypes, operators, precedence, associativity, contexts, pragmas and libraries in WML script									2
CO4. Create programs in WML Script using variables, expressions, image elements, tables, functions, loops  Average	1.50	3 1.75	3 2.50	2 2.25	3 2.25	1.67	3 2.00	1.00	2 2.00
Course Code:BCA 306	1.50	1.75	2.30	2.23	Linux Environment	1.07	2.00	1.00	2.00
CO1. Student will be able to apply various UNIX commands on a standard UNIX/LINUX Operating system	2	3	2	2	3	2	1	-	1
CO2. Student will be able to develop C / C++ programs on UNIX.	2	3	1	1	2	2	2	2.	
CO3. Student will be able to do shell programming on UNIX OS.	2	1	2	1	1	1	1	2	1
CO4. Student will be able to apply and handle UNIX system calls.	2	2	1	1	2	2	2	-	1
Average Course Code:BCA 312	2.00	2.25	1.50	1.25	2.00 Artificial Intelligence	1.75	1.50	2.00	1.00
CO1. Understand the fundamental understanding of artificial intelligence (AI) and expert systems.	-	1	1	1	1	1	1	2	2
CO2. Explore the basics of ANN and different optimizations techniques.	1	1 2	1 2	1	1 2	1 2	1 2	- 1	- 1
CO3. Acquire Knowledge about scientific method to models of machine learning.  CO4. Apply basic principles of AI in solutions that require problem solving, inference, perception,	•	_	-	-	_		_	1	•
knowledge representation, and learning	1	1	2	2	2	2	3	-	1
Average	1.00	1.25	1.50	1.25	1.50 Practical-X Linux Lab	1.50	1.75	1.50	1.33
Course Code:BCA 352 CO1.Understand Linux Environment with the help of its architecture.	2	3	2	2	Practical-X Linux Lab	2	1	-	1
CO2. Understand the Linux environment by using general Linux Commands	2	3	1	1	2	2	2	2	-
CO3. Implement Process Related commands	2	1	2	1	1	1	1	2	1
CO4. Implement File Permission concept	2.00	2 2.25	1 1.50	1 1.25	2 2.00	2 1.75	2	2.00	1 1.00
Average	2.00	2.23	1.30	1.43	2.00	1./3	1.30	2.00	1.00

Course Code:BCA 356					Major Project	roject									
CO1. Understand programming language concepts, as well as software engineering principles or go through the research work and gather knowledge over the field and develop an ability to apply them to software design of real life problems in an industry/ commercial environment 27 or propose methodology in the field of research.	3	3	3	2	3	3	3	3	3						
CO2. Plan, analyze, design a software project and demonstrate the ability to communicate effectively in speech and writing.	1	1	1	3	1	1	1	-	-						
CO3. Introduce with major software engineering topics and position them to lead medium sized software projects in industry or propose any new model over the selected field of research that will be useful for future activities.	1	2	2	1	2	2	2	1	1						
CO4.Learn about and go through the software development cycle with emphasis on different processes - requirements, design, and implementation phases and also learn details about different artifacts produced during software development.	1	1	2	2	2	2	3	-	1						
CO5. Learn about different software development process models and how to choose an appropriate one for a project.	2	3	1	2	2	1	1	2	1						
C06.Gain confidence at having conceptualized, designed, and implemented a working, medium sized project with their team.	2	2	1	1	2	3	1	2	1						
Average	1.67	2.00	1.67	1.83	2.00	2.00	1.83	2.00	1.40						

Director
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