



## Key Indicator 2.6 Student Performance and Learning Outcomes

2.6.1 – Program outcomes, program specific outcomes and course outcomes for all programs offered by the institution are stated and displayed in website of the institution (to provide the weblink)

Sr.No.	Documentary Evidences / Sample Documents	Page No.
1	Sample Documents of program outcomes, program specific outcomes and course outcomes for all programs offered by the institution	1-21

Sr. No.	Semester	Course Code	Course Title	Course Outcomes	
2	III	BTCOC302	Discrete Mathematics	CO1	Apply logic, probability, combination and algebraic system concepts to solve the problems.
				CO2	Formulate the problem like project management, event management problem using set theory, graph theory etc.
				CO3	Design the problem like project management, event management problem using set theory, graph theory etc.
3	III	BTCOC303	Data Structures	CO1	CO1:Ability to analyze algorithms and a algorithm correctness.
				CO2	CO2:Ability to analyze the linear and non linear data structure and hashing techniques
				CO3	CO3:Ability to summarize searching and sorting techniques
				CO4	CO4:Ability to analyze the linked list operations.
				CO5	CO5:Ability to apply stack, queue and linked list concepts.
				CO6	CO6:Ability to apply the tree and graphs concepts to solve the problem
4	III	BTCOC304	Computer Architecture and Organization	CO1	Explain fundamental units of computer, their functions and interconnections and structure of CPU
				CO2	Understand and elaborate different types of operations, instructions and computer arithmetics
				CO3	Analyze different types of memories in computer system
				CO4	Explain functioning of control unit, Input/Output organization and instruction pipelining
				CO5	Develop ability to recognize and analyze variants of computer systems and their applications

5	III	BTCOC305	Digital Electronics and Microprocessor	CO1	Define basic logical circuits, Boolean algebra, minimization methods, methods for writing Boolean functions
				CO2	Design Combinational Circuits such as MUX, DEMUX, ADDER, SUBTRACTOR.
				CO3	Design Sequential Circuits such as Register, Counter
				CO4	Describe architectural and functional block diagram of 8086 microprocessor and Distinguish between 8-bit, 16-bit and 32-bit microprocessor
				CO5	Explain Memory interfacing and I/O interfacing
				CO6	Identify the Addressing mode of the instruction and develop assembly language programs.
7	III	BTCOL307	Python Programming	CO1	Apply the Programming Concepts of Python to solve the given Problems
				CO2	Analyze the various solutions for a given problem using Python.
				CO3	Demonstrate Competence in Oral and Written Communication.
8	III	BTCOL308	HTML and Javascript	CO1	Explain website development essentials.
				CO2	Design a Website using HTML and Javascript.
				CO3	Demonstrate Competence in Oral and Written Communication.
9	III	BTCOL309	Data Structures Lab	CO1	Apply the Concepts of Data structures to solve the given Problems

				CO2	Analyze the various solutions for a given problem using Data Structures.
				CO3	Demonstrate Competence in Oral and Written Communication.
10	III	BTCOL310	Digital Electronics & M	CO1	Practice different types of wiring and components connections keeping in mind technical, economical, safety issues.
				CO2	Construct various types of Digital Electronics circuits.
				CO3	Demonstrate Competence in Oral and Written Communication.
11	III	BTCOF311	Field Training / Internship/Industrial Training Evaluations	CO1	Become updated with all the latest
				CO2	Ability to communicate and collaborate effectively with different professionals
				CO3	Will explore career options and gain general work experience.
				CO4	Awareness of social, cultural, global and environmental responsibility as an engineer.
				CO5	Capability and enthusiasm for self improvement through continuous professional development and life long learning.
12	IV	BTCOC401	Design & Analysis of A	CO1	ANALYZE THE RUNNING TIME AND SPACE COMPLEXITY OF ALGORITHMS

				CO2	ABLE TO EXPLAIN IMPORTANT ALGORITHMIC DESIGN PARADIGMS (DIVIDE-AND-CONQUER, GREEDY METHOD ) AND APPLY WHEN AN ALGORITHMIC DESIGN SITUATION CALLS FOR IT.
				CO3	EXPLAIN AND APPLY DYNAMIC-PROGRAMMING, BACKTRACKING, BRANCH AND BOUND AND STRING MATCHING TECHNIQUES TO DEAL WITH SOME HARD PROBLEMS.
				CO4	ABLE TO DESCRIBE THE CLASSES P, NP, AND NP COMPLETE AND BE ABLE TO PROVE THAT A CERTAIN PROBLEM IS NP-COMPLETE.
				CO5	PARTICIPATE IN TEAM/INDIVIDUAL ACTIVITES IN ORDER TO GAIN KNOWLEDGE ABOUT COURSE
15	IV	BTCOE404	<b>Elective-I A) Object C</b>	CO1	Apply the Programming Concepts of Java to solve the given Problems
				CO2	Analyze the various solutions for a given problem using Java.
				CO3	Demonstrate Competence in Oral and Written Communication.
16	IV	BTCOE405	<b>Elective-II A) Numeri</b>	CO1	PRACTICE self management techniques.
				CO2	IDENTIFY the strength within the teams through team dynamics.
				CO3	PRIORTIZE time and resources.
				CO4	ADAPT communication skills as well as positive personality traits.

				CO5	COMPILE and DESIGN effective presentation using different tools.
17	IV	BTXXC406	Product Design Engine	CO1	Apply SDLC Phases for product development.
				CO2	Follow Ethical Practices to design a product.
				CO3	Demonstrate Competence in Oral and Written Communication.
18	IV	BTCOL407	Design & Analysis of A	CO1	Implement various Algorithms for problem solving using programming.
				CO2	Analyze the performance of various algorithms in terms of time and space complexity.
				CO3	Demonstrate Competence in Oral and Written Communication.
19	IV	BTCOL408	Introduction to Data S	CO1	Apply the Concepts of R programming to solve the given Problems.
				CO2	Develop ability to learn constantly in Dynamic environment.
				CO3	Analyze the various solutions for a given problem using Data Science & R.
				CO4	Demonstrate Competence in Oral and Written Communication.
20	IV	BTCOL409	Object Oriented Progr	CO1	Apply the Programming Concepts of C++ to solve the given Problems

				CO2	Analyze the various solutions for a given problem using C++.
				CO3	Demonstrate Competence in Oral and Written Communication.
21	IV	BTCOL410	Operating System Lab	CO1	Understand Shell script programming.
				CO2	Implement various concepts of operating systems using programming.
				CO3	Develop ability to learn constantly in Dynamic environment.
				CO4	Demonstrate Competence in Oral and Written Communication.
22	IV	BTCOF411	Field Training / Internship/Industrial Training (minimum 4 weeks which can be completed partially in first semester and second Semester or in at one time.)	CO1	Become updated with all the latest changes in the technological world.
				CO2	Ability to communicate and collaborate effectively with different professionals
				CO3	Will explore career options and gain general work experience.
				CO4	Awareness of social, cultural, global and environmental responsibility as an engineer.
				CO5	Capability and enthusiasm for self improvement through continuous professional development and life long learning.

Sr. No.	Semester	Course Code	Course Title	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2			
2	III	BTCOC30	Discrete Mathematics	CO1	3	2	-	-	-	-	-	1	-	1	-	1					
				CO2	1	3	2	-	-	-	-	-	-	1	-	1					
				CO3	1	2	3	1	-	-	-	-	-	1	-	1					
				Average	1.66	2.33	2.5	1						1		1					
3	III	BTCOC303	Data Structures	CO1	3	3	2	2										3			
				CO2	3	3	2							1					3		
				CO3	3											1			3		
				CO4	3	3	2							1					3		
				CO5	3	2	2		2					1					3		
				CO6	3	2	2												3		
			Average	3	2.6	2	2	2				1	1		1						
4	III	BTCOC304	Computer Architecture and Organization	CO1	3	2		2													
				CO2	3	2	3		2	2						1			2		
				CO3	2	2							1						3		
				CO4	2	2															
				CO5	3	2								1	1	1	1	3	2	1	
			Average	2.6	2	3	2	2	2	1	1	1	1	1	3	2	1				
5	III	BTCOC305	Digital Electronics and Microprocessor	CO1	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-		
				CO2	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	
				CO3	3	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	
				CO4	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	
				CO5	3	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	
				CO6	3	1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	
			Average	3	1	2	2.25	1							1						
7	III	BTCOL307	Python Programming	CO1	3	2	2	-	3	-	-	1	-	3	-	-	3	2			
				CO2	3	3	2	-	3	-	-	1	-	2	-	-	3	2			
				CO3	1	1	-	-	-	-	-	1	-	3	-	-	-	-			
				Average	2.33	2	2		3			1		2.66			3	2			
9	III	BTCOL309	Data Structures Lab	CO1	3	2	2	2	1				2	3			3				
				CO2	2	3	2	2	1				2	3			3				
				CO3	3	3	3	2	1				2	3			-				
			Average																		
10	III	BTCOL310	Digital Electronics & Microprocessor	CO1	2	-	-	-	-	-	-	-	2	2	-	-	-	-			
				CO2	3	3	3	3	3	-	-	-	-	-	-	1	-	-			
				CO3	-	-	-	-	-	-	-	-	-	2	3	-	-	-			
				Average	2.5	3	3	3	3					2	2.5		1				



12	IV	BTCOC4	Design & Analysis of Algorithm	CO1	3	3	1	-	-	-	-	-	-	-	-	-	2	-		
				CO2	3	3	2	-	2	-	-	2	-	2	-	1	3	-		
				CO3	3	2	-	1	-	-	-	1	-	-	-	-	2	-		
				CO4	3	1	-	-	-	-	-	-	-	-	-	-	-	-		
				CO5	3	2	-	-	-	-	-	-	3	2	-	1	3	1		
				Average	3	2.2	1.5	1	2			1.5	3	2		1	2.5	1		
15	IV	BTCOE4	Elective-I A) Object Oriented	CO1	2								2				3			
				CO2	3			2			2		1					3		
				CO3	3			2			2		1					3		
				CO4	2													3		
				CO5	2			2			2		1					3		
				CO6	3			3				2		1		3				
				Average	2.5		2.25			2	1		2							
16	IV	BTCOE4	Elective-II A) Numerical	CO1	3	-	-	-	-	-	-	-	-	-	-	3	-	-		
				CO2	3	-	-	-	-	-	-	-	3	3	-	2	-	-		
				CO3	3	-	-	1	-	-	-	-	-	-	-	3	-	-		
				CO4	3	-	-	-	-	-	-	3	-	3	-	2	-	-		
				CO5	3	-	-	-	3	-	-	-	-	2	-	2	-	-		
				Average	3			1	3			3	3	2.66		2.4				
17	IV	BTXXC4	Product Design Engineering	CO1	3	2	3			2			1			1		3		
				CO2	2						2			3		1				
				CO3							1			2		3		2		2
				Average	2.5	2	3			1.5	2		2		2	1	2	2.5		
18	IV	BTCOL4	Design & Analysis of	CO1	2	2	-	-	-	-	-	-	-	-	2	2	1			
				CO2	3	3	2	1	-	-	-	3	-	-	-	2	-	-		
				CO3	2	2	2	2	-	-	-	-	-	3	-	-	3	-		
				Average	2.33	2.33	2	1.5				3		3		2	2.5	1		
19	IV	BTCOL4	Introduction to Data Science	CO1	3	2	2	2	3	-	-	1	-	3	-	-	3	2		
				CO2	-	-	-	-	1	-	-	-	-	1	-	2				
				CO3	3	3	2	2	3	-	-	1	-	2	-	-	3	2		
				CO4	1	1	-	-	-	-	-	1	-	3	-	-	-	-		
				Average	2.33	2	2	2	2.33			1		2.25		2	3	2		
20	IV	BTCOL4	Object Oriented Program	CO1	2	2							2				3			
				CO2	3	2	2				2	1					3			
				CO3	3	2	2				2	1			3					
				Average																

Sr. No.	Semester	Course Code	Course Title	Course Outcomes	
1	V	BTCOC501	Database Systems	CO1	Illustrate evaluation of query construct.
				CO2	Draw schema diagram using relational model for the given information system.
				CO3	Investigate transaction satisfying the ACIDS properties.
				CO4	Identify the normal form of a given relation schema in database schema.
				CO5	Formulate query construct using relational algebra etc.
				CO6	
2	V	BTCOC502	Theory of Computations	CO1	Introduce the mathematical foundation of computation and design finite automata for different regular expression and language
				CO2	Construct context free grammar for various languages.
				CO3	Solve various problems by applying normal forms techniques, Pushdown automata and Turing Machine
				CO4	Participate in activities, GATE, PGECET, PSU and other competitive exam.
3	V	BTCOC503	Machine Learning	CO1	Recognize the characteristics of machine learning that make it useful to real-world problems
				CO2	Characterize machine learning algorithms as supervised, semi-supervised, and unsupervised.
				CO3	Explain the machine learning concepts like Instance based learning, Feature reduction, Collaborative filtering based recommendation, Bayes learning, Logistic Regression and Support Vector Machine
				CO4	Understand the concept behind neural networks
				CO5	Explain the computational learning theory and PAC learning model
				CO6	Solve the numerical based on K-means clustering
5	V	BTCOE505	<b>Elective-IV (A) Economics &amp; Management (B) Business</b>	CO1	CO1:Identify the need of commmunicative competence.
				CO2	CO2:Apply Verbal and Non-Verbal Communication Techniques in the Professional Environment

			<b>Communication</b>	CO3	CO3: Identify key principles in public speaking for business
				CO4	CO4: Demonstrate effective Interpersonal & organizational communication.
				CO5	CO5: Participate in team activities that lead to the development of collaborative work skills
				CO6	CO6: Apply business communication strategies and principles to prepare effective communication for domestic and international business situations.
6	V	BTCOC5 06	Competitive Programming-I	CO1	Apply the Programming Concepts to solve challenges on competitive programming Platforms.
				CO2	Analyze the various solutions for a given problem using different programming languages.
				CO3	Develop ability to learn constantly in Dynamic Environment
				CO4	Demonstrate Competence in Oral and Written Communication.
7	V	BTCOL5 07	Database System Laboratory	CO1	Design ERD & relational schema for given problem.
				CO2	Illustrate SQL script for given problem.
				CO3	Demonstrate Competence in Oral and Written Communication.
8	V	BTCOL5 08	Machine Learning Laboratory	CO1	Implement Machine learning algorithms using python.
				CO2	Formulate the problem and solution using Machine learning.
				CO3	Design a small project based on all Machine learning stages.
				CO4	Demonstrate Competence in Oral and Written Communication.
9	V	BTCOS5 09	Seminar	CO1	Students will engage with topics that are widely held to be significant in the field of computer science and engineering while recognizing scope of computer science and engineering in other areas.
				CO2	Students will be able to make use of visual, audio and audio-visual material to support their presentation and will be able to speak cogently with or without notes.
				CO3	Students will develop persuasive speech, present information in a compelling well structured and logical sequence and respond respectfully to opposing ideas.

				CO4	Students will engage with important questions that stimulate discussion and debate.
10	V	BTCOF4 11	Internship/Industrial Training	CO1	Become updated with all the latest changes in the technological world.
				CO2	Ability to communicate and collaborate effectively with different professionals
				CO3	Will explore career options and gain general work experience.
				CO4	Awareness of social, cultural, global and environmental responsibility as an engineer.
				CO5	Capability and enthusiasm for self improvement through continuous professional development and life long learning.
11	VI	BTCOC6 01	Compiler Design	CO1	Students will be able to explain the concepts and different phases of compilation.
				CO2	Students will be able to represent language tokens using regular expressions, context free grammar and finite automata and design lexical analyzer for a language.
				CO3	Students will be able to compare top down with bottom up parsers, and develop appropriate parser to produce parse tree representation of the input.
				CO4	Students will be able to generate intermediate code for statements in high level language.
				CO5	Students will be able to apply optimization techniques to intermediate code and generate machine code for high level language program.
				CO6	Participate in team/individual activities in order to get more insight of course.
12	VI	BTCOC6 02	Computer Networks		At the end of the course the students should be able to :
				CO1	1. Describe the functions of each layer in OSI and TCP/IP model.
				CO2	2. Explain the functions of LAN Technologies and Protocols.
				CO3	3. Describe the functions of data link layer and explain the protocols.
				CO4	4. Classify the routing protocols and analyze how to assign the IP addresses for the given network.

				CO5	5. Explain the functions of Application layer paradigms and Protocols
				CO6	6. Describe the concept of network security and its types
13	VI	BTCOE6 03	<b>Elective-V</b> <b>(A) Human Computer Interaction</b> <b>(B) Artificial Intelligence</b> <b>(C) Object- Oriented Analysis Design</b>	CO1	Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
				CO2	Apply basic principles of AI in solutions that require problem solving and constraints specific problems
				CO3	Demonstrate fundamental understanding of Game Playing in AI
				CO4	Demonstrate awareness and a fundamental understanding of AI logical agents and impact of uncertainty
				CO5	
				CO6	
14	VI	BTCOE6 04	<b>Elective-VI</b> <b>(A) Geographic Information System</b> <b>(B) Biology</b> <b>(C) Internet of Things</b>	CO1	Discuss the architecture, operation, and business benefits and security aspects of an IoT solution.
				CO2	Explore on use of various hardware , sensing technologies and protocols to build IoT applications.
				CO3	Explain various concepts involved in IOT application development.
				CO4	Compare various case studies of IOT.
15	VI	BTCOE6 05	<b>Open Elective-VII</b>  <b>(C) Consumer Behaviour</b>	CO1	Recognize the importance of study of consumer behavior and relevance of market research with consumer behavior
				CO2	Elaborate market segmentation and positioning and consumer decision making process
				CO3	Analyze different models of consumer behavior, psychological and sociological influences on consumer decision making process
				CO4	Explain organizational buying
				CO5	Apply different marketing, pricing strategies
16	VI	BTCOC6 06	Competitive Programming-II	CO1	Apply the Programming Concepts to solve challenges on competitive programming Platforms.

				CO2	Analyze the various solutions for a given problem using different programming languages.
				CO3	Develop ability to learn constantly in Dynamic environment.
				CO4	Demonstrate Competence in Oral and Written Communication.
17	VI	BTCOL607	(A) Mobile Application Development (B) Internet of Things Laboratory	CO1	Apply appropriate hardware and software services for developing IoT applications for societal and industry needs.
				CO2	Operate hardware devices observing operating instruction Manual.
				CO3	Demonstrate the ability to work in teams.
				CO4	Demonstrate Competence in Oral and Written Communication.
18	VI	BTCOL608	Computer Networks Laboratory	CO1	Design and Simulate different types of Networks topologies
				CO2	Analyse the error correction techniques
				CO3	Analyse various protocols like CSMA/CD, Spanning tree & TCP/IP
				CO4	Demonstrate Competence in Oral and Written Communication.
19	VI	BTCOF609	Filed Training / Internship / Industrial Training (Credit to be evaluated in VII Sem.)	CO1	Become updated with all the latest changes in the technological world.
				CO2	Ability to communicate and collaborate effectively with different professionals
				CO3	Will explore career options and gain general work experience.
				CO4	Awareness of social, cultural, global and environmental responsibility as an engineer.
				CO5	Capability and enthusiasm for self improvement through continuous professional development and life long learning.

No.	Semester	Code	Course Title	Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2		
1	V	BTCOC 501	Database Systems	CO1	1	-	-	-	-	-	-	1	-	1	-	1				
				CO2	1	-	-	3	-	-	-	-	1	-	1	-	1			
				CO3	-	-	3	-	-	-	-	-	-	1	-	1	-	1		
				CO4	-	1	2	3	-	-	-	-	1	-	1	-	1			
				CO5	1	-	-	3	-	-	-	-	1	-	1	-	1			
				Average	1	1	2.5	3	-	-	-	1	-	1	-	1				
2	V	BTCOC 502	Theory of Computations	CO1	3	2	2	-	3	-	-	-	-	-	-	-	-			
				CO2	2	-	-	-	2	-	-	-	-	-	-	-	-			
				CO3	3	2	3	3	3	-	-	-	-	-	-	-	-			
				CO4	3	2	-	-	2	-	-	-	-	2	-	-	2			
				Average	2	2	2.5	2	2.5	-	-	-	-	2	-	-	2			
3	V	BTCOC 503	Machine Learning	CO1	3	1	-	-	-	-	-	1	-	1	-	-	2	-		
				CO2	3	2	-	-	-	-	-	-	1	-	1	-	-	2	-	
				CO3	3	1	-	2	-	-	-	-	1	-	1	-	-	2	-	
				CO4	3	-	-	-	-	-	-	-	1	-	1	-	-	2	-	
				CO5	3	1	-	-	-	-	-	-	1	-	1	-	-	2	-	
				CO6	3	1	1	-	-	-	-	-	1	-	1	-	-	2	-	
				Average	3	1.2	1	2	-	-	-	1	-	1	-	-	2	-		
5	V	BTCOE 505	Elective-IV (A) Economics & Management (B) Business Communicati	CO1	-	-	-	-	-	-	-	-	-	2	-	-				
				CO2	-	-	-	-	-	-	-	-	-	3	-	-				
				CO3	-	-	-	-	-	-	-	-	-	3	-	-				
				CO4	-	-	-	-	-	1	-	-	-	3	-	-				
				CO5	-	-	-	-	-	-	-	-	-	3	-	-				
				CO6	-	-	-	-	-	-	-	-	1	-	3	-	-			
				Average																
6	V	BTCOC 506	Competitive Programming-I	CO1	3	3	3	2	2			3	2			1	2	2		
				CO2	3	3	3	2	2			3	2			2	2	2		
				CO3	2	2	2	2	2			2	2			2	2	2		
				CO4	2	2	2	2	1			1	1	3						
				Average	2.5	2.5	2.5	2	1.75	-	-	2.25	1.75	3	-	1.66	2	2		
8	V	BTCOL 508	Machine Learning Laboratory	CO1	3	2	2	1	2	-	-	1	-	1	-	-	3	1		
				CO2	3	3	2	1	2	-	-	1	-	1	-	-	3	1		
				CO3	3	2	2	2	2	-	-	1	2	2	1	2	3	2		
				CO4	1	1	-	-	-	-	-	1	-	3	-	-	-	-		
				Average	2.5	2	2	1.33	2	-	-	1	2	1.75	1	2	3	1.33		
		BTCOC 601	Compiler Design	CO1	3	1	1	-	1	-	-	-	-	-	-	-	3			
				CO2	3	2	2	1	2	-	-	-	-	-	-	3				
				CO3	3	1	2	-	-	-	-	-	-	-	-	3				
				CO4	3	2	-	-	-	-	-	-	-	-	-	1	3			
				CO5	3	1	-	-	-	-	-	-	-	-	-	-	3			

11	VI			CO6	3	2	-	-	-	-	-	-	2	-	-	2	3				
				Average	3	1.33	2	1	2	-	-	-	2	-	-	1.5					
12	VI	BTCOC 602	Computer Networks	CO1	2													3			
				CO2	3		2			2	1								3		
				CO3	2		2			2	1									3	
				CO4	2															3	
				CO5	3		2			2	1									3	
				CO6	3		2			2	1									3	
				Average	2.5	-	2	-	-	2	1	-	-	-	-	-	3				
13	VI	BTCOE 603	<b>Elective-V</b> <b>(B) Artificial</b> <b>Intelligence</b>	CO1	3	-	-					1		1	-	-	2	-			
				CO2	3	1	1					1		1	-	-	2	1			
				CO3	3	-	1					1		1	-	-	2	-			
				CO4	3	-	-					1		1	-	-	2	-			
				Average	3	1	1	-	-	-	-	1	-	1	-	-	2	1			
14	VI	BTCOE 604	<b>Elective-VI</b> <b>(C) Internet</b> <b>of Things</b>	CO1	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-		
				CO2	3	2	2	1	2	-	-	-	-	-	-	-	-	-	-	1	
				CO3	2	1	2	1	1	-	-	-	-	-	-	-	-	-	-	1	
				CO4	2	2	1	1	1	-	-	-	-	-	-	-	1	-	-	-	
				Average	2.25	1.75	1.75	1	1.33	-	-	-	-	-	-	-	1			1	
15	VI	BTCOE 605	<b>Open</b> <b>Elective-VII</b> <b>(C)</b> <b>Consumer</b>	CO1	3	3	2	3	2				1	2		2		3			
				CO2	2	3	2			2	1			2	2						
				CO3	2	2					2			3		1			2		
				CO4			3					2									
				CO5	2	3	1		1			1			1	2			3		
				Average	2.25	2.75	2	3	1.5	2	1.5	1.5	1	2.33	1.5	1.66	2.66				
16	VI	BTCOC 606	Competitive Programming- II	CO1	3	3	3	2	2			3	2			1		2	2		
				CO2	3	3	3	2	2			3	2			2		2	2		
				CO3	2	2	2	2	2			2	2			3		2	2		
				CO4	2	2	2	2	2					3							
				Average	2.5	2.5	2.5	2	2			2.66	2	3		2	2	2			
17	VI	BTCOL 607	(A) Mobile Application Development (B) Internet of	CO1	3	1	2	1	2	-	-	-	-	-	-	-	-	-	1		
				CO2	-	-	-	-	-	-	-	2	-	1	-	1	-	-	-		
				CO3	-	-	-	-	-	-	-	-	3	3	-	-	-	-	-		
				CO4	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-		
				Average	3	1	2	1	2	-	-	2	3	2.33	1	-	-	1			
18	VI	BTCOL 608	Computer Networks Laboratory	CO1	3	2	2	1	2									3			
				CO2	2	3													3		
				CO3	3	2	3		2										3		
				CO4	3	3	3	3						3					-		
				Average																	



Sr. No.	Semester	Course Code	Course Title	Course Outcomes	
2	VII	BTCOE702	Elective - VIII (A) Big Data Analytics (B) Distributed System (C) Fundamental of Digital Image Processing	CO1	EXPLAIN THE MOTIVATION FOR BIG DATA SYSTEMS AND IDENTIFY THE MAIN SOURCES OF BIG DATA IN THE REAL WORLD.
				CO2	DEMONSTRATE AN ABILITY TO USE FRAMEWORKS LIKE HADOOP, NOSQL TO EFFICIENTLY STORE RETRIEVE AND PROCESS BIG DATA FOR ANALYTICS.
				CO3	TO APPLY NON-RELATIONAL DATABASES, THE TECHNIQUES FOR STORING AND PROCESSING LARGE VOLUMES OF STRUCTURED AND UNSTRUCTURED DATA, AS WELL AS STREAMING DATA
				CO4	APPLY MACHINE LEARNING TECHNIQUES
				CO5	THE STUDENTS WILL ABLE TO ILLUSTRATE THE USE OF BIG DATA ANALYTICS TOOLS SUCH AS SPARK, MAHOUT IN SOLVING
3	VII	BTCOE703	Elective - IX (A) Cloud Computing (B) Business Intelligence (C) Natural Language Processing		Students will be able to
				CO1	CO1. Define Cloud Computing and memorize the different Cloud service and deployment models also able to identify the significance of implementing virtualization techniques.
				CO2	CO2. The students will able to compare the various public cloud platforms and software environments.
				CO3	CO3. The students will able to interpret the various cloud computing models and services
				CO4	CO4. The students will able to apply appropriate cloud programming methods to solve big data problems using different cloud computing services
				CO5	CO5. The students will able to appreciate the need of security mechanisms in cloud and the key components of Amazon web Service
				CO6	CO6. The students will be able to illustrate the use of various cloud services available online.
4	VII	BTCOE704	Open Elective - X (A) Blockchain Technology	CO1	Explain basic terminologies in Blockchain Technology
				CO2	Elaborate the use of blockchain technology in cryptocurrencies like Bitcoin
				CO3	Analyze permissioned and permissionless blockchain networks

				CO4	Compare different platforms and services available for blockchain applications
				CO5	Apply enhanced security mechanisms in various fields using blockchain technology
5	VII	BTCOL705	Full Stack Development (LAMP/MEAN)	CO1	Structure and Implement HTML/CSS.
				CO2	Apply intermediate and advanced web development practices like javascript, ajax, jquery, and PHP etc.
				CO3	Develop a fully functional website and deploy on a web server.
				CO4	Demonstrate Competence in Oral and Written Communication.
				CO5	Develop ability to learn constantly in a Dynamic environment.
6	VII	BTCOL706	System Administration	CO1	Build a functioning general purpose computer from scratch using various linux flavors.
				CO2	Demonstrate how to install and troubleshoot various servers like SSH, TELNET, FTP, SAMBA, HTTP and Proxy.
				CO3	Demonstrate Competence in Oral and Written Communication.
7	VII	BTCOL707	Elective – VIII Lab	CO1	Demonstrate installation of Hadoop, Hbase, and Apache spark cluster and file management tasks in Hadoop.
				CO2	Able to implement Map-Reduce paradigm.
				CO3	Develop a fully functional website and deploy on a web server.
				CO4	Demonstrate CRUD operations in MongoDB.
				CO5	Demonstrate Competence in Oral and Written Communication.
9	VII	BTCOP709	Project-I	CO1	Demonstrate skill and knowledge of current information and technical tools and techniques specific to the professional field of study.
				CO2	Apply fundamental and multidisciplinary concepts and methods in ways appropriate to their ( principal area of study ) project domain.
				CO3	Identify and analyze and solve problems creatively through sustained critical investigation.
				CO4	Follow Ethical practices to Design a project.
				CO5	Communicate effectively with engineering community and society at large.
				CO6	Demonstrate positive group communication exchanges.
				CO7	Develop ability to learn constantly in a Dynamic environment.
10	VII	BTCOF609	Internship/Industrial	CO1	Become updated with all the latest changes in the technological world.

			Training	CO2	Ability to communicate and collaborate effectively with different professionals
				CO3	Will explore career options and gain general work experience.
				CO4	Awareness of social, cultural, global and environmental responsibility as an engineer.
				CO5	Capability and enthusiasm for self improvement through continuous professional development and life long learning.
11	VIII	BTCOE801	<b>Elective-XI (A) Deep Learning (B) Social Networks (C) Randomized Algorithms ##</b>	CO1	To Analyze network using Python basics and understand searching, marketing on social networking.
				CO2	Analyze and visualize network using Gephi tool as well as understand the different formats of datasets.
				CO3	Creating graph, displaying it and counting unstable triangle.
				CO4	Implement PointRank using point Distribution Method.
				CO5	Implementing Rich-get richer phenomenon using Barabasi-Albert model
				CO6	
12	VIII	BTCOE802	<b>Open Elective-XII (B) Cryptography and Network Security ##</b>	CO1	Explain fundamental concepts of Cryptography, ciphers and Data Encryption Standard (DES)
				CO2	Apply basic principles of Mathematics, Abstract algebra, Number Theory
				CO3	Analyze and compare Public Key Cryptosystem, Knapsack Cryptosystem, RSA Cryptosystem and ElGamal Cryptosystem
				CO4	Analyze different types of attacks and Elaborate importance of Hashing and digital signature technique in cryptography
				CO5	Identify the security requirements of systems and provide security using functionalities like Secure Sockets Layer (SSL), Pretty Good Privacy (PGP), Blockchain technology
13	VIII	BTCOE803	Project phase - II (In-house) \$ / Internship and project in the Industry	CO1	Demonstrate skill and knowledge of current information and technical tools and techniques specific to the professional field of study.
				CO2	Apply fundamental and multidisciplinary concepts and methods in ways appropriate to their ( principal area of study ) project domain.
				CO3	Identify and analyze and solve problems creatively through sustained critical investigation.
				CO4	Follow Ethical practices to Design a project.
				CO5	Communicate effectively with engineering community and society at large.

				CO6	Demonstrate positive group communication exchanges.
				CO7	Develop ability to learn constantly in a Dynamic environment.

Sr.	Semester	Course	Course Title	Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2			
2	VII	BTCOE 702	Elective - VIII (A) Big Data Analytics (B) Distributed System	CO1	3	2	-	1	-	-	-	-	-	-	-	-	2	2	-		
				CO2	3	2	1	-	-	-	-	-	-	-	-	3	-	2	3		
				CO3	3	1	-	-	2	3	-	-	-	-	-	-	-	-	1	-	
				CO4	3	-	2	-	-	2	-	2	-	2	-	1	-	1	2	2	
				CO5	3	2	1	-	-	-	-	-	-	-	-	-	-	-	1	3	
				Average	3	1.75	1.33	1	2	2.5	-	2	-	1	3	1.5	1.6	2.66			
3	VII	BTCOE 703	Elective - IX (A) Cloud Computing (B) Business Intelligence (C) Natural	CO1	-	2	-	-	-	-	-	-	-	-	-	-	-				
				CO2	1	-	-	-	-	-	-	-	-	-	-	-	-	-			
				CO3	-	2	-	-	-	-	-	-	-	-	-	-	-	-			
				CO4	-	2	2	-	-	-	-	-	-	-	-	-	-	-			
				CO5	-	2	-	-	-	-	-	-	-	-	-	-	-	-			
				CO6	1	2	2	-	-	-	-	-	-	-	-	-					
				Average	1	2	2	-	-	-	-	-	-	-	-	-	-	-			
4	VII	BTCOE 704	Open Elective - X (A) Blockchain Technology	CO1	2						1										
				CO2	2	2						2	1						2		
				CO3	3	2	2		3			1	1								
				CO4	2	2		2	3					1		2					
				CO5	3	2	2			2			1		1		2		3		
				Average	2.4	2	2	2	3	2	1.33	1	1	1	2	2	2.5				
5	VII	BTCOL 705	Full Stack Development (LAMP/MEAN)	CO1	3	-	3	-	-	-	-	-	-	-	-	-	-				
				CO2	3	-	-	-	2	-	-	-	-	-	-	-	-				
				CO3	3	-	-	-	2	-	-	-	-	-	-	-	-				
				CO4	3	-	-	-	-	-	-	-	-	2	2	-	-				
				CO5	3	-	-	-	-	-	-	-	-	2	-	-	2				
				Average	3	-	3	-	2	-	-	-	2	2	-	2	-	-			
7	VII	BTCOL 707	Elective – VIII Lab	CO1	3	2	2	-	-	-	3	-	-	-	3	2	3	-			
				CO2	3	3	3	-	2	-	2	-	-	-	-	-	-	2	1		
				CO3	3	-	2	-	1	-	-	-	-	-	-	-	1	1	3		
				CO4	3	2	2	-	-	-	3	-	-	-	-	3		2	-		
				CO5	3	2	2	2	-	-	-	-	-	-	3	-	-	2	-		
				Average	3	2.25	2.2	2	1.5	-	2.66	-	-	3	3	1.5	2	2			
9	VII	BTCOP 709	Project-I	CO1	3	3	2	2	3	1	1	3	3	1	1	3	3	3			
				CO2	3	3	3	3	3	2	2	3	3	2	2	3	3	3	3		
				CO3	2	2	2	3	1	1	2	1	3	2	1	3	2	3	3		
				CO4	2	2	2	1	1	-	-	3	2	3	1	3	2	3	3		
				CO5	1	1	1	1	-	3	-	1	2	3	1	3	1	3	3		
				CO6	1	1	1	1	-	-	-	2	3	3	-	2	1	3	3		

				CO7	3	3	2	2	3	1	1	2	2	2	1	3	3	3
				Average	2.14	2.14	2.14	2.14	2.2	1.6	1.5	2.14	2.57	2.28	1.16	2.85	2.14	3
11	VIII	BTCOE 801	<b>Elective-XI (A) Deep Learning (B) Social Networks</b>	CO1	3	2	1	3	2	-	-	-	-	-	-	-		
				CO2	3	-	-	-	1	2	-	-	1	-	2	2		
				CO3	3	-	-	-	2	-	1	2	-	1	-	-		
				CO4	3	2	-	-	-	-	-	-	-	-	-	2		
				CO5	3	-	-	-	-	-	1	-	-	-	-	-		
				Average	3	2	1	3	1.66	2	1	2	1	1	2	2	-	-
12	VIII	BTCOE 802	<b>Open Elective- XII  (B) Cryptography</b>	CO1	2					1								
				CO2	3	3					2	1					2	
				CO3	3	2	2		3		1	1						
				CO4	3	2		1		2		2			2	2		
				CO5	3	2	2			2			1	1		2	3	2
				Average	2.8	2.25	2	1	3	2	1.33	1.33	1	1	2	2	2.5	2
13	VIII	BTCOE 803	Project phase - II (In-house) \$ / Internship and project in the Industry	CO1	3	3	2	2	3	1	1	3	3	1	1	3	3	3
				CO2	3	3	3	3	3	3	2	2	3	3	2	2	3	3
				CO3	2	2	2	3	1	1	2	1	3	2	1	3	2	3
				CO4	2	2	2	1	1	-	-	3	2	3	1	3	2	3
				CO5	1	1	1	1	-	3	-	1	2	3	1	3	1	3
				CO6	1	1	1	1	-	-	-	2	3	3	-	2	1	3
				CO7	3	3	2	2	3	1	1	2	2	2	1	3	3	3
			Average	2.14	2.14	2.14	2.14	2.2	1.6	1.5	2.14	2.57	2.28	1.16	2.85	2.14	3	