BACHELORS OF COMPUTER APPLICATIONS

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
PO / CO	PO1-Understand the fundamental concepts of Computers, Software hardware and peripheral devices and evolution of computer technologies.	PO2-Familiarized with Business environment and Information Technology and its Applications in different domains.	PO3-Gain knowledge to identify, explain and apply functional programming and object-oriented programming techniques and use of databases to develop computer programs.	PO4-Analyze, design, implement and evaluate computerized solutions to real life problems, using appropriate computing methods including web applications.	PO5-Understand the front end and backend of software applications.	PO6-Gain expertise in at least one emerging technology.	PO7-Acquire knowledge about computer networks, network devices and their configuration protocols, security concepts at various level etc.	PO8-Apply techniques of software validation and reliability analysis to the development of computer programs.	PO9-Acquire Technical, Communication and management Skills to convey or present infoI mation, applications, instructions, policies, procedures, decisions, documentations etc. verbally	PO10-Recognize the various issues related to society, environment, health and vivid cultures and understand the responsibilities to contribute in providing the solutions.	PO11-Acquire technical skills to lead a productive life in the society as a professional or as an entrepreneur.
Course Code: BCA 101	**Discrete Mathematics**										
CO1-Understand the basics conceptual math and relations.	3	1	1	1	0	1	0	2	1	0	0
CO2-Understand and apply partial order and recurrence relation and their operations.	2	3	2	2	1	2	0	2	1	0	0
CO3- Compare and design, sorting and hashing techniques.	3	2	3	3	2	2	0	2	1	0	0
CO4-Appraise and determine the correct logic and solutions for any given real world problem.	3	3	0	3	0	0	0	0	0	0	0
Average BCA 101	**2.75**	**2.25**	**1.50**	**2.25**	**0.75**	**1.25**	**0.00**	**1.50**	**0.75**	**0.00**	**0.00**
Course Code: BCA 103	**Contemporary India: An Overview**										
CO1-Develop programming skills by learning the fundamentals of structured programming using C Language.	3	2	3	2	3	1	0	2	3	0	2
CO2-Design and develop programs using arrays,, storage classes, functions and to understand memory management	3	2	3	3	2	2	0	2	2	0	1
CO3-Critically analyze real world problems using structures, unions and develop applications for handling text and binary	3	2	3	3	2	2	0	2	1	0	2
CO4-Explore the use of command line arguments, string manipulation and standard libraries.	2	2	2	3	2	2	0	0	3	0	1
Average :Course Code: BCA 103	**2.75**	**2.00**	**2.75**	**2.75**	**2.25**	**1.75**	**0.00**	**1.50**	**2.25**	**0.00**	**1.50**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 105	**Fundamentals of Computers and IT**										
CO1-Describe computer with its characteristics, its usage, limitations and benefits, Computer Memories and its type,	3	1	1	2	2	1	1	1	3	1	2
CO2-Acquire knowledge about Number Systems, various computer languages and operating system DOS.	3	2	1	2	1	1	3	1	2	1	2
CO3-Attain skills in Application Software used for word processing, spreadsheet and presentation	2	2	1	2	3	1	1	1	3	2	2
CO4-Understand network fundamentals and various communication network, Advance trends in IT.	3	3	2	3	2	2	3	1	3	3	3
Average :Course Code: BCA 105	**2.75**	**2.00**	**1.25**	**2.25**	**2.00**	**1.25**	**2.00**	**1.00**	**2.75**	**1.75**	**2.25**
Course Code: BCA 107	**Web Technologies**										
CO1-Develop static web pages through HTML, JavaScript,	3	2	1	3	3	0	1	1	2	1	2
CO2-Implement different constructs and programming techniques provided by JavaScript.	2	1	3	3	2	1	1	3	2	1	2
CO3-Adapt HTML, Javascript, CSS and Bootstrap syntax and semantics to build web pages.	2	2	3	3	3	1	1	1	3	2	2
CO4-Develop Client-Side Scripts using JavaScript to display the contents dynamically.	2	1	3	3	3	1	1	2	3	3	2
Average: Course Code: BCA 107	**2.25**	**1.50**	**2.50**	**3.00**	**2.75**	**0.75**	**1.00**	**1.75**	**2.50**	**1.75**	**2.00**
Course Code: BCA 109	**Technical Communication**										
CO1-The student will become familiar with the basics of communication and its importance in the organizational world.	3	2	3	3	1	1	3	2	3	2	3
CO2-To improve the business writing skills also will become well aware how to write effective resume to enter the global world.	3	2	3	3	2	2	3	2	3	1	3
CO3-To improve the listening skills by knowing well how to negotiate and give effective presentations.	3	2	3	3	1	1	3	2	3	2	3
CO4-To make use of effective business language and give a professional look to oneself.	2	1	3	3	0	1	3	2	3	1	3
Average : Course Code: BCA 109	**2.75**	**1.75**	**3.00**	**3.00**	**1.00**	**1.25**	**3.00**	**2.00**	**3.00**	**1.50**	**3.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code:BCA 171	**Practical -1 'C' Prog. Lab**										
CO1-Develop programming skills by learning the fundamentals of structured programming using C Language.	3	3	3	2	2	1	0	2	2	1	1
CO2-Design and develop programs using arrays, storage classes, functions and to understand memory management	3	3	3	2	2	1	0	2	1	1	1
CO3-Critically analyze real world problems using structures, unions and develop applications for handling text and binary	3	3	3	3	3	1	0	2	1	1	1
CO4-Create interactive Presentation using advanced features of MS Power-Point.	3	3	2	3	2	1	0	2	1	1	1
Average:Course Code: BCA 171	**3.00**	**3.00**	**2.75**	**2.50**	**2.25**	**1.00**	**0.00**	**2.00**	**1.25**	**1.00**	**1.00**
Course Code:BCA 173	**Practical – II IT Lab**										
CO1-Work with basic DOS Commands and Windows	**3**	**3**	**1**	**1**	**1**	**1**	**2**	**2**	**1**	**0**	**1**
CO2-Create Word Documents using advanced features of MS Word.	**3**	**3**	**1**	**2**	**2**	**2**	**0**	**1**	**3**	**1**	**3**
CO3-Create Worksheet using advanced features of MS Excel.	**3**	**3**	**1**	**2**	**2**	**2**	**0**	**2**	**2**	**1**	**3**
CO4-Explore the use of command line arguments, string manipulation and standard libraries.	**3**	**3**	**1**	**1**	**1**	**1**	**2**	**2**	**1**	**1**	**1**
Average :Course Code: BCA 173	**3.00**	**3.00**	**1.00**	**1.50**	**1.50**	**1.50**	**1.00**	**1.75**	**1.75**	**0.75**	**2.00**
Course Code: BCA 175	**Practical-III Web Tech Lab**										
CO1-Develop static web pages through HTML, CSS, JavaScript, bootstrap and XML.	3	1	3	3	2	1	1	2	2	1	2
CO2-Implement different constructs and programming techniques provided by JavaScript.	3	2	2	3	3	2	1	2	3	2	3
CO3-Adapt HTML, CSS, javascript, bootstrap and XML syntax and semantics to build web pages.	3	3	2	2	1	2	0	1	2	3	2
CO4-Develop Client-Side Scripts using JavaScript to display the contents dynamically.	3	1	2	2	1	1	3	1	2	2	3
Average: Course Code: BCA 175	**3.00**	**1.75**	**2.25**	**2.50**	**1.75**	**1.50**	**1.25**	**1.50**	**2.25**	**2.00**	**2.50**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 181+	**Bridge Course in Mathematics**										
CO1.Understand the various approaches dealing the data using theory of matrices	3	3	3	3	2	3	3	3	2	1	2
CO2. Understand and apply the concepts of determinants.	3	3	3	2	2	2	3	3	2	2	3
CO3.Understand the concept of calculus such as limit, continuity and differentiability	3	3	2	3	3	3	2	2	2	2	3
CO4. Appraise and determine the correct logic and solutions for any given real world problem using application of integration integral calculus.	3	3	3	3	3	1	1	1	1	1	2
Average: Course Code: BCA 181+	**3.00**	**3.00**	**2.75**	**2.75**	**2.50**	**2.25**	**2.25**	**2.25**	**1.75**	**1.50**	**2.50**
Course Code: BCA102	**Applied Mathematics**										
CO1-Understand the various approaches dealing the data using theory of Probability.	3	3	3	3	0	0	2	2	2	2	1
CO2-Understand various numerical techniques and apply them to solve real life problems.	3	3	2	1	0	0	2	2	2	1	2
CO3-Analyse and evaluate the accuracy of common Numerical Methods.	3	3	3	3	3	0	0	1	1	1	1
CO4-Develop a mathematical model for real life situation and solving it Using Linear programming technique.	3	3	3	3	3	0	2	2	2	1	2
Average :Course Code: BCA 102	**3.00**	**3.00**	**2.75**	**2.50**	**1.50**	**0.00**	**1.50**	**1.75**	**1.75**	**1.25**	**1.50**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA104	**Web Based Programming**										
CO1-Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's.	3	3	3	3	2	2	3	2	3	1	1
CO2-Have a good understanding of Web Application Terminologies.	3	3	3	3	3	2	3	2	3	3	3
CO3-Learn how to link and publish web sites.	3	3	3	3	3	2	1	3	3	1	3
Average: Course Code: BCA 104	**3.00**	**3.00**	**3.00**	**3.00**	**2.67**	**2.00**	**2.33**	**2.33**	**3.00**	**1.67**	**2.33**
Course Code: BCA106	**Data Structure and Algorithm Using C**										
CO1-Familiarize the basics of data structures and algorithms.	3	3	3	3	0	1	3	2	1	1	2
CO2-Understand and apply linear and nonlinear data structures and their operations.	3	3	3	3	3	1	3	2	1	1	2
CO3-Compare and implement searching, sorting and hashing techniques.	3	3	3	3	3	3	3	2	3	3	3
CO4-Appraise and determine the correct data structure for any given real world problem.	3	3	3	3	3	2	3	2	1	2	1
Average: Course Code: BCA 106	**3.00**	**3.00**	**3.00**	**3.00**	**2.25**	**1.75**	**3.00**	**2.00**	**1.50**	**1.75**	**2.00**
Course Code: BCA108	**Database Management System**										
CO1-Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies.	3	3	3	3	3	2	3	1	3	2	2
CO2-Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and Indexes Discuss integrity Constraints.	3	3	3	1	3	2	3	2	2	1	2
CO3-Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization.	3	3	3	3	3	2	0	2	3	0	3
CO4-Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security.	1	3	3	3	3	3	3	3	1	0	3
Average: Course Code: BCA 108	**2.50**	**3.00**	**3.00**	**2.50**	**3.00**	**2.25**	**2.25**	**2.00**	**2.25**	**0.75**	**2.50**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA110	**Environmental Studies**										
CO1-Gain in-depth knowledge on natural processes and resources that sustain life and govern economy.	3	3	3	3	0	0	0	0	3	3	0
CO2-Understand the consequences of human actions on the web of life, global economy, and quality of human life.	3	3	2	1	0	0	0	2	2	3	2
CO3-Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.	3	3	3	3	1	2	0	2	3	3	3
CO4- Acquire values and attitudes towards understanding complex environmental economic-social challenges, and active participation in solving current environmental problems and preventing the future ones.	3	2	2	2	2	2	2	2	2	3	2
CO5-Adopt sustainability as a practice in life, society, and industry.	3	3	3	2	2	2	2	1	1	3	2
Average: Course Code: BCA 110	**3.00**	**2.80**	**2.60**	**2.20**	**1.00**	**1.20**	**0.80**	**1.40**	**2.20**	**3.00**	**1.80**
Course Code: BCA134	**Front End Design Tools VB.NET**										
CO1-Design Console application using basic programming concepts.	3	3	3	3	3	3	2	2	3	0	2
CO2-Design Windows application using control.	3	3	3	2	3	2	1	2	3	2	2
CO3-Understand and use of different Data Structures, Exception Handling.	3	3	3	3	3	1	2	2	2	1	2
CO4-Learn basic concepts of OOPS. Design classes and interfaces.	3	3	3	3	3	2	3	3	1	2	2
Average: Course Code: BCA 134	**3.00**	**3.00**	**3.00**	**2.75**	**3.00**	**2.00**	**2.00**	**2.25**	**2.25**	**1.25**	**2.00**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA136	**Statistical Analysis using Excel**										
CO1-Understand the basic concepts of statistics and its application in the real life scenarios.	3	3	3	1	0	1	1	2	1	1	1
CO2-Understand the means and mechanisms for applying the various skills used in the process of generating various statistical concepts by using MS Excel software.	3	3	3	2	3	2	2	2	2	1	1
CO3-Developing the skills needed for understand the various features of MS Excel software which assist the user in the process of deriving statistical measures.	3	3	3	3	3	2	3	2	2	1	2
CO4-Understand the skill needed to draw various forms of graphical representation based on statistical data.	3	3	3	3	1	1	1	2	2	2	2
CO5-Understand the various features of MS Excel involved in the process of compilation and summarizing of Statistical data and the skills needed to interpret the statistical data.	2	2	3	3	2	2	1	2	2	1	1
CO6-Understand the skills needed to ensure the process of integrating data from multiple in MS Excel.	2	3	3	3	1	2	2	2	1	3	3
Average: Course Code: BCA 136	**2.67**	**2.83**	**3.00**	**2.50**	**1.67**	**1.67**	**1.67**	**2.00**	**1.67**	**1.50**	**1.67**
Course Code: BCA138	**Designing Lab Photoshop**										
CO1-Explain the basics of graphics designing & Adobe suite.	3	3	3	3	2	3	1	2	2	1	3
CO2-Exploring the Raster designing tools in Adobe	3	3	3	3	2	3	2	3	2	3	3
CO3-Exploring the Vector designing tools in Adobe	3	2	2	2	2	3	3	3	3	3	3
CO4-Exploring the image filters & adjustments in Adobe Photoshop.	3	2	3	3	2	2	2	2	2	3	3
Average: Course Code: BCA 138	**3.00**	**2.50**	**2.75**	**2.75**	**2.00**	**2.75**	**2.00**	**2.50**	**2.25**	**2.50**	**3.00**
Course Code: BCA172	**Practical-IV WBP Lab**										
CO1-Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's.	3	3	3	3	2	3	3	0	3	0	1
CO2-Have a good understanding of Web Application Terminologies.	3	3	3	1	0	3	3	1	3	3	2
CO3-Learn how to link and publish web sites.	3	3	3	3	1	0	0	0	0	0	1
Average: Course Code: BCA 172	**3.00**	**3.00**	**3.00**	**2.33**	**1.00**	**2.00**	**2.00**	**0.33**	**2.00**	**1.00**	**1.33**
Course Code: BCA174	**Practical-V DS Lab**										
CO1-Implement basic operations on static linear data	3	3	3	3	2	1	2	2	2	0	1
CO2-Implement various operations on dynamic linear data structures.	3	3	3	3	3	2	1	2	2	1	3
CO3-Implement basic operations on non-linear data structures.	3	3	3	3	3	2	1	2	2	2	2
CO4-Implement searching techniques on linear and non- linear data structures.	3	3	3	3	2	2	2	2	2	2	2
CO5-Implement sorting techniques on one dimensional array.	3	3	3	3	2	3	2	3	2	0	3
Average: Course Code: BCA 174	**3.00**	**3.00**	**3.00**	**3.00**	**2.40**	**2.00**	**1.60**	**2.20**	**2.00**	**1.00**	**2.20**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA176	**Practical-VI DBMS Lab**										
CO1-Understand the structure and design of relational	3	3	3	3	3	3	2	2	2	1	2
CO2-Write DDL statements in SQL to create, Modify and remove database objects.	3	3	3	3	3	3	2	2	2	0	2
CO3-Use constraints for the database.	3		3	2	3	3	2	2	2	2	2
CO4-Write DML statements in SQL to insert, Modify and remove data from database, retrieve data based on the conditions provided by the user.	3		3	2	3	3	2	2	2	2	2
CO5-Use index and Views in database.	3		3	2	3	3	2	2	2	2	2
CO6-Use structured query language (SQL) to an intermediate/advanced level.	3	3	3	3	3	3	2	2	2	0	2
Average: Course Code: BCA 176	**3.00**	**3.00**	**3.00**	**2.50**	**3.00**	**3.00**	**2.00**	**2.00**	**2.00**	**1.17**	**2.00**
Course Code: BCA201	**Computer Networks**										
CO1-Utilize the fundamentals of data communication and networking to identify the topologies and connecting devices of networks.	3	3	3	2	2	1	3	3	3	0	3
CO2-Understand and describe the layered protocol model (OSI and TCP/IP model).	3	3	3	3	1	2	3	2	3	1	2
CO3-Analyze the elements and protocols for peer – peer and communication between layers.	3	3	3	2	2	3	3	0	0	0	0
CO4-Evaluate and implement routing algorithms and Router basic configuration.	3	3	3	3	2	2	3	3	0	0	0
CO5-Evaluate the protocols and Principles in computer networking.	3	3	3	3	3	3	3	3	2	2	3
Average:Course Code: BCA201	**3.00**	**3.00**	**3.00**	**2.60**	**2.00**	**2.20**	**3.00**	**2.20**	**1.60**	**0.60**	**1.60**
Course Code: BCA203	**Computer Organization and Architecture**										
CO1-Able to understand the fundamentals of digital principles and able to design digital circuits by simplifying the Boolean functions.	3	3	3	2	1	1	3	3	2	0	3
CO2-Implement the combinational and sequential circuits for the given specifications.	3	3	2	3	2	2	3	2	2	2	3
CO3-Able to trace the execution sequence of an instruction through the processor.	3	0	2	2	2	2	3	2	2	2	3
CO4-Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.	3	0	2	3	2	1	3	2	2	2	3
CO5-Demonstrate the ability to classify the addressing modes, instructions set.	3	3	3	3	3	1	3	3	3	2	3
Average:Course Code: BCA203	**3.00**	**1.80**	**2.40**	**2.60**	**2.00**	**1.40**	**3.00**	**2.40**	**2.20**	**1.60**	**3.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA205	**Object Oriented Programming with C++**										
CO1-Understand the basic principles of Object-Oriented Programming.	3	3	3	2	2	3	2	3	2	1	2
CO2-Apply OOPs principles using C++ constructs.	3	3	3	2	2	3	2	2	2	2	2
CO3-Develop expertise in classification hierarchies and polymorphism using C++.	3	2	3	3	2	3	3	2	1	2	2
CO4-Comprehend the working of files and generic	2	2	3	3	2	3	1	3	2	1	2
AVERAGECourse Code: BCAT205	**2.75**	**2.50**	**3.00**	**2.50**	**2.00**	**3.00**	**2.00**	**2.50**	**1.75**	**1.50**	**2.00**
Course Code: BCA207	**Human Values and Ethics**										
CO1-Identify and evaluate personal ethical values and their implications in various social situations.	3	3	3	3	3	2	2	3	2	3	2
CO2-Recognize the multiple ethical interests at stake in a real-world situation.	3	3	3	2	2	2	1	3	3	3	1
CO3-Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.	3	2	3	3	2	2	0	0	3	3	3
CO4-Instill Moral and Social Values and Loyalty and appreciate the rights of others.	3	3	3	3	2	0	2	0	2	3	3
CO5-Comprehend the concept of harmony at all the levels of society and readiness to contribute towards harmony at all	3	3	3	2	1	0	0	2	2	3	2
AVERAGECourse Code: BCAT207	**3.00**	**2.80**	**3.00**	**2.60**	**2.00**	**1.20**	**1.00**	**1.60**	**2.40**	**3.00**	**2.20**
Course Code: BCAT211	**Basics of Python Programming**										
CO1-Demonstrate knowledge of basic programming constructs in python.	3	3	3	3	1	0	3	0	3	0	2
CO2-Illustrates string handling methods and user-defined functions in python.	3	3	3	2	3	0	3	0	0	1	2
CO3-Applying data structures primitives like List, Dictionary and tuples.	3	3	3	3	2	0	3	2	2	2	3
CO4-Identify the commonly used operations involved in file handling.	3	3	3	3	2	0	3	2	2	2	3
CO5-To understand how python can be used for application development.	3	3	3	3	1	1	3	2	2	1	3
AVERAGECourse Code: BCAT211	**3.00**	**3.00**	**3.00**	**2.80**	**1.80**	**0.20**	**3.00**	**1.20**	**1.80**	**1.20**	**2.60**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAP211	**Basics of Python Programming**										
CO1-Demonstrate knowledge of basic programming constructs in python.	3	3	3	3	1	0	3	0	3	0	2
CO2-Illustrates string handling methods and user-defined functions in python.	3	3	3	2	3	0	3	0	0	1	2
CO3-Applying data structures primitives like List, Dictionary and tuples.	3	3	3	3	2	0	3	2	2	2	3
CO4-Identify the commonly used operations involved in file handling.	3	3	3	3	2	0	3	2	2	2	3
CO5-To understand how python can be used for application development.	3	3	3	3	1	1	3	2	2	1	3
AVERAGECourse Code: BCAP211	**3.00**	**3.00**	**3.00**	**2.80**	**1.80**	**0.20**	**3.00**	**1.20**	**1.80**	**1.20**	**2.60**
Course Code: BCAT213	**Cyber Security**										
CO1- Define the basic concept of Cyber Security, Cybercrime and Cybercriminals. Identify and understand about Cyber	3	3	3	2	2	3	3	3	1	0	0
CO2-Describe briefly types of criminal attack and classification of Cybercrimes. Describe Steganography.	3	1	3	2	2	3	3	1	0	0	0
CO3-Identify and apply the Cybercrime Tools and Methods. Identify and apply the underlying concepts of Symmetric-key and Asymmetric-key Cryptography along with Digital	3	0	3	2	2	3	3	3	1	1	3
CO4-Implement security for HTTP applications, Emails. Apply Firewall in your system.	3	2	3	2	3	3	3	2	2	2	3
CO5-Implement, evaluate Keyloggers. Implement and evaluate different cyber security algorithms with the help of program.	3	2	2	3	2	3	3	3	2	2	3
CO6-Design and create security mechanisms to protect computer systems.	3	1	3	3	2	3	3	3	1	1	3
AVERAGECourse Code: BCAT213	**3.00**	**1.50**	**2.83**	**2.33**	**2.17**	**3.00**	**3.00**	**2.50**	**1.17**	**1.00**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAP213	**Cyber Security**										
CO1- Define the basic concept of Cyber Security, Cybercrime and Cybercriminals. Identify and understand about Cyber	3	3	3	2	0	0	3	3	2	3	3
CO2-Describe briefly types of criminal attack and classification of Cybercrimes. Describe Steganography.	3	1	3	2	0	0	3	1	2	3	3
CO3-Identify and apply the Cybercrime Tools and Methods. Identify and apply the underlying concepts of Symmetric-key and Asymmetric-key Cryptography along with Digital	3	1	3	2	0	3	3	3	2	1	3
CO4-Implement security for HTTP applications, Emails. Apply Firewall in your system.	3	1	3	2	3	2	3	2	2	2	3
CO5-Implement, evaluate Keyloggers. Implement and evaluate different cyber security algorithms with the help of program.	3	1	2	3	2	3	3	3	2	2	3
CO6-Design and create security mechanisms to protect computer systems.	3	1	3	3	0	3	3	3	2	1	3
AVERAGECourse Code: BCAP213	**3.00**	**1.33**	**2.83**	**2.33**	**0.83**	**1.83**	**3.00**	**2.50**	**2.00**	**2.00**	**3.00**
Course Code: BCA221	**Principles of Management & Organizational Behaviour**										
CO1-Develop basic knowledge about management, management process, managerial roles, skills and functions and management theories.	3	3	3	3	0	0	3	2	3	3	2
CO2-To give knowledge about planning and decision making process. To describe about staffing and directing.	3	3	3	3	1	1	3	2	2	2	2
CO3-To learn about the motivation theories and Leadership styles. To discuss about the Organizational behaviour and its application.	2	2	3	3	0	0	3	2	2	1	2
CO4-To give basic knowledge people management, their personality and perception. To describe about the Organisational culture and its effects. editing techniques.	2	3	3	3	2	2	3	2	1	1	1
AVERAGECourse Code: BCA221	**2.50**	**2.75**	**3.00**	**3.00**	**0.75**	**0.75**	**3.00**	**2.00**	**2.00**	**1.75**	**1.75**
Course Code: BCA233	**Designing Lab CorelDraw**										
CO1-Explain the basics of graphics designing & CorelDraw	3	3	2	2	1	3	3	2	2	2	2
CO2-Exploring the vector & 3D tools in CorelDraw.	3	3	3	3	1	3	3	3	2	2	2
CO3-Exploring the custom shapes & basics of printing in CorelDraw.	3	2	3	2	1	3	2	2	1	2	2
CO4-Exploring the workspaces & objects in CorelDraw.	3	2	3	2	3	3	3	2	1	2	2
AVERAGECourse Code: BCA233	**3.00**	**2.50**	**2.75**	**2.25**	**1.50**	**3.00**	**2.75**	**2.25**	**1.50**	**2.00**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA235	**ASP.NET**										
CO1-Understand the designing and development of Web Application Components.	2	3	3	2	1	2	3	2	2	2	2
CO2-Develop dynamic web pages using Web Server controls.	3	2	2	3	3	2	3	2	2	2	2
CO3-Design and create web applications with Validation controls.	3	3	3	3	2	3	3	3	3	3	2
CO4-Understand and Apply database connectivity to Web Applications.	3	3	3	3	3	3	3	3	3	2	3
AVERAGECourse Code: BCA235	**2.75**	**2.75**	**2.75**	**2.75**	**2.25**	**2.50**	**3.00**	**2.50**	**2.50**	**2.25**	**2.25**
Course Code: BCA237	**AR VR Development with Unity**										
CO1-Familiarize the basics of augmented, virtual and mixed reality.	3	3	3	3	1	1	2	2	1	1	2
CO2-Understand and apply the game development basics.	3	3	3	3	3	2	3	2	1	2	2
CO3-Compare and implement the various XR development techniques.	3	3	3	3	3	2	2	2	2	2	2
CO4-Appraise the XR development using Unity Engine.	3	3	3	3	3	1	3	2	2	2	2
AVERAGECourse Code: BCA237	**3.00**	**3.00**	**3.00**	**3.00**	**2.50**	**1.50**	**2.50**	**2.00**	**1.50**	**1.75**	**2.00**
Course Code: BCA239	**Cyber Ethics**										
CO1-Define cyber ethics and recognize cyber ethic issues.	3	3	3	2	1	0	0	1	3	3	1
CO2-Identify how security issues in cyberspace raise ethical concerns.	3	2	1	2	0	0	0	1	2	3	2
CO3-Recognize various types of cybercrime and its impact.	3	3	1	2	1	2	2	2	2	3	2
CO4-Discuss ethical issues associated with the use of social networks and social media.	2	3	1	3	0	2	2	2	2	3	1
CO5-Survey recent whistle-blowing cases focusing on associated ethical issues.	3	3	2	1	0	2	3	3	3	3	2
AVERAGECourse Code: BCA239	**2.80**	**2.80**	**1.60**	**2.00**	**0.40**	**1.20**	**1.40**	**1.80**	**2.40**	**3.00**	**1.60**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA271	**Practical – VII C++ Lab**										
CO1-Implement basic concepts of Object Oriented	3	3	3	1	2	1	2	1	2	2	3
CO2-Implement the concept of Classes and Objects.	3	3	3	2	1	2	1	2	2	2	2
CO3-Analyse and apply various polymorphism techniques to solve real life problems.	3	3	1	3	1	1	1	2	2	2	2
CO4-Implement Generic Classes, Exception Handling and various file operations.	3	3	3	3	3	3	2	3	2	3	3
AVERAGECourse Code: BCA271	**3.00**	**3.00**	**2.50**	**2.25**	**1.75**	**1.75**	**1.50**	**2.00**	**2.00**	**2.25**	**2.50**
Course Code: BCA202	**Java Programming**										
CO1-Illustrate the Object-Oriented paradigm and Java language constructs.	3	3	3	3	2	2	1	2	2	0	2
CO2-To inculcate concepts of inheritance to create new classes from existing ones and design the Classes needed given a problem specification.	3	1	3	1	0	0	0	2	2	1	3
CO3-To familiarize the concepts of packages and interfaces.	3	2	2	3	1	1	0	0	2	0	3
CO4-To facilitate students in handling exceptions and defining their own exceptions.	3	3	3	3	1	0	0	1	2	0	3
CO5-To manage input output using console and files.	3	3	2	3	2	2	2	2	2	2	2
CO6-To apply the Java Thread model to develop multithreading applications.	3	3	2	3	2	2	2	2	2	2	2
CO7-To understand and apply the concepts of GUI programming using swings.	2	2	3	2	3	3	1	1	2	2	3
AVERAGECourse Code: BCA202	**2.86**	**2.43**	**2.57**	**2.57**	**1.57**	**1.43**	**0.86**	**1.43**	**2.00**	**1.00**	**2.57**
Course Code: BCA204	**Software Engineering**										
CO1-To evaluate languages to code front end and back end of a software.	3	3	2	2	3	2	2	2	1	1	1
CO2-Instantiating into the process of designing, coding and testing a software module.	3	2	3	3	1	1	2	1	1	1	2
CO3-Organizing a software product along with its complete documentation.	3	2	3	3	1	1	1	1	1	1	2
CO4-Implementing Software Development Cycle to develop a software module.	2	3	3	3	3	2	3	1	2	1	1
CO5-To analyze the use of techniques, skills and modern engineering tools necessary for software development.	2	2	2	2	2	3	2	2	2	2	2
CO6-Organizing a complete software module.	2	2	2	2	2	2	2	3	2	2	2
AVERAGECourse Code: BCA204	**2.50**	**2.33**	**2.50**	**2.50**	**2.00**	**1.83**	**2.00**	**1.67**	**1.50**	**1.33**	**1.67**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA206	**Introduction to Management and Entrepreneurship Development**										
CO1-Gain in-depth knowledge on Entrepreneurial development in today's global scenario.	3	3	3	2	1	1	0	1	2	3	3
CO2-Understand the concept of entrepreneurs and to help the students to develop an entrepreneurial mind-set.	3	3	3	1	1	0	0	1	3	3	3
CO3-Develop critical thinking for shaping strategies and help them to become an successful entrepreneur.	3	3	3	2	3	1	0	0	2	2	3
CO4-Acquire values and attitudes towards understanding complex business problems, and active participation in solving current business problems.	2	2	3	2	2	2	2	2	2	3	3
CO5-Understand the concept of the fundamentals of	3	3	3	2	3	3	2	1	2	3	3
AVERAGECourse Code: BCA206	**2.80**	**2.80**	**3.00**	**1.80**	**2.00**	**1.40**	**0.80**	**1.00**	**2.20**	**2.80**	**3.00**
Course Code: BCAT212	**Introduction to Data Science**										
CO1-Basics of Data Science and Data Collection strategies.	3	3	3	3	2	3	3	2	2	2	3
CO2-Illustrating statistical analysis of data.	3	3	3	3	1	2	3	2	2	0	3
CO3-Working with the data structures of python like series and Data Frames.	3	3	3	3	0	2	2	0	2	0	2
CO4-Statistical analysis of data with the help of python.	3	3	3	3	0	2	2	2	2	0	3
AVERAGECourse Code: BCAT212	**3.00**	**3.00**	**3.00**	**3.00**	**0.75**	**2.25**	**2.50**	**1.50**	**2.00**	**0.50**	**2.75**
Course Code: BCAP212	**Introduction to Data Science Lab**										
CO1-Basics of Data Science and Data Collection strategies.	3	3	3	3	2	3	3	2	2	2	3
CO2-Illustrating statistical analysis of data.	3	3	3	3	1	2	3	2	2	0	3
CO3-Working with the data structures of python like series and Data Frames.	3	3	3	3	0	2	2	0	2	0	2
CO4-Statistical analysis of data with the help of python.	3	3	3	3	0	2	2	2	2	0	3
AVERAGECourse Code: BCAP212	**3.00**	**3.00**	**3.00**	**3.00**	**0.75**	**2.25**	**2.50**	**1.50**	**2.00**	**0.50**	**2.75**
Course Code: BCAT214	**Introduction to Artificial Intelligence**										
CO1-To understand elements constituting problems and learn to solve it by various uninformed and informed (heuristics	3	3	3	3	0	0	0	2	2	0	2
CO2-To understand formal methods for representing the knowledge and the process of inference to derive new representations of the knowledge.	3	3	3	3	0	0	1	1	2	0	2
CO3-Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty	3	3	3	3	3	0	0	0	2	1	3
CO4-Apply some mechanisms to create and improve AI	2	2	2	3	2	3	2	3	2	2	2
AVERAGECourse Code: BCAT214	**2.75**	**2.75**	**2.75**	**3.00**	**1.25**	**0.75**	**0.75**	**1.50**	**2.00**	**0.75**	**2.25**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAP214	**Television News: Reporting and Anchoring Lab**										
CO1-To understand elements constituting problems and learn to solve it by various uninformed and informed (heuristics	3	3	3	3	0	0	0	2	2	0	2
CO2-To understand formal methods for representing the knowledge and the process of inference to derive new representations of the knowledge.	3	3	3	3	0	0	1	1	2	0	2
CO3-Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty	3	3	3	3	3	0	0	0	2	1	3
CO4-Apply some mechanisms to create and improve AI	2	2	2	3	2	3	2	3	2	2	2
AVERAGECourse Code: BCAP214	**2.75**	**2.75**	**2.75**	**3.00**	**1.25**	**0.75**	**0.75**	**1.50**	**2.00**	**0.75**	**2.25**
Course Code: BCAT216	**Network Security**										
CO1-Define and explain the issues and basic concepts of Network Security. To understand how to draw a network	3	3	3	2	1	1	3	1	2	0	2
CO2-To Explain, understand and summarize the concepts, types and features of Firewall.	3	3	3	1	1	0	3	1	2	1	2
CO3-Explain and implement working of authentication, authorization, Packet security, IP Security, Firewall by using some suitable examples.	2	2	3	3	2	2	3	2	2	2	2
CO4-Classify and organize the architecture of network security management.	2	2	2	2	2	2	3	2	2	2	2
CO5-Evaluate different Network Security algorithms with the help of program.	2	2	3	3	2	2	3	2	2	2	2
CO6-Design and create a network security architecture for an organization.	3	3	3	3	1	1	3	3	2	2	2
AVERAGECourse Code: BCAT216	**2.50**	**2.50**	**2.83**	**2.33**	**1.50**	**1.33**	**3.00**	**1.83**	**2.00**	**1.50**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAP216	**Network Security Lab**										
CO1-Define and explain the issues and basic concepts of Network Security. To understand how to draw a network	3	3	3	2	1	3	3	1	2	0	2
CO2-To Explain, understand and summarize the concepts, types and features of Firewall.	3	3	3	1	1	2	3	1	2	1	2
CO3-Explain and implement working of authentication, authorization, Packet security, IP Security, Firewall by using some suitable examples.	2	2	3	3	2	2	3	1	2	2	3
CO4-Classify and organize the architecture of network security management.	2	2	2	2	2	2	3	1	1	2	3
CO5-Evaluate different Network Security algorithms with the help of program.	2	2	3	3	2	2	3	1	2	2	3
CO6-Design and create a network security architecture for an organization.	3	3	3	3	1	3	3	3	2	2	2
AVERAGECourse Code: BCAP216	**2.50**	**2.50**	**2.83**	**2.33**	**1.50**	**2.33**	**3.00**	**1.33**	**1.83**	**1.50**	**2.50**
Course Code: BCAT218	**Web Development with Python and Django**										
CO1-Install and Configure Python and Django in a development and production environment.	2	3	2	3	3	3	1	3	2	3	1
CO2-Understands the security implications of Django using templates and develop secure websites with Django.	2	1	2	3	3	2	1	3	2	3	2
CO3- Utilize Django Models to build an interface with powerful relational databases.	2	1	1	2	3	0	3	3	2	3	2
CO4- Design and develop forms (both ad-hoc and from Models and Data Models) and automate the validation and verification of data in those forms.	3	2	3	2	2	3	3	3	2	3	2
Average	**2.25**	**1.75**	**2.00**	**2.50**	**2.75**	**2.00**	**2.00**	**3.00**	**2.00**	**3.00**	**1.75**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAP218	**Web Development with Python and Django Lab**										
CO1-Install and Configure Python and Django in a development and production environment.	2	3	2	3	3	3	1	3	2	3	1
CO2-Understands the security implications of Django using templates and develop secure websites with Django.	2	1	2	3	3	2	0	3	2	3	2
CO3- Utilize Django Models to build an interface with powerful relational databases.	2	1	1	2	3	0	3	3	2	3	2
CO4- Design and develop forms (both ad-hoc and from Models and Data Models) and automate the validation and verification of data in those forms.	3	2	3	2	2	3	3	3	2	3	2
AVERAGECourse Code: BCAP218	**2.25**	**1.75**	**2.00**	**2.50**	**2.75**	**2.00**	**1.75**	**3.00**	**2.00**	**3.00**	**1.75**
Course Code: BCA222	**Digital Marketing**										
CO1- Understanding the digital marketing concepts and its usefulness in business.	2	3	3	2	0	2	2	2	1	0	1
CO2- Planning steps for digital marketing strategy and successfully executing it.	3	3	3	2	0	0	3	2	1	0	0
CO3- Understand the importance of Social Media Platforms and Social Media Marketing for online communication.	2	3	3	3	3	3	3	2	2	3	2
CO4- Applying Search Engine Optimization techniques (SEO) and Search Engine Marketing (SEM) to maximize reach and enhance engagement of users.	2	3	3	3	2	3	3	2	1	2	1
CO5- Analyzing web using analytics tools and gaining insights to various tools for Social Media Marketing.	3	3	3	2	0	3	2	1	1	2	2
AVERAGECourse Code: BCA222	**2.40**	**3.00**	**3.00**	**2.40**	**1.00**	**2.20**	**2.60**	**1.80**	**1.20**	**1.40**	**1.20**
Course Code: BCA224	**Principles of Accounting**										
CO1: Basic accounting knowledge, accounting equations, accounting concepts & convention.	2	3	3	3	0	2	2	2	2	2	2
CO2: Rules of debit & credit, journal, ledger, trial balance.	2	3	3	2	0	1	0	0	1	2	2
CO3: Final A/c's (Trading A/c, Profit & Loss A/c, Balance Sheet) without adjustment & with adjustment.	3	3	2	3	2	2	1	1	2	2	2
CO4: Sub division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return Journal, Sales Journal, Sales Return Journal.	2	3	2	3	0	2	3	2	1	2	2
CO5: Inventory valuation, Inventory System, Methods of valuation of Inventories (FIFO, LIFO & Weighted Average	2	3	2	3	0	0	2	2	1	2	2
CO6: Depreciation concept & causes, Method of recording depreciation & Method of providing depreciation.	1	1	2	3	0	3	1	1	1	0	2
AVERAGECourse Code: BCA224	**2.00**	**2.67**	**2.33**	**2.83**	**0.33**	**1.67**	**1.50**	**1.33**	**1.33**	**1.67**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA232	**Personality Development Skills**										
CO1: Learn Social Etiquettes and social conversation.	2	2	3	2	1	1	2	2	3	2	3
CO2: Learn Leadership, Decision making and Team-building skills	2	2	3	2	1	2	3	2	3	3	3
CO3: Improve confidence building skills	2	2	3	2	1	2	3	2	3	2	3
CO4: Able to manage Stress and Time Management	2	2	3	3	0	0	3	0	3	1	3
AVERAGECourse Code: BCA232	**2.00**	**2.00**	**3.00**	**2.25**	**0.75**	**1.25**	**2.75**	**1.50**	**3.00**	**2.00**	**3.00**
Course Code: BCA272	**Practical – VIII Java Lab**										
CO1: Illustrate the Object-Oriented paradigm and Java language constructs	3	2	3	1	1	1	2	1	1	3	2
CO2: To inculcate concepts of inheritance to create new classes from existing ones and design the classes needed given a problem specification.	3	1	3	1	1	1	2	0	2	2	1
CO3: To apply various functions of String class	2	2	2	3	2	1	2	2	1	1	2
CO4: To facilitate students in handling exceptions and defining their own exceptions.	2	2	2	3	2	1	2	2	1	2	2
CO5: To manage input output using console and files	3	1	2	3	1	1	3	0	2	2	1
CO6: To apply the Java Thread model to develop multithreading applications.	2	1	2	3	1	1	3	1	2	2	3
CO7: To understand and apply the concepts of GUI programming using swings.	3	3	3	2	3	3	2	1	1	2	2
AVERAGECourse Code: BCA272	**2.57**	**1.71**	**2.43**	**2.29**	**1.57**	**1.29**	**2.29**	**1.00**	**1.43**	**2.00**	**1.86**
Course Code: BCA274	**Practical-IX SE Lab**										
CO1: To apply the software engineering lifecycle by demonstrating compete	3	2	3	2	2	1	3	2	1	2	2
CO2: Demonstrate an understanding of and apply current theories, models,	3	2	3	2	2	1	1	2	2	2	2
CO3: Analyzing and developing a software product along with its complete	3	2	3	3	2	1	1	2	2	2	2
CO4: Work as an individual and as part of a multidisciplinary team to develo	2	1	3	3	3	1	3	2	2	3	3
CO5: Demonstrate an ability to use the techniques and tools necessary for e	2	2	1	3	2	0	2	0	1	1	2
AVERAGECourse Code: BCA274	**2.60**	**1.80**	**2.60**	**2.60**	**2.20**	**0.80**	**2.00**	**1.60**	**1.60**	**2.00**	**2.20**
Course Code: BCA 301	**Operating System & Linux Programming**										
CO1: Understand the basic concept of Operating System with the help of Ur	3	2	2	3	2	1	3	2	1	2	2
CO2: Understand the concept of Processes, Process Scheduling, Process Syr	3	3	1	3	3	1	1	1	1	1	1
CO3: Understand the concept of memory management and deadlock.	3	3	1	3	3	1	1	1	1	1	1
CO4: Understand the concept of file Systems, Types and Access Methods by	3	3	3	3	3	1	3	2	2	3	3
AVERAGECourse Code: BCA 301	**3.00**	**2.75**	**1.75**	**3.00**	**2.75**	**1.00**	**2.00**	**1.50**	**1.25**	**1.75**	**1.75**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 303	**Computer Graphics**										
CO1: Develop basic knowledge of computer generated graphics, their applications, display devices and drawing of graphic objects on display devices	3	1	2	2	3	2	1	1	2	1	2
CO2: To develop knowledge of various graphics 2D transformation operation, their mathematical calculations.	3	1	3	3	2	2	1	1	1	1	1
CO3: To learn about the surfaces and curves, properties of curves and shading of surfaces	2	1	2	2	2	2	1	1	1	1	1
CO4: To give basic knowledge of 3D projection and identifying hidden surfaces to be removed	3	1	2	3	2	2	1	1	1	1	2
AVERAGECourse Code: BCA 303	**2.75**	**1.00**	**2.25**	**2.50**	**2.25**	**2.00**	**1.00**	**1.00**	**1.25**	**1.00**	**1.50**
Course Code: BCA 305	**Cloud Computing**										
CO1: Overview of Cloud Computing	3	2	1	2	2	3	1	2	2	1	2
CO2: Understanding Cloud Computing Architecture	3	2	2	3	2	3	2	2	2	1	2
CO3: Working with Parallel and Distributed Computing	2	2	3	3	2	3	2	2	1	1	2
CO4: Understanding the Concept of Virtualization	3	2	2	2	2	3	1	2	2	1	2
AVERAGECourse Code: BCA 305	**2.75**	**2.00**	**2.00**	**2.50**	**2.00**	**3.00**	**1.50**	**2.00**	**1.75**	**1.00**	**2.00**
Course Code: BCA 307	**Minor Project**										
CO1:Identify a simple real-world problem and define objectives and scope of a software-based solution.	3	3	2	2	2	2	2	2	2	1	1
CO2:Design and develop a basic software system using appropriate tools and programming techniques.	3	2	3	3	2	2	1	1	2	1	2
CO3:Apply fundamental software development techniques including testing and debugging.	2	2	3	3	2	2	2	2	2	2	2
CO4:Demonstrate ability to work in a team and follow a project development process.	1	2	2	2	1	2	3	2	2	1	2
CO5:Document project work and present outcomes effectively using written and oral communication skills.	2	2	1	1	1	3	2	1	2	1	3
CO6:Recognize basic ethical and social implications related to the use of software systems.	2	2	1	1	3	2	1	1	1	2	3
AVERAGECourse Code: BCA 307	**2.17**	**2.17**	**2.00**	**2.00**	**1.83**	**2.17**	**1.83**	**1.50**	**1.83**	**1.33**	**2.17**

Scheme 2021-22 (CO PO Mapping)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAT 311	**Machine Learning with Python**										
CO1: Explain machine learning concepts on real world applications and prol	3	3	2	3	2	3	1	2	2	2	2
CO2: Analyze and Implement Regression techniques.	3	1	3	3	2	3	1	2	2	0	2
CO3: Solve and design solution of Classification problem	1	3	3	3	2	3	1	2	2	0	2
CO4: Understand and implement Unsupervised learning algorithms	2	1	2	3	1	3	1	2	1	1	2
CO5: Interpret various machine learning algorithms in a range of real world	2	3	2	3	2	3	1	2	2	1	2
AVERAGECourse Code: BCAT 311	**2.20**	**2.20**	**2.40**	**3.00**	**1.80**	**3.00**	**1.00**	**2.00**	**1.80**	**0.80**	**2.00**
Course Code: BCAP 311	**Machine Learning with Python Lab**										
CO1: Explain machine learning concepts on real world applications and prol	3	3	2	2	2	2	1	3	1	2	2
CO2: Analyze and Implement Regression techniques.	3	1	1	3	1	2	1	1	1	1	1
CO3: Solve and design solution of Classification problem	1	3	3	3	1	2		3	1	1	1
CO4: Understand and implement Unsupervised learning algorithms	2	1	3	3	1	3	1	3	2	3	3
CO5: Interpret various machine learning algorithms in a range of real world	2	3	1	2	2	3	1	0	1	1	2
AVERAGECourse Code: BCAP 311	**2.20**	**2.20**	**2.00**	**2.60**	**1.40**	**2.40**	**1.00**	**2.00**	**1.20**	**1.60**	**1.80**
Course Code: BCAT 313	**Web Security**										
CO1: Define overall web security infrastructure, components, issues and basic concept etc.	3	2	2	3	2	2	3	2	1	2	2
CO2: Describe briefly various types of security like social media security, email security, web application and web services security etc. Explain Web related services	3	3	1	3	3	2	3	2	1	2	3
CO3: Apply and implementing various vulnerabilities for Ethically hacking a websites / Web Applications.	3	1	1	3	1	3	1	3	1	2	3
CO4: Focusing Penetration Testing, Computer Forensics.	3	3	3	3	3	2	3	2	2	3	3
CO5: Evaluate different web security algorithms with the help of program.	3		3	3		3	3	3	1	2	3
CO6: Design and implement XSS attacks, SQL Injection attack, password hashing and cracking.	3	2	3	3	2	2	3	3	1	2	3
AVERAGECourse Code: BCAT 313	**3.00**	**2.20**	**2.17**	**3.00**	**2.20**	**2.33**	**2.67**	**2.50**	**1.17**	**2.17**	**2.83**
Course Code: BCAP 313	**Web Security Lab**										
CO1: Define overall web security infrastructure, components, issues and basic concept etc.	3	2	2	3	2	1	3	2	1	2	2
CO2: Describe briefly various types of security like social media security, email security, web application and web services security etc. Explain Web related services	3	3	2	3	3	2	3	2	2	2	2
CO3: Apply and implementing various vulnerabilities for Ethically hacking a websites / Web Applications.	3	2	2	3	2	3	2	3	2	2	2
CO4: Focusing Penetration Testing, Computer Forensics.	3	3	3	3	3	1	3	2	2	3	3
CO5: Evaluate different web security algorithms with the help of program.	3		3	3	1	3	3	3	1	1	1
CO6: Design and implement XSS attacks, SQL Injection attack, password hashing and cracking.	3	2	3	3	2	0	3	3	1	1	2
Average Course Code: BCAP 313	**3.00**	**2.40**	**2.50**	**3.00**	**2.17**	**1.67**	**2.83**	**2.50**	**1.50**	**1.83**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCAT 315	**Web Development with Java & JSP**										
CO1: Understand the concept of HTML, CSS and Java Script.	3	2	3	2	3	2	1	1	2	1	2
CO2: Understand J2EE architecture, web application structure and web arch	3	2	3	3	3	2	1	1	1	1	2
CO3: Creating and configuring Servlets.	2	1	3	3	3	2	1	2	1	1	3
CO4: Understand JDBC architecture and design database applications using	2	1	3	3	3	2	1	3	1	1	2
CO5: Design applications using JSP and JSF.	2	1	3	3	3	2	1	2	2	1	3
CO6: Elaborate the functional programming concepts of Hibernate, Struts a	2	1	3	3	3	3	1	3	2	1	3
Average Course Code: BCAT 315	**2.33**	**1.33**	**3.00**	**2.83**	**3.00**	**2.17**	**1.00**	**2.00**	**1.50**	**1.00**	**2.50**
Course Code: BCAP 315	**Web Development with Java & JSP Lab**										
CO1: Understand the concept of HTML, CSS and Java Script.	1	2	3	3	3	2	3	2	2	2	2
CO2: Understand J2EE architecture, web application structure and web arch	3	1	3	3	3	2		3	1		2
CO3: Creating and configuring Servlets.	3	1	3	3	3	2		2	1		3
CO4: Understand JDBC architecture and design database applications using	3	1	3	3	3	2		3	1		2
CO5: Design applications using JSP and JSF.	2	1	3	3	3	2	3	3	2	3	3
CO6: Elaborate the functional programming concepts of Hibernate, Struts a	2	2	3	3	3	3	3	3	2	1	3
AVERAGECourse Code: BCAP 315	**2.33**	**1.33**	**3.00**	**3.00**	**3.00**	**2.17**	**3.00**	**2.67**	**1.50**	**2.00**	**2.50**
Course Code: BCA 331	**Summer Training Project**										
CO1:Apply theoretical knowledge of computing to practical problems in a re	2	3	3	3	2	2	2	1	3	2	2
CO2:Analyze and understand the working of IT systems, software solutions,	3	3	3	3	2	2	2	2	3	2	3
CO3:Develop or support small-scale applications, scripts, or data reports as	2	2	3	3	3	3	2	1	3	2	3
CO4:Demonstrate communication, teamwork, and professional behavior in	2	2	3	3	2	2	1	2	3	2	3
CO5:Prepare a structured report and effectively present the learning and w	2	3	3	3	3	3	1	2	3	3	3
AVERAGECourse Code: BCA 331	**2.20**	**2.60**	**3.00**	**3.00**	**2.40**	**2.40**	**1.60**	**1.60**	**3.00**	**2.20**	**2.80**
Course Code: BCA 371	**Practical-X LINUX – OS LAB**										
CO1: Understand Linux Environment with the help of its architecture.	3	2	2	2	3	2	1	2	1	1	1
CO2: Understand the Linux environment by using general Linux Commands.	3	2	2	3	3	2	1	2	2	2	2
CO3: Implement Process Related commands.	3	2	2	3	3	2	1	2	2	2	2
CO4: Implement File Permission concept.	3	2	2	3	3	2	1	2	2	2	2
CO5: Understanding the shell script by combining commands.	3	2	2	3	3	3	1	2	3	3	3
AVERAGECourse Code: BCA 371	**3.00**	**2.00**	**2.00**	**2.80**	**3.00**	**2.20**	**1.00**	**2.00**	**2.00**	**2.00**	**2.00**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 373	**Practical - XI CG Lab**										
CO1: Develop basic computer generated graphic and drawing of graphic objects on 2D display devices.	3	2	3	3	3	2	1	2	2	1	2
CO2: To perform various algorithms for generating objects	2	1	3	3	3	2	1	2	2	1	2
CO3: To implement various 2D transformation operations through matrices.	3	1	3	4	3	3	1	2	2	1	3
CO4: Implementation of cohen-sutherland line clipping algorithm.	3	1	3	4	3	2	1	2	2	1	3
AVERAGECourse Code: BCA 373	**2.75**	**1.25**	**3.00**	**3.50**	**3.00**	**2.25**	**1.00**	**2.00**	**2.00**	**1.00**	**2.50**
Course Code: BCA 302	**Data Ware Housing and Data Mining**										
CO1: Understand the various component of Datawarehouse	3	2	3	3	2	1	1	2	2	2	2
CO2: Appreciate the strengths and limitations of various data mining and da	2	3	3	4	2	1	1	2	3	2	2
CO3: Critically evaluate data quality to advocate application of data preproc	2	3	3	4	2	1	1	2	3	3	2
CO4: Describe different methodologies used in data mining and data ware h	3	2	3	3	2	1	1	2	2	2	2
CO5: Design a data mart or data warehouse for any organization	3	3	4	4	3	2	1	2	2	3	3
CO6: Test real data sets using popular data mining tools such as WEKA	2	2	4	3	3	3	1	2	3	3	3
AVERAGECourse Code: BCA 302	**2.50**	**2.50**	**3.33**	**3.50**	**2.33**	**1.50**	**1.00**	**2.00**	**2.50**	**2.50**	**2.33**
Course Code: BCA 304	**E-Commerce**										
CO1: Understand the framework and business models of E-commerce.	3	3	2	3	2	1	2	1	2	2	2
CO2: Explain the concept of network infrastructure and gain knowledge abo	2	3	3	3	2	2	3	2	2	1	3
CO3: Demonstrate the process of secure electronic transactions for E-comm	2	2	3	3	3	3	3	3	3	2	3
CO4: Analyze various e-commerce secure payment gateway.	3	3	2	4	2	2	3	3	3	3	3
CO5: Evaluate Internet banking platform to work with E-commerce infrastru	2	3	3	4	3	2	3	3	3	3	3
CO6: Implement ecommerce website for online business.	3	2	4	4	4	4	2	3	3	3	3
AVERAGECourse Code: BCA 304	**2.50**	**2.67**	**2.83**	**3.50**	**2.67**	**2.33**	**2.67**	**2.50**	**2.67**	**2.33**	**2.83**
Course Code: BCA 306	**Internet of Things**										
CO1: Understand the architecture and the functional blocks of Internet of T	3	2	2	3	2	3	3	2	2	2	2
CO2: Explain the concepts of Internet of Things and gain knowledge to desig	3	2	3	3	2	3	3	2	2	1	2
CO3: Demonstrate the process of capturing and analyzing data in Internet o	2	2	3	3	3	3	3	2	3	2	3
CO4: Examine the various components involved in IoT design methodology	2	2	3	3	3	3	3	3	3	2	3
CO5: Evaluate an IoT device to work with a Cloud Computing infrastructure	3	3	3	3	3	3	4	3	3	3	3
CO6: Implement IoT protocols for communication.	3	3	3	3	3	3	3	3	3	3	3
AVERAGECourse Code: BCA 306	**2.67**	**2.33**	**2.83**	**3.00**	**2.67**	**3.00**	**3.17**	**2.50**	**2.67**	**2.17**	**2.67**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 308	**Major Project**										
CO1:Identify and define a real-world problem to be solved using	3	2	2	3	2	2	2	1	2	2	2
CO2:Design and implement a working solution using appropriat	3	2	3	4	3	3	2	3	3	2	3
CO3:Conduct research to explore possible solutions and select t	2	3	3	4	3	3	2	2	3	2	3
CO4:Develop and test a prototype or working model for the solu	2	3	3	4	4	4	3	3	3	3	3
CO5:Demonstrate an understanding of project management skil	3	3	2	3	3	3	2	2	4	2	3
CO6:Communicate and present the project results clearly, both v	3	3	3	3	3	3	2	3	4	3	3
AVERAGECourse Code: BCA 308	**2.67**	**2.67**	**2.67**	**3.50**	**3.00**	**3.00**	**2.17**	**2.33**	**3.17**	**2.33**	**2.83**
Course Code: BCAT 312	**Data Visualization & Analytics**										
CO1: Illustrating the features of Multithreading in python.	2	2	3	3	2	3	2	1	2	1	2
CO2: Analyzing data using suitable python library.	2	2	3	3	2	3	2	2	3	2	2
CO3: Visualizing data using Matplotib, Seaborn library.	2	2	3	3	2	3	2	2	3	3	2
CO4: Develop python applications with database connectivity operations.	3	3	3	3	3	3	2	3	3	3	3
AVERAGECourse Code: BCAT 312	**2.25**	**2.25**	**3.00**	**3.00**	**2.25**	**3.00**	**2.00**	**2.00**	**2.75**	**2.25**	**2.25**
Course Code: BCAP 312	**Data Visualization & Analytics Lab**										
CO1: Illustrating the features of Multithreading in python.	3	3	3	3	3	3	2	2	2	1	2
CO2: Analyzing data using suitable python library.	3	3	3	3	3	3	2	3	3	2	2
CO3: Visualizing data using Matplotib, Seaborn library.	3	3	3	3	3	3	2	3	3	3	2
CO4: Develop python applications with database connectivity operations.	3	3	3	3	3	3	2	3	3	3	3
Average Course Code: BCAP 312	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**3.00**	**2.00**	**2.75**	**2.75**	**2.25**	**2.25**
Course Code: BCAT 314	**Deep Learning with Python**										
CO1: Understand the basic concepts of Deep Learning and differentiate bet	3	3	2	2	2	3	2	1	2	1	2
CO2: Implement various Deep Learning Models.	2	3	3	3	2	3	2	2	3	2	3
CO3: Understand different Deep Learning architectures and training algorith	3	3	3	2	3	3	2	2	3	3	2
CO4: Understanding Dimensionality Reduction and optimization in Deep Le	3	3	3	3	3	3	2	3	3	3	3
CO5: Understanding and implementing Recurrent Neural Network (RNN).	3	3	3	3	3	3	2	2	3	2	3
CO6: Applying Deep Learning techniques in real life applications such as obj	2	3	3	3	3	3	3	3	3	3	3
AVERAGECourse Code: BCAT 314	**2.67**	**3.00**	**2.83**	**2.67**	**2.67**	**3.00**	**2.17**	**2.17**	**2.83**	**2.33**	**2.67**
Course Code: BCAP 314	**Deep Learning with Python**										
CO1: Understand the basic concepts of Deep Learning and differentiate bet	3	3	2	2	2	3	2	1	2	1	2
CO2: Implement various Deep Learning Models.	2	3	3	3	2	3	2	2	3	2	3
CO3: Understand different Deep Learning architectures and training algorith	3	3	3	2	3	3	2	2	3	3	2
CO4: Understanding Dimensionality Reduction and optimization in Deep Le	3	3	3	3	3	3	2	3	3	3	3
CO5: Understanding and implementing Recurrent Neural Network (RNN).	3	3	3	3	3	3	2	2	3	2	3
CO6: Applying Deep Learning techniques in real life applications such as obj	2	3	3	3	3	3	3	3	3	3	3
Average Course Code: BCAP 314	**2.67**	**3.00**	**2.83**	**2.67**	**2.67**	**3.00**	**2.17**	**2.17**	**2.83**	**2.33**	**2.67**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 316	**IT Act and Cyber Laws**										
CO1: Define various Cyber laws in the world, Classification of Cybercrime	2	2	2	2	2	1	3	2	2	3	2
CO2: Describe and explain the ways in which certain cybercrimes are perpe	2	2	3	1	1	1	3	1	2	3	2
CO3: Explain and use the objectives of national cyber security strategies	2	2	3	2	1	1	3	1	2	3	2
CO4: Discover IPR and E-commerce law.	1	3	1	1	1	1	1	1	2	3	2
CO5: Explain and Evaluate E-Commerce Issues and provisions in Indian Law.	1	3	3	3	1	1	3	2	3	3	3
CO6: Design and create frameworks for international cooperation on cyber	1	3	1	3	2	3	2	0	3	3	3
Average Course Code: BCA 316	**1.50**	**2.50**	**2.17**	**2.00**	**1.33**	**1.33**	**2.50**	**1.17**	**2.33**	**3.00**	**2.33**
Course Code: BCAT 318	**Mobile Application Development**										
CO1: Recognize the concept of application development for mobile devices	3	3	2	2	2	2	3	2	0	0	2
CO2: Understand the basic technologies used by the Android platform	3	3	3	2	3	3	1	0	0	0	2
CO3: Recognize and use Android Environment Emulator and Application life	3	3	2	2	3	2	1	0	0	0	2
CO4: Develop mobile applications for the Android operating system that us	3	3	3	3	3	3	3	2	2	2	3
CO5: Deploy applications to the Android marketplace for distribution	3	3	2	2	2	3	3	2	2	3	3
Average Course Code: BCAT 318	**3.00**	**3.00**	**2.40**	**2.20**	**2.60**	**2.60**	**2.20**	**1.20**	**0.80**	**1.00**	**2.40**
Course Code: BCAP 318	**Mobile Application Development Lab**										
CO1: Recognize the concept of application development for mobile devices	3	3	2	2	2	2	2	2	1	2	2
CO2: Understand the basic technologies used by the Android platform	3	3	3	2	3	3	1	1	1	1	2
CO3: Recognize and use Android Environment Emulator and Application life	3	3	2	2	3	2	1	1	1	1	2
CO4: Develop mobile applications for the Android operating system that us	3	3	3	3	3	3	3	2	2	1	3
CO5: Deploy applications to the Android marketplace for distribution	3	3	2	2	2	3	3	2	2	3	3
Average Course Code: BCAP 318	**3.00**	**3.00**	**2.40**	**2.20**	**2.60**	**2.60**	**2.00**	**1.60**	**1.40**	**1.60**	**2.40**
Course Code: BCA 332	**Seminar/ Conference Presentation**										
CO1:Identify and choose emerging or relevant topics from the domain of co	2	2	2	1	1	2	1	1	1	1	2
CO2:Conduct literature reviews, summarize findings, and formulate present	2	2	2	2	1	2	1	1	2	1	2
CO3:Develop effective visual presentation materials using appropriate digit	1	1	1	1	2	1	1	1	3	1	2
CO4:Deliver a professional and well-structured seminar/conference present	1	1	1	1	1	1	1	1	3	1	3
CO5:Demonstrate verbal and written communication, critical thinking, and	1	1	1	1	1	1	1	1	3	1	3
Average Course Code: BCA 332	**1.40**	**1.40**	**1.40**	**1.20**	**1.20**	**1.40**	**1.00**	**1.00**	**2.40**	**1.00**	**2.40**

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Course Code: BCA 372	**Practical-XII IOT Lab**										
CO1: Understand the architecture and the functional blocks of Internet of T	3	3	3	2	2	1	3	2	1	2	2
CO2: Explain the concepts of Internet of Things and gain knowledge to desig	3	3	3		0	1	3	1	1	3	2
CO3: Demonstrate the process of capturing and analyzing data in Internet o	3	3	3	3	0	1	1	1	1	1	2
CO4: Examine the various components involved in IoT design methodology.	3	3	3	3	2	1	3	1	1	1	2
CO5: Evaluate an IoT device to work with a Cloud Computing infrastructure.	3	3	3	3	3	1	3	2	1	3	2
CO6: Implement IoT protocols for communication.	3	3	3	3	2	3	3	3	1	1	3
Average Course Code: BCA 372	**3.00**	**3.00**	**3.00**	**2.80**	**1.50**	**1.33**	**2.67**	**1.67**	**1.00**	**1.83**	**2.17**
Course Code: BCA 374	**NSS/NCC/Cultural Clubs/Technical Society/Technical Club**										
CO1:Demonstrate leadership qualities and team spirit through active partic	0	0	0	0	0	0	0	0	3	2	3
CO2:Organize and participate in cultural, social, and technical events to fost	0	2	0	0	0	0	0	0	3	3	2
CO3:Communicate ideas effectively and develop interpersonal and professi	0	0	0	0	0	0	0	0	3	2	2
CO4:Understand and reflect on societal, cultural, environmental, and ethica	0	0	0	0	0	0	0	0	2	3	2
CO5:Apply technical knowledge in organizing workshops, seminars, or socia	1	2	2	2	1	2	1	0	3	2	3
Average Course Code: BCA 374	**0.20**	**0.80**	**0.40**	**0.40**	**0.20**	**0.40**	**0.20**	**0.00**	**2.80**	**2.40**	**2.40**

Note :

3- Highly Coorelation 2-Moderate 1-Mild Coorelation 0-No Correlation

Head of the Department
Department of Information, Communication & Technology