BACHELORS OF COMPUTER APPLICATIONS(BCA)
W.E.F 2011-12

CO \ PO	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	**Mathematics-I**								
CO-1Student will be able to understand the basics of conceptual math and relations.	-	-	3	3	1	3	2	1	2
CO-2 Student will be able to apply partial order recurrence relation and their operations.	-	-	3	3	1	3	2	1	1
CO-3: Student will be able to compare and design sorting and hashing techniques.	3	3	3	2	2	3	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
Average	3.00	2.50	3.00	2.75	1.75	3.00	2.25	1.50	1.50
Course Code:BCA 103	**Technicial Communication**								
CO-1:Student will able to understand the basics of communication and its importance in the organizational world.	3	-	-	1	1	-	-	2	1
CO2:Student will able to develop technical writing skills to write resume, memorandum, notices etc.	2	3	-	-	1	-	-	-	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
Average	2.67	2.00	1.50	1.67	1.00	1.00	0.00	2.50	1.25
Course Code:BCA 105	**Introduction to Programming Language Using C**								
CO1.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
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	**Introduction to Computers & IT**								
CO1Student will be able to memorize computer Basics	3	2	2	-	-	-	-	-	-
CO2. Student will be able to understand different types of Computer Software and working of MS Office 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	-	-	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	**Physics**								
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 computer components	2	-	2	-	-	-	-	-	-
CO3.Student will be able to apply the principles of physics to design scientific applications	-	2	-	-	-	0	1	2	0
CO4. Student will be able to solve problems related to functioning of computer systems based on 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	**Practical -I, C Programming Lab**								
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	**Practical-II, IT Lab**								
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

Course Code:BCA 102	**Mathematics-II**								
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	0.00	1.00	1.25	
Course Code:BCA 104	**Principles of Management**								
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 C**								
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 System**								
CO1. Student will be able to identify and link user needs and take them into account in the selection, 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	**Practical-III, Data Structure Lab**								
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	1	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 Management System Lab**								
CO1. Understand the structure and design of relational databases	1	2	3	2	2	1	0	1	2
CO2. Write DDL statements in SQL to create, Modify and remove database objects	2	2	2	2	2	0	0	2	2
CO3. Write DML statements in SQL to insert, Modify and remove data from database	2	3	3	3	3	1	1	2	2
CO4. Use index and Views in database	3	3	3	3	3	2	2	2	2
Average	2.00	2.50	2.75	2.50	2.50	1.00	0.75	1.75	2.00
Course Code:BCA 201	**Mathematics-III**								
CO1. Student will able to Define the various approaches dealing the data using central tendency dispersion	3	1	1	-	1	1	-	1	2
CO2. Student will able to Understand various corelation and regression techniques and apply them to solve re	3	1	1	-	1	-	-	2	2
Student will able to Solve the Graphical and Simplex Problems	2	2	2	1	1	1	1	1	2
Student will able to Analyze the transportation and assignment problem and solve real examples based on it.	3	1	2	1	1	2	2	1	2
Average	2.75	1.25	1.50	1.00	1.00	1.33	1.50	1.25	2.00
Course Code:BCA 203	**Computer Architecture**								
CO1.Perform basic operations with different number systems and Understand concepts of register transfer Language	3	3	2	1	1	-	1	1	2
CO2. Understand the architecture and functionality of cpu and memory Organization	3	1	2	2	-	2	2	1	1
CO3. Understand the Concept of Parallel computing and its applications	2	2	3	1	3	1	1	2	3
CO4.Learn the concepts of pipelined processors and interprocessor communication	3	1	2	2	1	2	1	2	2
Average	2.75	1.75	2.25	1.50	1.67	1.67	1.25	1.50	2.00
Course Code:BCA 205	**Front end Design Tool VB .Net**								
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	1	3	3	1	3	1	2	3	1
CO7.To create Crystal Report using VB.NET	1	2	3	1	2	1	2	3	1
Average	1.57	2.43	2.57	1.57	2.43	1.00	2.00	2.57	1.00
Course Code:BCA 207	**Principles of Accounting**								
CO1. Students will be able to describe, explain, and integrate fundamental concepts underlying accounting, finance, management, marketing, and economics	2	-	2	2	3	3	2	1	-
CO2.Define journal and ledger	1	-	2	2	3	2	2	1	-
CO3. Specify the significance of alternative accounting procedures	1	-	2	2	3	2	2	1	-
CO4.Identify the basis of measurement, presentation, and disclosure issues related to items presented in Income statements and balance sheets	1	1	2	2	3	2	2	1	-
CO5.develop practical activities using techniques and procedures appropriate to financial accounting	1	1	3	3	3	3	2	1	1
Average	1.20	1.00	2.20	2.20	3.00	2.40	2.00	1.00	1.00

Course Code:BCA 209	**Object Oriented Programming Using C++**								
CO1. Students will be able to understand OOPs concepts and the difference between procedure oriented and 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	1	3	3	1	3	1	2	3	1
CO7.To create Crystal Report using VB.NET	1	2	3	1	2	1	2	3	1
Average	1.57	2.43	2.57	1.57	2.43	1.00	2.00	2.57	1.00
Course Code:BCA 253	**C++ Lab**								
CO1. Implement basic concepts of Object Oriented Programming	3	3	2	2	1	1	0	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
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 pr	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**								
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	1	-	-	1	1
CO3.Develop static and dynamic web pages using HTML, DHTML and Javascipt	3	3	3	3	2	2	1	2	3
CO4. 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	**Java Programming**								
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 invocation (RMI)	3	3	3	2	2	1	-	-	2
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 analysis, design, construction of SRS	3	3	3	2	2	-	1	1	1
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
CO4. To perform testing techniques using tools necessary for engineering practice	2	1	3	3	1	1	1	2	2
Average	2.67	2.00	2.25	2.25	1.50	2.00	2.00	2.25	2.00
Course Code:BCA 210	**Computer Networks**								
CO1. Students will be able to understand basics of computer networks and various protocols.	2	3	3	3	2	2	1	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 needed given a problem specification	3	3	3	2	1	1	-	2	1
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	3	3	2	2	1	-	-	2
Average	2.75	2.75	2.75	2.50	2.00	1.50	1.00	1.33	1.25
Course Code:BCA 254	**Practical-VIII Web Tech Lab**								
CO1. Develop static web pages through HTML, CSS, JavaScript, bootstrap and XML.	3	2	2	2	1	1	1	1	2
CO2. Implement different constructs and programming techniques provided by JavaScript.	2	2	2	2	1	0	0	1	1
CO3. Adapt HTML, CSS, javascript, bootstrap and XML syntax and semantics to build web pages	3	3	3	3	2	2	1	2	3
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 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 system.	1	3	-	2	1	2	3	2	-
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**								
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	-	-
CO4. Create graphic objects using solid modelling and hidden surface removal techniques	2	2	3	1	1	2	3	2	2
Average	1.75	2.00	2.50	1.00	1.00	2.00	3.00	2.50	2.00
Course Code:BCA 305	**E- Commerce**								
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.	3	2	-	1	2	-	-	2	1
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	2.25	2.25	2.00	1.50	2.50	2.50	2.00	1.50	1.50
Course Code:BCA 307	**Software Testing**								
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	2	2	-	1	3	3	-	1	1
CO4. Explore object oriented testing techniques to test applications	2	2	2	2	2	2	2	1	2
Average	2.25	2.25	2.00	1.50	2.50	2.00	1.50	1.50	
Course Code:BCA 313	**Web Based Programming**								
CO1. Students will have a good understanding of Web Application terminologies	1	1	2	2	-	1	2	1	2
CO2. Students will be able to design and develop dynamic web pages with good aesthetic sense of designing and latest technical tool using php	2	1	1	2	2	3	3	1	2
CO3. Students will learn how to link and publish web sites	1	2	1	1	2	3	3	1	-
CO4. Students will be able to design a usable Database using SQL	1	1	-	-	1	2	2	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	**Practical-IX CG Lab**								
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	-	-
CO4. Create graphic objects using solid modelling and hidden surface removal techniques	2	2	3	1	1	2	3	2	2
Average	1.75	2.00	2.50	1.00	1.00	2.00	3.00	2.50	2.00
Course Code:BCA 357	**Minor Project**								
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, resolving conflicts, and leveraging diverse perspectives to achieve project goals.	2	2	3	1	1	2	3	2	2
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	1.80	1.75	2.20	1.00	1.00	2.00	2.75	2.50	2.00
Course Code:BCA 302	**Data Mining & Data Warehousing**								
CO1.Determine data warehouse architecture for organizing huge data and deduce association rules for mining relevant patterns	1	1	2	2	-	1	2	1	2
CO2. Analyze and compare various data mining techniques for finding intersting patterns in data	2	1	1	2	2	3	3	1	2
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	1.25	1.25	1.33	1.67	1.67	2.25	2.50	1.00	1.67
Course Code:BCA 304	**Mobile Computing**								
CO1. Understand the basics of wireless communications, mobile Internet services, radio transmission and satellite systems	1	1	2	3	2	-	1	1	-
CO2. Understand and Compare different types modulation techniques, multiplexing, media access control techniques	1	1	3	3	2	2	1	-	-
CO3. Understand the basics of Wireless Access Protocol, Wireless Markup Language and the use of datatypes, operators, precedence, associativity, contexts, pragmas and libraries in WML script	2	2	2	1	2	1	3	1	-
CO4. Create programs in WML Script using variables, expressions, image elements, tables, functions, loops	2	3	3	2	3	2	3	-	2
Average	1.50	1.75	2.50	2.25	2.25	1.67	2.00	1.00	2.00
Course Code:BCA 306	**Linux Environment**								
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	2.00	2.25	1.50	1.25	2.00	1.75	1.50	2.00	1.00
Course Code:BCA 312	**Artificial Intelligence**								
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	1	1	1	1	1	-	-
CO3. Acquire Knowledge about scientific method to models of machine learning.	1	2	2	1	2	2	2	1	1
CO4. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning	1	1	2	2	2	2	3	-	1
Average	1.00	1.25	1.50	1.25	1.50	1.50	1.75	1.50	1.33
Course Code:BCA 352	**Practical-X Linux Lab**								
CO1.Understand Linux Environment with the help of its architecture.	2	3	2	2	3	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	2	1	1	2	2	2	-	1
Average	2.00	2.25	1.50	1.25	2.00	1.75	1.50	2.00	1.00

Course Code:BCA 356	Major Project								
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