



# TRINITY INSTITUTE OF PROFESSIONAL STUDIES

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## SUPPORTING DOCUMENTS OF 2.6.1

Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

S.No.	Program	Link
1	BCA	<a href="https://tips.edu.in/course_outcome/bca_course_outcome.pdf">https://tips.edu.in/course_outcome/bca_course_outcome.pdf</a>
2	BALLB	<a href="https://tips.edu.in/course_outcome/ballb_course_outcome.pdf">https://tips.edu.in/course_outcome/ballb_course_outcome.pdf</a>
3	BBA	<a href="https://tips.edu.in/course_outcome/bba_course_outcome.pdf">https://tips.edu.in/course_outcome/bba_course_outcome.pdf</a>
4	B.Com	<a href="https://tips.edu.in/course_outcome/bcom_course_outcome.pdf">https://tips.edu.in/course_outcome/bcom_course_outcome.pdf</a>
5	BAJMC	<a href="https://tips.edu.in/course_outcome/bba_course_outcome.pdf">https://tips.edu.in/course_outcome/bba_course_outcome.pdf</a>

Prof. (Dr.) Ashutosh Agarwal  
Director & IQAC Chairperson



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## BCA

### PROGRAMME OUTCOME

**PO 1:** Knowledge of Computer Applications: The acquaintance of fundamentals of computer applications is helpful in grooming and developing a team of future software professionals and entrepreneurs.

**PO 2:** Pragmatic approach: The practical knowledge of various aspects of computers, like Programming, Networking, Testing, etc. are helpful in designing and developing a real time project.

**PO 3:** Logical & Scientific perspective: The subject's like Mathematics and Statistics strengthen the logical reasoning of students. On the one hand, Programming enhances the Software development skills, Software engineering facilitates requirement elicitation, problem identification and analysis for business requirements; on the other, Database management System highlights the data storage and helps in retrieving the queries. The comprehension of all these aspects builds a broader outlook of budding professionals.

**PO 4:** Holistic personality grooming: Communication and presentation skills are developed in subjects like Technical Communication, whereas technical skills are enhanced in IT and other practical classes to make holistic personality development.

**PO 5:** Employability and self-employment: Gaining rudimentary knowledge about the computer after completion of this course, students have many options with them. They may go for pursuing higher studies, get a job or start their own business venture; thus, may become a job-provider as well.

**PO 6:** Ethically upright future citizens: Through various subjects and personal mentoring sessions on social and ethical issues in computers the students of this course are made aware about the traits

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of a responsible human being and good professionals, who boosts business and trade, contributes to the society and develops the nation.

## Course Outcome

Paper Code	Paper Name	COs
BCA 101	Discrete Mathematics	CO1: Understand the basics conceptual maths and relations  CO2: Understand and apply partial order and recurrence and their operations.
BCA 103	Programming using C Language	CO1: Understand the basics conceptual maths and relations  CO2: Understand and apply partial order and recurrence and their operations.  CO3: Compare and design, sorting and hashing techniques.  CO4: Appraise and determine the correct logic and solutions for any given real world problem

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BCA 105	Fundamentals Computers & IT	of  CO1: Describe a computer with its characteristics, its usage, limitations and benefits, Computer Memories and its types, Software and its types.  CO2: Acquire knowledge about Number Systems, various Computer languages and operating system DOS.  CO3: Attain skills in Application Software used for word processing, spreadsheet and presentation.  CO4: Understand network fundamentals and various communication networks, Advance Trends in IT.
BCA 107	WEB TECHNOLOGIES	CO1: Develop static web pages through HTML, JavaScript; CSS and Bootstrap.

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		<p>CO2: Implement different constructs and programming techniques provided by JavaScript.</p> <p>CO3: Adapt HTML, JavaScript, CSS and Bootstrap syntax and semantics to build web pages.</p> <p>CO4: Develop Client-Side Scripts using JavaScript to display the contents dynamically.</p>
BCA 109	TECHNICAL COMMUNICATION	<p>CO1: The students will become familiar with the basics of communication and its importance in the organizational world.</p> <p>CO2: To improve the Business writing skills also will become well aware of</p>

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		<p>how to write affective resume to enter the global world.</p> <p>CO3: To improve the listening skills by knowing well how to negotiate and give effective presentations.</p> <p>CO4: To make use of effective business language and give a professional look to oneself.</p>
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## Course Outcomes (COs) of BCA 2nd Semester

Paper Code	Paper Name	COs
BCA 102	Applied Mathematics	<p>CO1: Understand the various approaches dealing the data using theory of Probability</p> <p>CO2: Understand various numerical techniques and apply them to solve real life problems</p> <p>CO3: Analyse and evaluate the accuracy of common Numerical Methods</p> <p>CO4: Develop a mathematical model for real life situations and solve it Using Linear programming techniques.</p>
BCA 104	Web Based Programming	<p>CO1: Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's.</p> <p>CO2: Have a good understanding of Web Application Terminologies</p> <p>CO3: Learn how to link and publish web sites</p>

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BCA 106	Data Structure And Algorithm Using 'C'	<p>CO1: Familiarize the basics of data structures and algorithms.</p> <p>CO2: Understand and apply linear and nonlinear data structures and their operations.</p> <p>CO3: Compare and implement searching, sorting and hashing techniques.</p> <p>CO4: Appraise and determine the correct data structure for any given real world problem.</p>
BCA 108	Database Management System	<p>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</p> <p>CO2: Explore Structure Query Language, a brief on NO SQL, 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</p> <p>CO3: Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization.</p> <p>CO4: Acquire Knowledge about Transaction Processing, concurrency</p>

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		problems, and its controlling techniques, Database backup and recovery and security.
BCA 110	Environment Studies	<p>CO1: Gain in-depth knowledge on natural processes and resources that sustain life and govern the economy.</p> <p>CO2: Understand the consequences of human actions on the web of life, global economy, and quality of human life.</p> <p>CO3: Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.</p> <p>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.</p> <p>CO5: Adopt sustainability as a practice in life, society, and industry.</p>

BCA 201	Computer Networks	CO1: Utilising the fundamentals of data communication and networking
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		<p>to identify the topologies and connecting devices of networks.</p> <p>CO2: Different types of media, multiplexing, switched Networks, TCP/IP Suite, Understand and describe the layered protocol model (OSI and TCP/IP model)</p> <p>CO3: Categories and topologies of networks (LAN and WAN) TCP/IP and protocol Suites. Channel error detection and correction, MAC protocols, Ethernet and WLAN.</p> <p>CO4: Details of IP operations in the Internet and associated routing principles. Evaluate and implement routing algorithms and multicasting.</p> <p>CO5: Have clear tweeting of the basic concepts of data communications including the key aspects of networking and their interrelationship, packet switching, circuit Switching.</p> <p>CO6: Evaluate the protocols and Principles in computer networking . Understand the concept of reliable and unreliable transfer protocol of data and how TCP and UDP implement these concepts.</p>
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BCA 203	Computer Organization and Architecture	<p>CO1: Able to understand the fundamentals of digital principles and able to design digital circuits by simplifying the Boolean functions.</p> <p>CO2: Implement the combinational and sequential circuits for the given specifications. Paraphrase the concept of flip-flops and apply them in the design of sequential circuits.</p> <p>CO3: Able to trace the execution sequence of an instruction through the processor. Acquire knowledge about multiprocessor organization and parallel processing also can understand mapping between virtual and physical memory.</p> <p>CO4: Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.</p> <p>CO5: Demonstrate the ability to classify the addressing modes, instructions set and design programs</p>
BCA 205	Object Oriented Programming with C++	CO1: Understand the features of C++ supporting object oriented programming

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		<p>CO2: Understand the relative merits of C++ as an object oriented programming language.</p> <p>CO3: Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.</p> <p>CO4: Understand features of C++ specifically stream I/O, templates and operator overloading.</p> <p>CO5: Improve problem solving skills.</p>
BCA-207	Human Values and Ethics	<p>CO1: Identify and evaluate personal ethical values and their implications in various social situations</p> <p>CO2: Recognize the multiple ethical interests at stake in a real-world situation</p> <p>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</p>

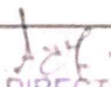
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		<p>CO4: Instill Moral and Social Values and Loyalty and appreciate the rights of others</p> <p>CO5: Comprehend the concept of harmony at all the levels of society and readiness to contribute towards harmony at all levels.</p>
BCAT 211T	Basics of Python Programming	<p>CO1: Demonstrate knowledge of basic programming constructs in python.</p> <p>CO2: Illustrates string handling methods and user-defined functions in python</p> <p>CO3: Applying data structures primitives like List, Dictionary and tuples.</p> <p>CO4: Identify the commonly used operations involved in file handling.</p> <p>CO5: To understand how python can be used for application development</p>
BCAT 213	Cyber Security	<p>CO1: Define the basic concept of Cyber Security, Cybercrime and Cybercriminals. Identify and understand about Cyber Threats.</p> <p>CO2: Describe briefly types of criminal attack and classification of Cybercrimes. Describe Steganography.</p>

  
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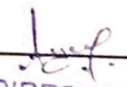
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		<p>CO3: Identify and apply the Cybercrime Tools and Methods. Identify and apply the underlying concepts of Symmetric- key and Asymmetric-key Cryptography along with Digital Signature.</p> <p>CO4: Implement security for HTTP applications, Emails. Apply Firewall in your system.</p> <p>CO5: Implement, evaluate Keyloggers. Implement and evaluate different cyber security algorithms with the help of a program.</p> <p>CO6: Design and create security mechanisms to protect computer systems.</p>
BCA 221	Principles of Management & Organizational Behaviour	<p>CO1: Develop basic knowledge about management, management process, managerial roles, skills and functions and management theories.</p> <p>CO2: To give knowledge about the planning and decision making process. To describe staffing and directing.</p>

  
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		<p>CO3: To learn about motivation theories and Leadership styles. To discuss about the Organizational behavior and its application</p> <p>CO4: To give basic knowledge about people management, their personality and perception. To describe the Organizational culture and its effects.</p>
BCA 239	Cyber Ethics	<p>CO1: Define cyber ethics and recognize cyber ethic issues</p> <p>CO2: Identify how security issues in cyberspace raise ethical concerns.</p> <p>CO3: Recognize various types of cybercrime and its impact</p> <p>CO4: Discuss ethical issues associated with the use of social networks and social media</p> <p>CO5: Survey recent whistle-blowing cases focusing on associated ethical issues</p>
BCA 208	Software Engineering	<p>CO1: To evaluate languages to code front end and back end of a software</p>

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		<p>CO2: Instantiating into the process of designing, coding and testing a software module.</p> <p>CO3: Organizing a software product along with its complete documentation.</p> <p>CO4: Implementing Software Development Cycle to develop a software module.</p> <p>CO5: To analyze the use of techniques, skills and modern engineering tools necessary for software development.</p> <p>CO6: Organizing a complete software module</p>
BCA 202	Java Programming	<p>CO1: Illustrate the Object-Oriented paradigm and Java language constructs.</p> <p>CO2: To inculcate concepts of inheritance to create new classes from existing ones and design the Classes needed given a problem specification.</p> <p>CO3: To familiarize the concepts of packages and interfaces.</p>

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		<p>CO4: To facilitate students in handling exceptions and defining their own exceptions.</p> <p>CO5: To manage input output using console and file.</p> <p>CO6: To apply the Java Thread model to develop multithreading applications.</p> <p>CO7: To understand and apply the concepts of GUI programming using swings.</p> <p>CO8: Solve problems by connecting java program with any RDBMS and perform insert, update, delete and select operations.</p>
BCA 206	<p><b>Introduction to management and Entrepreneurship development</b></p>	<p>CO1: To evaluate languages to code front end and back end of a software</p> <p>CO2: Instantiating into the process of designing, coding and testing a software module.</p> <p>CO3: Organizing a software product along with its complete documentation.</p> <p>CO4: Implementing Software Development Cycle to develop a software module.</p> <p>CO5: To analyze the use of techniques, skills and modern engineering tools necessary for software development.</p> <p>CO6: Organizing a complete software module</p>

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BCAT 216	Network Security	<p>CO1: Define and explain the issues and basic concepts of Network Security. To understand how to draw a network model</p> <p>CO2: To Explain, understand and summarize the concepts, types, and features of Firewall.</p> <p>CO3: Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty. Explain and implement working of authentication, authorization, Packet security, IP Security, Firewall by using some suitable examples</p> <p>CO4: Classify and organize the architecture of network security management.</p> <p>CO5: Evaluate different Network Security algorithms with the help of program</p> <p>CO6: Design and create a network security architecture for an organization.</p>
BCAT 214	Introduction to Artificial Intelligence	<p>CO1: To understand elements constituting problems and learn to solve it by various uninformed and informed (heuristics based)</p> <p>CO2: To understand formal methods for representing the knowledge and the</p>

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		<p>process of inference to derive new representations of the knowledge.</p> <p>CO3: Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty.</p> <p>CO4: Apply some mechanisms to create and improve AI system.</p>
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## Course Outcomes (COs) of BCA 5th Semester

Paper Code	Paper Name	COs
BCA 301	Operating System	<p>CO1: To understand basic knowledge of an operating system and its functionalities.</p> <p>CO2: To understand the services provided by an operating system.</p> <p>CO3: Analyze the performance of various CPU scheduling algorithms</p> <p>CO4: To understand the difference between process and thread, issues of scheduling of Processes and threads.</p> <p>CO5: To understand the use of locks and semaphores for synchronizing process and threads.</p>

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		<p>CO6: To understand the concept of deadlock and how to implement them in a Multiprogramming environment.</p> <p>CO7: To understand the concept of memory management and file system.</p> <p>CO8: To understand the types of I/O management, disk scheduling, protection and security problems faced by operating systems and how to minimise these problems.</p>
BCA 303	Computer Graphics	<p>CO1: Critical understanding of the theory of 2D and 3D transformations, projection and viewing.</p> <p>CO2: Understanding of how to project figures on screen with the help of coding.</p> <p>CO3: Understanding graphical curves and clipping.</p> <p>CO4: Detailed knowledge of the graphics pipeline</p> <p>CO5: Detailed knowledge of shading and texture mapping algorithms</p> <p>CO6: Broad knowledge of 3D modeling and rendering techniques</p> <p>CO7: Ability to understand, design and implement scene graphs</p>

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BCA 305	E-Commerce	<p>CO1: Make students familiarized with technologies for Ecommerce. Make them understand the provision of Selling and marketing on web.</p> <p>CO2: Acquaint the different ways of Online Payment systems.</p> <p>CO3: Familiarize them with the concept of E-business and E-business Revenue generation Models.</p> <p>CO4: Understand various E-business Strategies.</p> <p>CO5: Familiarize them with Threats, Security concerns and Security Measures</p> <p>CO6: Cyber Securities – Cryptography, SSL, HTTPS, etc.</p> <p>CO7: Explore technical and legal issues in E-Commerce</p>
BCA 311	ADVANCED COMPUTER NETWORK	<p>CO1: Students will develop background knowledge as well as core expertise in networking technologies, which is one of the fastest growing industries is in today's</p>

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		<p>world as building network, Ethernet &amp; MAC, bridging, Switching etc.</p> <p>CO2: The students will be exposed to different types of media, multiplexing, switched Networks, the Internet, Global internet, Multicast, MPLS.</p> <p>CO3: Categories and topologies of networks (LAN and WAN) TCP/IP and protocol Suites. Channel error detection and correction, MAC protocols, Ethernet and WLA.</p> <p>CO4: Details of congestion control and congestion avoidance mechanisms. Describe the concept of Multimedia Networking.</p> <p>CO5: Details of Network security, Cryptographic building blocks, Symmetric Key Encryption. The key aspects of networking and their interrelationship, packet switching, circuit Switching and cell switching as internal and external operations.</p>
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		CO6: Summarize the role of Public Key Encryption, authentication protocols, PGP, TLS, SSL, Firewalls, Intrusion Detection digital communications devices in data communications.
BCA 313	Web Based Programming (PHP)	CO1: Design and implement a basic website. CO2: Implement different navigation strategies CO3: Develop simple back-end database and connectivity to support a website. CO4: Sending query to database, parsing of the query results, checking data errors. CO5: Files operations on the server. CO6: Recognize and evaluate website organisational structure and design elements.

Course Outcomes (COs) of BCA 6th Semester

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Paper Code	Paper Name	CO's
BCA-302	DATA WARE HOUSING & DATA MINING	<p>CO1: Understand the various component of Data warehouse</p> <p>CO2: Appreciate the strengths and limitations of various data mining and data warehousing models</p> <p>CO3: Critically evaluate data quality to advocate application of data pre-processing techniques.</p> <p>CO4: Describe different methodologies used in data mining and data ware housing.</p> <p>CO5: Design a data mart or data warehouse for any organisation</p> <p>CO6. Test real data sets using popular data mining tools such as WEKA</p>
BCA 304	MOBILE COMPUTING	<p>CO1: Mobile computing is subject of Mobile &amp; wireless communication as well as mobile devices uses &amp; applications.</p> <p>CO2: The Program outcome of this course is to describe uses &amp; functions of mobile computing</p>

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devices as well as applications of these devices in daily life.

CO3: Concept of Multicasting. Applications & descriptions of Spread spectrum.

Concept of Multiplexing & DE multiplexing.

CO4: Descriptions of near/far & hidden exposed terminal. Uses & applications of Aloha. Applications of GSM: Mobile services, System architecture

CO5: Satellite systems: History, Applications, And Basics: GEO, LEO, MEO, Routing, Localization, And Handover.

CO6: Uses & Applications of Mobile Internet & related concepts. Concepts of implementing WAP services. The uses & applications of wireless application Protocol. The uses & applications of wireless markup language.

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BCA-306	LINUX ENVIRONMENT	<p>CO1: Able to interpret the Linux and UNIX operating system capabilities, features and functionality.</p> <p>CO2: Learn about Basic commands to get help and start with the LINUX using operating and manipulation commands.</p> <p>CO3: Interpreting the application of Input and output in Linux and Redirection using pipes.</p> <p>CO4: Linux file security using permission granting and changing the permissions and concepts of Masking and unmasking.</p> <p>CO5: Vi editor basics, Inodes, archiving and links.</p> <p>CO6: Enhancing Programming through shell scripting. Correlating the Concept of Environment variables, basic commands like tail,wc, etc. Usage of awk, sed and grep commands.</p> <p>CO7: Implementation of Process related commands and examine the Linux kernel in detail.</p>
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*J. S.*  
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