



P.P.N. (P.G.) College, Kanpur

96@12 Mahatma Gandhi Marg, Kanpur -208001

• Telefax: (0512)2361924 • Website: www.ppncollege.org

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B.C.A.

COURSE OUTCOMES (COs)

Course Code	Course Name	L	T	P	C
BCA-1001	Computer Fundamental & Problem solving techniques	3	0	0	3
CO1	Describe the usage of computers and why computers are essential components in business and society.				
CO2	Understanding the concept of Computer memory and input/output devices of Computers and how it works and recognize the basic terminology used in computer programming.				
CO3	Demonstrate the use of Operating system commands. Understand the basic concepts of computational thinking, including sequential logic, abstractions and problem-solving techniques.				
CO4	Possess the ability to design and develop programs to solve basic computational problems, develop algorithms and flowcharts. Explain the working of important application software and their use to perform any engineering activity.				
CO5	Possess the ability to extend their knowledge towards learning behavior on windows operating system and Hands on training on MS Office Automation.				
Course Code	Course Name	L	T	P	C
BCA-1002	C Programming	3	0	0	4
COs	Description				
CO1	Able to understand the basic knowledge of Computer fundamental and its application in computers.				
CO2	Able to understand the basic knowledge of Computer fundamental and its application in computers.				
CO3	Able to design and develop various programming problems using C programming concepts.				
CO4	Able to Implement advance C programming concepts like function, pointer, structure and Union				
CO5	Able to understand the file handling using C Programming language.				
Course Code	Course Name	L	T	P	C
BCA-1003	Principle of Management	4	0	0	4
CO1	Understand the concepts related to business.				
CO2	Define Management and Demonstrate the roles, skills and Levels of management.				
CO3	Describe major management theories, Business ethics and social responsibility in the context of management.				
CO4	To analyze and discuss planning, Organizing, controlling, decision making, motivation, leadership, Management of change				
CO5	Develop theoretical and critical thinking skills relevant to both academic and management practices.				

FIRST YEAR

SEMESTER - I

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FIRST YEAR	SEMESTER - I	Course Code	Course Name	L	T	P	C
		BCA-1004	Business Communication	3	1	0	4
		CO1	To participate in an online learning environment successfully.				
		CO2	To distinguish among various levels of organizational communication and communication barriers while developing an understanding of Communication as a process in an organization.				
		CO3	To draft effective business correspondence with brevity and clarity.				
		CO4	To stimulate their Critical thinking by designing and developing clean and lucid writing skills.				
		CO5	To demonstrate their verbal and non-verbal communication ability through presentations.				
		Course Code	Course Name	L	T	P	C
		BCA-1005	Mathematics -I	4	0	0	4
		CO1	Find out matrix representation of any data.				
		CO2	Apply the concepts of limit, continuity and differentiability in different science fields.				
		CO3	Apply Taylors and Maclaurin's theorem to find the expansion of functions as infinite series.				
		CO4	Evaluate the integrals of complex functions and to find area, volume.				
		CO5	Apply the concept of vector algebra, scalar triple product, vector triple product.				
		CO1	Find out matrix representation of any data.				

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FIRST YEAR	SEMESTER-II	Course Code	Course Name	L	T	P	C
		BCA-2004	Financial Accounting & Management	4	0	0	4
	CO 1	Prepare consolidated financial statements using international accounting standards.					
	CO 2	Manage the financial operations including revenues, expenses, assets, liabilities and capital and calculate the various ratios through financial statements and its impact on the short and long term position of the firm.					
	CO 3	Determine the long term sources of finance to fulfill the long term finance needs of organization.					
	CO 4	Demonstrate the applicability of the concept of Financial Management to understand Capitalization and Capital Structure, break-even point, fixed and variable costs and all the costs incurred in conducting the business.					
	CO 5	Evaluate and determine the organization's motives for holding cash, Cash budget, Managing Inventory and Receivables.					
		Course Code	Course Name	L	T	P	C
		BCA-2005	Mathematics-II	4	0	0	4
	CO1	Ability to learn the basic concepts about relations, functions and to draw different diagrams like Lattice, Hasse diagrams.					
	CO2	Ability to learn the basic concepts about relations, functions					
	CO3	To draw different diagrams like Lattice, Hasse diagrams.					
	CO4	Identify the application of partial differentiation and apply for evaluating maxima, minima					
	CO5	Illustrate the working methods of multiple integral and apply for finding area, volume					

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FIRST YEAR	SEMESTER-II	Course Code Course Name	L	T	P	C	
		BCA-2001 Object Oriented Programming Using C++	3	0	0	3	
		CO1	Identify classes, objects, members of a class and relationships among them needed for a specific problem				
		CO2	Implement C++ application programs using OOP principles and proper program structuring.				
		CO3	Demonstrate the concepts of polymorphism, inheritance using C++ programming.				
		CO4	Using Generic function Template function to build generic programs.				
		CO5	Using Files Streams and Exception Handling to handle streams and exceptions.				
		Course Code Course Name	L	T	P	C	
		BCA-2002 Internet Technology and Web Design	3	1	0	4	
		CO1	Analyze a web page and identify its elements and attributes.				
		CO2	Create web pages using XHTML and Cascading Style Sheets				
		CO3	Build dynamic web pages using JavaScript (Client side programming)				
		CO4	Create XML documents and Schemas.				
		Course Code Course Name	L	T	P	C	
		BCA-2003 Organization Behavior	4	0	0	4	
		CO 1	Describe conceptual inputs to manage behavior in organizations and assess the basic design elements of organizational structure and evaluate their impact on employees.				
		CO 2	Evaluate individual human behavior in the workplace as influenced by personality, values, perceptions, and motivation.				
		CO 3	Analyze the behavior of individuals and groups in organizations in terms of the key factors that influence organizational behavior.				
CO 4	Examine the cause of stress and analyze the effect of stress on individual, group and organization level.						
CO 5	Examine the causes, outcomes and the different ways of managing individual, interpersonal and Group behavior in the context of Organizational set up.						

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SEMESTER - III	COURSE CODE	COURSE NAME	L	T	P	C
SECOND YEAR	BCA-3001	Python Programming	3	0	0	3
	CO 1	Understand the structure, syntax, and semantics of the Python language.				
	CO 2	Solve real world problems by applying the Python Data Structures, Objects, Functions and Modules.				
	CO 3	Apply the fundamental principles of Object Oriented Programming.				
	CO 4	Apply the basics of data science using advanced Python libraries.				
	CO 5	Build practical applications in Python.				
	BCA-3002	Data Structure Using C & C++	3	0	0	3
	CO 1	Understand the structure, syntax, and semantics of the Python language.				
	CO 2	Solve real world problems by applying the Python Data Structures, Objects, Functions and Modules.				
	CO 3	Apply the fundamental principles of Object Oriented Programming.				
	CO 4	Apply the basics of data science using advanced Python libraries.				
	CO 5	Build practical applications in Python.				
	BCA-3003	Operating System	3	1	0	4
	CO1	Understand the basics of operating systems like kernel, shell, types and views of operating systems.				
	CO2	Describe the various CPU scheduling algorithms and remove deadlocks.				
	CO3	Explain various memory management techniques and concept of thrashing				
	CO4	Use disk management and disk scheduling algorithms for better utilization of external memory.				
	CO5	Recognize file system interface, protection and security mechanisms.				
	CO6	Explain the various features of distributed OS like Unix, Linux, windows etc				
	BCA-3004	Digital Electronics & Computer Organization	3	1	0	4
	CO1	An ability to understand theory of Digital Design and Computer Organization to provide an insight of how basic computer components are specified.				
	CO2	An ability to understand the functions of various hardware components and their building blocks				
	CO3	An ability to understand and appreciate Boolean algebraic expressions to digital design				
	CO4	An in depth understanding of sequential Combinational circuits				
	CO5	An in depth understanding of realization of different combinational/sequential circuits				
BCA-3005	Elements of Statistics	3	1	0	4	
CO1	Organize, manage and present data.					
CO2	Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.					
CO3	Analyze statistical data using measures of central tendency, dispersion and location.					
CO4	Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.					
CO5	Translate real-world problems into probability models.					

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SECOND YEAR	SEMESTER-IV	<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-4001</td> <td>Computer Graphics and Animation</td> <td>3</td> <td>0</td> <td>0</td> <td>3</td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-4001	Computer Graphics and Animation	3	0	0	3	CO1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
		Course Code	Course Name	L	T	P	C									
		BCA-4001	Computer Graphics and Animation	3	0	0	3									
		CO2	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.													
		CO3	Use of geometric transformations on graphics objects and their application in composite form.													
		CO4	Extract scene with different clipping methods and its transformation to graphics display device.													
		CO5	Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.													
		CO6	Render projected objects to naturalize the scene in 2D view and use of illumination models for this.													
		<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-4002</td> <td>Database Management System</td> <td>3</td> <td>0</td> <td>0</td> <td>3</td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-4002	Database Management System	3	0	0	3	CO1	Describe DBMS architecture, physical and logical database designs, database modeling, relational, hierarchical and network models.
	Course Code	Course Name	L	T	P	C										
	BCA-4002	Database Management System	3	0	0	3										
	CO2	Identify basic database storage structures and access techniques such as file organizations, indexing methods including B-tree, and hashing.														
	CO3	Learn and apply Structured query language (SQL) for database definition and database manipulation.														
	CO4	Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.														
	CO5	Understand various transaction processing, concurrency control mechanisms and database protection mechanisms.														
	<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-4003</td> <td>Software Engineering</td> <td>3</td> <td>1</td> <td>0</td> <td>4</td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-4003	Software Engineering	3	1	0	4	CO1	How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.	
	Course Code	Course Name	L	T	P	C										
	BCA-4003	Software Engineering	3	1	0	4										
CO2	An ability to work in one or more significant application domains.															
CO3	Work as an individual and as part of a multidisciplinary team to develop and deliver quality software															
CO4	Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.															
CO5	Demonstrate an ability to use the techniques and tools necessary for engineering practice															
CO6	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.															

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SECOND YEAR	SEMESTER-IV	Course Code	Course Name	L	T	P	C	
		BCA-4004	Optimization Techniques	3	1	0	4	
		CO1	Understand the basic concepts of linear programming, duality and methods for solving linear programming problem.					
		CO2	Understand the mathematical formulation of transportation and assignment problems and solution					
		CO3	Solve simple games using various techniques.					
		CO4	Solve nonlinear unconstrained optimization problems.					
		Course Code	Course Name	T	P	C		
		BCA-4005	Mathematics-III	0	0	4		
		CO1	Find out nth roots of complex numbers					
		CO2	Apply the concepts of vector calculus					
CO3	Find out Directional Derivatives, Divergence and Curl							
CO4	Find out Fourier series of periodic functions							
CO5	To solve various differential equations and to apply these analytical methods in different engineering applications							

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COURSE OUTCOMES (COs)

THIRD YEAR	SEMESTER-V	<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-5001</td> <td>Knowledge Management</td> <td>3</td> <td>1</td> <td>0</td> <td>4</td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-5001	Knowledge Management	3	1	0	4
		Course Code	Course Name	L	T	P	C							
		BCA-5001	Knowledge Management	3	1	0	4							
		CO 1	Introduce students business intelligence and importance and technologies involved in decision support system.											
		CO 2	Characterize expert systems, OLAP & OLTP. Introduction and use of data warehouse and data marts in knowledge management system.											
		CO 3	Apply appropriate tool for data mining and knowledge discovery from databases.											
		CO 4	Describe key components of KM solutions: infrastructure, mechanisms and technologies, systems and processes. Clear understanding of importance of intellectual capital in gaining a competitive advantage of organization											
		<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-5002</td> <td>Java Programming and Dynamic Webpage Design</td> <td>3</td> <td>0</td> <td>0</td> <td>3F</td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-5002	Java Programming and Dynamic Webpage Design	3	0	0	3F
		Course Code	Course Name	L	T	P	C							
		BCA-5002	Java Programming and Dynamic Webpage Design	3	0	0	3F							
		CO1	Use the syntax and semantics of Java programming language and basic concepts of OOPs.											
		CO2	Develop reusable Programs using the concept of Inheritance											
		CO3	Apply the concepts of Multithreading.											
		CO4	Design event driven GUI.											
		CO5	Identify categories of program, systems software and application organize and work with file and folder.											
		<table border="1"> <thead> <tr> <th>Course Code</th> <th>Course Name</th> <th>L</th> <th>T</th> <th>P</th> <th>C</th> </tr> </thead> <tbody> <tr> <td>BCA-5003</td> <td>Computer Network</td> <td>3</td> <td>1</td> <td>0</td> <td></td> </tr> </tbody> </table>	Course Code	Course Name	L	T	P	C	BCA-5003	Computer Network	3	1	0	
		Course Code	Course Name	L	T	P	C							
		BCA-5003	Computer Network	3	1	0								
		CO1	Explain basic concepts, OSI reference model, services and role of each layer of OSI model and TCP/IP, networks devices and transmission media, Analog and digital data transmission											
		CO2	Apply channel allocation, framing, error and flow control techniques.											
CO3	Describe the functions of Network Layer i.e. Logical addressing, subnetting & Routing Mechanism.													
CO4	Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.													
CO5	Explain the functions offered by session and presentation layer and their Implementation.													
CO6	Explain the different protocols used at application layer i.e. HTTP, SNMP, SMTP, FTP, TELNET and VPN.													

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THIRD YEAR	SEMESTER-V	Course Code Course Name		L	T	P	C	
		BCA-5004		3	1	0	4	
		CO1	Apply Numerical Methods to find solution of Algebraic and transcendental equation					
		CO2	Apply Various Interpolation techniques to interpolate the complicated functions for givendata into much simpler once like polynomial					
		CO3	Evaluate numerically differentiation and integration of a tabular function if analytical methods are not given					
		CO4	Solve system of linear equations in large size with the help of different iterative methods					
		Course Code Course Name		L	T	P	C	
		BCA-5005 Minor Project		0	1	2	2	
		Evaluation will be based on Summer Training held after fourth semester and will be Conducted by the college committee only.						
		Course Code Course Name		L	T	P	C	
		BCA-5006 Viva-Voice on Summer Training		0	0	2	1	
		The viva will be conducted based on summer training of four weeks after the end of fourth Semester and will be Conducted by the college committee only.						

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THIRD YEAR	SEMESTER-VI	Course Code Course Name		L	T	P	C	
		BCA-6001 Information & Cyber Security		4	0	0	4	
		CO1	Introduce the cyber world and cyber law in general. To explain about the Information Technology Act 2000					
		CO2	Enhance the understanding of problems arising out of online transactions and provoke them to find solutions.					
		CO3	Introduce the students to various cyber laws and standards.					
		CO4	Introduce the students to various wireless networks and security. To explain about the various facets of cyber crimes and ethical hacking.					
		Course Code Course Name		L	T	P	C	
		BCA-6002 Internet Of Things		3	1	0	4	
		CO 1	Understand the concept of IoT and its significance in the current technological landscape.					
		CO 2	Familiarize with the hardware and software components that comprise an IoT system.					
		CO 3	Get acquainted with various hardware platforms as Raspberry pi, NetArduino etc.					
		CO 4	Explore different communication protocols and networking technologies used in IoT					
		CO 5	Develop skills in programming with Arduinio to create and manage IoT applications.					
		Course Code Course Name		L	T	P	C	
		BCA-6003 E-Commerce		3	1	1	0	
		CO1	Use the Plate-form of E Commerce					
		CO2	Use the porter's Value chain Model					
		CO3	Apply the concept of E Commerce					
CO4	Design and develop of E Commerce							
CO5	Identify the categories of program, system software applications file and folder							

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		BCA-6004	Data Science and Machine Learning	3	1	0	4
		CO1	Introduction to Data Science, Evolution of Data Science, Application of Data Science				
		CO2	Gain knowledge of data collection and pre-processing of data.				
		CO3	Develop an in-depth understanding of popular methods like regression, Skewness and Kurtosis, Introduction to Machines learning from data, Supervised and Unsupervised learning				
		CO4	Learn optimization formulations to minimize errors and build accurate models.				
		Course Code	Course Name	L	T	P	C
		BCA-6005	Major Project	0	3	6	5
		Evaluation will be based on Summer Training held after fourth semester and will be Conducted by the college committee only.					

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