Dayanand College,Hisar

Affiliated to Guru Jambheshwar University of Science & Technology, Hisar
Under DAV College Managing Committee, New Delhi
(Accredited with Grade 'A' by NAAC)

Programme Outcome, Programme Specific Outcome, Course Outcome

DEPARTMENT OF COMPUTER SCIENCE

Programme Outcomes:

The Bachelor of Computer Application (BCA) and Bachelor of Science (Computer Science) is a three year undergraduate degree program that is designed to provide students with a strong foundation in computer science and applications. The program focuses on developing analytical and logical reasoning skills, programming knowledge, database management, web development, software engineering, and system analysis.

The following are some of the program outcomes of a Bachelor of Computer Application Bachelor of Science (Computer Science) degree:

- Knowledge and understanding of the fundamental concepts of computer science and its applications.
- Ability to design, develop, and implement computer-based solutions to real-world problems using programming languages like C, C++, Java, Python, etc.
- Skills in data management, including database design, implementation, and querying using database management systems like Oracle, MySQL, etc.
- Ability to develop web-based applications using technologies like HTML, CSS, JavaScript, PHP, and other web development frameworks.
- Knowledge of software engineering principles and methodologies, including software development life cycle (SDLC), software testing, and quality assurance.
- Understanding of computer networks and their components, including protocols, topologies, and network security.
- Skills in system analysis and design, including the ability to analyze user requirements, design system architecture, and implement solutions that meet business needs.
- Awareness of emerging technologies and their potential impact on computer applications.

Programme Specific Outcomes:

- Equip themselves to potentially rich & employable field ofcomputer applications.
- Pursue higher studies in the area of Computer Science/Applications.
- Take up self-employment in Indian & global software market.
- Meet the requirements of the Industrial standards.

Course Outcomes:
 Our graduates will have:
- The necessary technical, scientific as well as basic managerial and financial procedures toanalyze and solve real world problems within their work domain.
- Clarity on both conceptual and application oriented skills in commerce, Finance &Accounting and IT Applications in Business context.
- Improved communication and business management skills, especially in providing techsupport.
- Awareness on ethics, values, sustainability and creativity aspects.
- The ability and the mindset to continuously update and innovate.

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

Three Year Degree Programme

Semester-1

Course Code	Learning Outcomes
CCsL-104 (Fundamentals of Computer)	**Upon completion of the course, the students will be able to:** • Bridge the fundamental concepts of Computer with the present level of knowledge of students. • Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming. • Familiarize operating systems, programming languages, peripheral devices, networking, multimedia and internet. • Build spreadsheets to perform calculations, display data, conduct analysis, and explore what-if scenarios. • Work with basic features of Word.
CCsL-105 (Programming in ─C)	**Upon completion of the course, the students will be able to:** • Write, compile and debug programs in C language and use different data types for writing the programs. • Design programs connecting decision structures, loops and functions. • Explain the difference between call by value and call by address. • Understand the dynamic behavior of memory by the use of pointers • Explain the commands of File Management in ─C.
CCsP-109 Computer Lab-1(Based on Fundamentals of Computer & Programming in ─C)	**Upon completion of the course, the students will be able to:** • To claim proficiency in word, excel and power point. • Independently create professional-looking documents and presentations. • Demonstrate the use of algorithms and flowcharts to plan the solution of a computing problem. • Explain the use of formatted and unformatted input and output statements in ─C and usage of sequence control statements of ─C'. • Enlist the fundamental data types and data structures of ─C And Explain the usage of arrays and pointers in ─C. • Differentiate between a structure and a union.

Semester-2

Course code	Learning Outcomes
CCsL-204 (Data structures using _c)	By the end of the course a student is expected to have the: • Ability to analyze algorithms and algorithm correctness. • Ability to analyze the time and space complexity of algorithms. • Ability to summarize searching and sorting techniques theoretically and practically using **C** programming language. • Ability to describe stack, queue and linked list operation and their practical using C language. • Ability to have knowledge of tree and graphs concepts & their implementation using C language. • Ability to write program and step by step approach to solve problems with the help of fundamental data structures using C language.
CCsL-205 (Computer Organization)	By the end of the course a student is expected to be able: • To understand the organization of a Computer system. • To solve basic binary math operations using the computer. • To demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target computer. • To apply knowledge of the processor's internal registers. • To apply the knowledge of combinational and sequential logical circuits to design computer architecture. • To understand the input / output and Memory related concepts.
CCsP-209 Computer lab II (Based on data structures using c)	By the end of the course a student is expected to be able: • To write code for a given problem in C language. • To present results in an informative way. • To write efficient, well-documented C code and present numerical results in an informative way.

Semester-3

Course Code	Learning Outcomes:
CCsL-304 (Database Management System)	By the end of the course the student will be able to : • Understand storage media and their basic properties. • Understand how data is stored using storage media in a **DBMS**. • Understand how different indexing techniques work. • Understand why and how data needs to be indexed.
CCsL-305 (Operating System)	By the end of the course the student will be able to : • Describe and explain the fundamental componentsof a computer operating system. • Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. • Design and construct the following OS components:System calls, Schedulers, Memory management • systems, Virtual Memory and Paging systems
CCsP-309 (Computer Lab-III(DBMS Lab)	By the end of the course the student will be able to : • Create Database and store information. • Create , update, view and delete table in database, • Learn SQL queries to maintain and access Database.

Semester-4

Course Code	Learning Outcomes:
CCsL-404 (Software Engineering)	By the end of the course the student will be able to : • Define various software application domains and remember different process model used in software development. • Describe key activities in software development and the role of modelling • Explain key concepts in software development such as riskand quality • Explain the basics of an object-oriented approach to software development • Describe a simple workflow for interacting with the published literature on software development.
CCsL-405 (Computer Networks)	By the end of the course the student will be able to : • Describe the functions of each layer in OSI and TCP/IPmodel. • Explain the functions of Application layer and Presentationlayer paradigms and Protocols. • Describe the Session layer design issues and Transport layer services. • Classify the routing protocols and analyze how to assignthe IP addresses for the given network. • Understand network security and define various protocolssuch as FTP, HTTP, Telnet, DNS
CCsP-409 (Computer Networks Lab)	By the end of the course the student will be able to : • Identify and use various networking components Understand different transmission media and design cables for establishing a network. • Implement any topology using network devices. • Understand the TCP/IP configuration for Windows and Linux. • Implement device sharing on network e) Learn the major software and hardware technologies used on computer networks

Semester-5

Course Code	Learning Outcomes
CCsL-503 (Object Oriented Programming using C++)	By the end of the course the student will be able to: • Understand the difference between the top-down and bottom-up approach. • Describe the object-oriented programming approach in connection with C++. • Apply the concepts of object-oriented programming • Illustrate the process of data file manipulations using C++. • Apply virtual and pure virtual function & complex programming situations.
CCsL-504 (Data Analytics)	By the end of the course the student will be able to: • Obtain, clean/process, and transform data • Analyze and interpret data using an ethically responsible approach • Use appropriate models of analysis, assess the quality of input, derive insight from results, and investigate potential issues • Apply computing theory, languages, and algorithms, as well as mathematical and statistical models, and the principles of optimization to appropriately formulate and use data analyses • Formulate and use appropriate models of data analysis to solve hidden solutions to business-related challenges
CCsP-509 (Computer Lab-V(Object Oriented Programming using C++ Lab))	By the end of the course the student will be able to • Creating simple programs using classes and objects in C++. • Implement Object Oriented Programming Concepts in C++. • Develop applications using stream I/O and file I/O. • Implement simple graphical user interfaces.. • Implement Object Oriented Programs using templates and exceptional handling concepts.

Semester-6

Course Code	Learning Outcomes
CCsL-603 (Computer Graphics)	By the end of the course the student will be able to : • Explain the core concepts of computer graphics, including viewing, projection, perspective, modeling and transformation in two and three dimensions. • Apply the concepts of color models, lighting and shading models, textures, ray tracing, hidden surface elimination, anti-aliasing, and rendering. • Interpret the mathematical foundation of the concepts of computer graphics. • Describe the fundamentals of animation, parametric curves and surfaces, and spotlighting. • Identify a typical graphics pipeline and apply graphics programming techniques to design and create computer graphics.
CCsL-604 (Python Programming)	By the end of the course the student will be able to : • To understand why Python is a useful scripting language for developers. • To learn how to design and program Python applications. • To learn how to use lists, tuples, and dictionaries in Python programs. • To learn how to identify Python object types.
CCsP-609 (Computer Lab-VI Computer Graphics Lab)	By the end of the course the student will be able to : • Understand the need of developing graphics application. • Learn algorithmic development of graphics primitives like: line, circle, polygon etc. • Learn the representation and transformation of graphical images and pictures.

BACHELOR OF COMPUTER APPLICATIONS (BCA)

Three Year Degree Programme

Semenster-1

Course Code	Learning Outcomes
BCA-PC(L)-111 (Environmental Studies)	By the end of the course the student will be able to • Create awareness about environmental problems among people. • Imparting basic knowledge about the environment and its allied problems. • Develop an attitude of concern for the environment. • Motivate public to participate in environment protection and environment improvement. • Create Awareness about environmental social issues like global warming, ozone layer depletion and pollution.
BCA-PC(L)-112 (Mathematical Foundation)	By the end of the course the student will be able to • Dealing with set, relation, permutation and combination • Basic Knowledge about functions and continuity of functions • Do derivative of any function and their higher order derivatives • Get knowledge about differential equations and their solutions. • Get an idea about application of differential equations.
BCA-PC(L)-113 (Computer and Programming Fundamentals)	By the end of the course the student will be able to • Understand computer basics. • Understand programming basics. • Understand binary number system. • Begin using the Java programming language. • Display output on the console. • Explain the differences between syntax errors, runtime errors, and logic errors.

	By the end of the course the student will be able to
BCA-PC(L)-114 (PC Software)	- Demonstrated a basic understanding of computer hardware and software. - Demonstrate basic level of competency in programming and logic skills. - Utilize web technologies. - Present conclusions effectively, orally and in writing. - Use productivity software effectively (spreadsheets, database software, and project management software). - Identify an area of interest through the selection of elective courses. - Apply the skills that are the focus of this program to business scenarios.
BCA-PC(L)-115 (Problem Solving Through C)	By the end of the course the student will be able to - Write efficient algorithms to solve various problems - Understand and use various constructs of the programming language such as conditionals, iteration, and recursion - Use data structures like arrays, linked lists, and stacks to solve various problems - Understand and use file handling in the C
BCA-PC(L)-116 (Problem Solving Through C Lab)	By the end of the course the student will be able to - Implement your algorithms to build programs in the C programming language. - Use data structures like arrays, linked lists, and stacks to solve various problems. - Understand and use file handling in the C. - Learn Programming skills and can implement in IT sectors. - Understand and use various constructs of the programming language such as conditionals, iteration, and recursion.
BCA-PC(L)-117 (PC Software Lab)	By the end of the course the student will be able to: - To claim proficiency in word, excel and power point. - Independently create professional-looking documents andpresentations.

Semester-2

Course code	Learning outcome
BCA-PC(L)-121 (Communication Skills and Personality Development)	• Students will be able to understand and apply knowledge of human communication and language processes as they occur across various contexts, e.g., interpersonal, intrapersonal, small group, organizational, media, gender, family, intercultural communication, technologically mediated communication, etc. from multiple perspectives. • Effective communication skills strengthen the bond among individuals. It is also said to improve the interpersonal relationships with other people. • Careful selection of words is essential for effective communication skills. You really need to know what you are speaking. You never know what might hurt the other person. Never even think of being rude to anyone.
BCA-PC(L)-122 (Computer Oriented Numerical Methods)	• Students will effectively communicate topics in the mathematical sciences. • Students will be able to formulate, analyze, and solve a wide variety of problems in this. • Students will engage in a lifelong learning process via ability to self-educate. • Students will demonstrate proficiency with the topical content and techniques included in the courses in this.
BCA-PC(L)-123 (Data Structures)	• Students who have successfully completed this course will be able to: Demonstrate strong problem solving skills in constructing complete High Level language programs to tackle exercises inspired by real-world problems. Analyze the performance of algorithms and data structures. • Students will understand the concept of :- a) Dynamic memory management, data types, algorithms, Big O notation. b) Understand basic data structures such as arrays, linked lists, stacks and queues. c) Describe the hash function and concepts of collision and its resolution methods

BCA-PC(L)-124 (Operating System)	• Students have the logical, algorithmic, and mathematical capability to model and analyze real-world problems in different application domains, to devise the problem-solving schemes accordingly, and to validate the correctness and effectiveness of the schemes. • Describe what operating systems are, including what they do, how they do it, and how their performance can be evaluated List and describe core items of operating systems including memory management, networks, processor management, system security, device management, systems management, and file management
BCA-PC(L)-125 (Management Information System)	• Understand the leadership role of MIS in achieving business competitive advantage through informed decision making. • Analyze and synthesize business information and systems to facilitate evaluation of strategic alternatives. • Effectively communicate strategic alternatives to facilitate decision making.
BCA-PC(P)-126 (Data Structure Lab)	• Student will be able to explain implementation and operations of basic data structures: Linked list, Stack, Queue, Tree and Graph. • They will be able to apply programming techniques using Pointer, Dynamic Memory allocation and structures to implement data structures as mentioned above. • Able to design and implement new abstract data using Data Structures with the help of programming implementations. • Able to apply the knowledge of data structure in problem solving.
BCA-PC(P)-127 (Operating System Lab)	Upon the completion of Operating Systems practical course, the student will be able to: • Understand and implement basic services and functionalities of the operating system using system calls. • Use modern operating system calls and synchronization libraries in software/ hardware interfaces.

Semester-3

Course Code	Learning Outcomes
BCA-PC(L)-231 (Object oriented programming using C++)	By the end of the course the student will be able to • Codes basic programs in Java programming language. • Prints to the screen in Java language. • Makes relational operations in Java. • Constructs loops in Java. • Defines arrays in Java and uses them. • Uses objects and **classes**. • Declares objects and **classes**. • Distinguishes **classes** and objects
BCA-PC(L)-232 (Web Designing)	By the end of the course the student will be able to • Develop skills in analyzing the usability of a web site. • Understand how to plan and conduct user research related to web usability. • Learn the language of the web: HTML and CSS. • Learn CSS grid layout and flex box. • Learn techniques of responsive web design, including media queries. • Develop skills in digital imaging (Adobe Photoshop.)
BCA-PC(L)-233 (Digital Electronics)	By the end of the course the student will be able to • Understand the current voltage characteristics of semiconductor devices • Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation • Design and analyze of electronic circuits

BCA-PC(L)-234 (Introduction to Database System)	By the end of the course the student will be able to • Describe the fundamental elements of relational database management systems • Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL. • Design ER-models to represent simple database application scenarios • Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data. • Improve the database design by normalization
BCA-PC(L)-235 (Advanced Data Structures)	By the end of the course the student will be able to • Ability to analyze algorithms and algorithm correctness. • Ability to summarize searching and sorting techniques • Ability to describe stack queue and linked list operation. • Ability to have knowledge of tree and graphs concepts.
BCA-PC(L)-236 (Object oriented programming usingC++ Lab)	By the end of the course the student will be able to • Choose appropriate data structures to represent data items in real world problems. • Analyze the time and space complexities of algorithms • Design programs using a variety of data structures such as stacks, queues, hash tables, binary trees, search trees, heaps, graphs, and B-trees. • Analyze and implement various kinds of searching and sorting techniques.
BCA-PC(L)-237 (Web Designing Lab)	By the end of the course the student will be able to • Analyze a **web** page and identify its elements and attributes. • Create **web** pages using XHTML and Cascading Style Sheets. • Build dynamic **web** pages using JavaScript (Client side programming). Create XML documents and Schemas.

Semester-4

Course Code	Learning Outcomes
BCA-PC(L)-241 (Java Programming)	By the end of the course the student will be able: • To learn why Java is useful for the design of desktop and web applications. • To learn how to implement object-oriented designs with Java. • To identify Java language components and how they work together in applications.
BCA-PC(L)-242 (RDBMS)	By the end of the course the student will be able to understand: • What is a DBMS and what it provides • The difference between different types of query languages • Functional dependencies and their relationship to keys • BCNF and 3NF • How queries are processed, optimized and evaluated in a DBMS
BCA-PC(L)-243 (Computer Architecture)	By the end of the course the student will be able: • To identify the elements of modern instructions sets
	and their impact on processor design. • To explain the function of each element of a memory hierarchy. • To identify and compare different methods for computer I/O. • To state and understand memory hierarchy design, memory access time formula and performance improvement techniques. • To state and compare properties of shared memory and distributed multiprocessor systems and cache coherency protocols.
BCA-PC(L) -244 (Computer Networks)	By the end of the course the student will be able to: • Describe the general principles of data communication. • Describe how computer networks are organized with the concept of layered approach. • Implement a simple LAN with hubs, bridges and switches. • Describe how routing protocols work.

BCA-PC(P)246 (Java Programming Lab)	By the end of the course the student will be able: ▪ To design and program stand-alone Java applications. ▪ To learn how to implement object-oriented designs with Java. ▪ To learn how to extend Java classes with inheritance and dynamic binding.
BCA-PC(P)- 247 (RDBMS)	By the end of the course the student will be able to: ▪ Populate and query a database using SQL DML/DDL commands. ▪ Declare and enforce integrity constraints on a database using a state-of-the-art RDBMS ▪ Program PL/SQL including stored procedures, stored functions, cursors, packages.
Elective -1	
BCA-PE(L)-241 (Advanced Web Designing)	By the end of the course: • Students will be able to write a well formed valid XML document • Students will be able to write a server side java application called JSP to catch form data sent from client and store it on database.
	• Students will be able to write PHP programs.
BCA-PE(L)-242 (Mobile Application & Development)	By the end of the course the student will be able to: • Recognizes the concept of application development for mobile devices. • Recognizes mobile computing platforms and mobile computing • Explains the basic concepts of Android phone features and capabilities. • Explains the relationship between XML and Java for the Android platform. • Recognizes and uses Android Environment Emulator and Application life cycle
BCA-PE(L)-243 (System Administration &Maintenance)	By the end of the course the student will be able to: • Create an installation document and implementation timeline. • Install network cabling and terminating each connection in conjunction with cabling standards. • Implement security policy for computers, users, groups, and authentication

Semester-5

Course Code	Learning Outcomes
BCA-PC(L)-351 (Programming Using Python)	By the end of the course the student will be able: • To understand how to write functions and pass arguments in Python. • To understand how to build and package Python modules for reusability. • To understand how to read and write files in Python. • To understand how to design object-oriented programs with Python classes. • To understand how to use class inheritance in Python for reusability
BCA-PC(L)-352 (Computer Graphics)	By the end of the course the student will be able to: • Explain the core concepts of computer graphics, including viewing, projection, perspective, modelling and transformation in two and three dimensions. • Interpret the mathematical foundation of the concepts of computer graphics. • Identify a typical graphics pipeline and apply graphics. programming techniques to design and create computer graphics.
BCA-PC(L)-353 (Software Engineering)	By the end of the course the student will be able to: • Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. • Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. • Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions. • Acquire and apply new knowledge as needed, using appropriate learning strategies.

BCA-PC(L)-354 (Data Warehousing And Data Mining)	By the end of the course the student will be able to: • Understand Data Warehouse fundamentals, Data mining principles. • Design data warehouse with dimensional modelling and apply OLAP operations. • Identify appropriate data mining algorithms to solve real world problems • Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining. • Describe complex data types with respect to spatial and web mining.
BCA-PC(P)-356 (Python Programming Lab)	By the end of the course the student will be able: • To learn how to design and program Python applications. • To learn how to use lists, tuples, and dictionaries in Python programs. • To understand why Python is a useful scripting language for developers.
BCA-PC(P)-357 (Computer Graphics Lab)	By the end of the course the student will be able to: • Explain the core concepts of computer graphics, including viewing, projection, perspective, modelling and transformation in two and three dimensions. • Interpret the mathematical foundation of the concepts of computer graphics. • Identify a typical graphics pipeline and apply graphics programming techniques to design and create computer graphics.
BCA-PC(P)-358 (Minor Project)	By the end of the course the student will be able to: • Provide job employment. • Strengthening the core skills. • Provide platform to self expression. • Provide competitive advantage.
Elective-2	
BCA-PE(L)-351 (TOC)	By the end of the course the student will be able to: • Helps in writing efficient algorithm. • Helps in designing compilers/interpreters, programming language etc.
BCA-PE(L)-352 (Open source software)	By the end of the course the student will be able to: • Explore the mechanisms by which open-source software development projects operate, from inception through maintenance. • Explore the group dynamics, motivations for participation, software development methodologies, and activities typically inherent in an Open-Source project.

BCA-PE(L)-353 (Cloud Computing)	By the end of the course the student will be able to: • Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc. • Identify problems, and explain, analyze, and evaluate various cloud computing solutions. • Provide the appropriate cloud computing solutions and recommendations according to the applications used.

Semester-6

Course Code	Learning Outcomes
BCA-PC(L)-361 (Internet Technology)	By the end of the course the student will be able : • To determine internet resources accessibility pattern among undergraduate students. • To demonstrate the students perceived benefits from the use of internet resources for academic research and
	learning. • To understand the search engines frequently used by the students for educational inquiry. • To realize the challenges confronting the students regarding the use of the internet for educational research and learning.
BCA-PC(L)-362 (E – Commerce)	By the end of the course the student will be able to: • Define and differentiate various types of Ecommerce. • Describe Hardware and Software Technologies for Ecommerce. • Explain payment systems for E - commerce. • Describe the process of Selling and Marketing on web. • Define and Describe E-business and its Models. • Discuss various E-Business Strategies
BCA-PC(L)-363 (Data Analytics UsingR)	By the end of the course the student will be able to: • Install and use R for simple programming tasks. • Extend the functionality of R by using add-on packages • Extract data from files and other sources and perform various data manipulation tasks on them. • Code statistical functions in R. • Use R Graphics and Tables to visualize results of various statistical operations on data. • Apply the knowledge of R gained to data Analytics for reallife applications.

BCA-PC(L)-364 (AI)	By the end of the course the student will be able to: - Compare AI with human intelligence and traditional information processing and discuss its strengths and limitations as well as its applications to complex and human-centered problems. - Apply the basic principles, models, and algorithms of AI to recognize model and solve problems in the analysis and design of information system. - Analyze the structures and algorithms of a selection of techniques related to searching, reasoning, machine learning, and language processing.
BCA-PC(L)-366 (Major Project Work)	By the end of the course the student will be able to: - Demonstrate a sound technical knowledge of their selected project topic. - Discover potential research areas in the field of IT - Conduct a survey of several available literature in the preferred field of study - Compare and contrast the several existing solutions for research challenge - Demonstrate an ability to work in teams and manage the conduct of the Communicate with engineers and the community at large in written an oral forms. - Demonstrate the knowledge, skills and attitudes of a professional engineer
Elective-3	
BCA-PE(L)-361 (Information and Cyber Security)	By the end of the course the student will be able to: - Design, develop, test and evaluate secure software. - Develop policies and procedures to manage enterprise security risks. - Evaluate and communicate the human role in security systems with an emphasis on ethics, social engineering vulnerabilities and training. - Interpret and forensically investigate security incidents.
BCA-PE(L)-362 (Multimedia)	By the end of the course the student will be able to: - Learn how learning theories influence the development of multimedia product - Develop competencies in designing and creating interactive multimedia applications by explaining how elements of these applications reflect a theory of how learning will occur; - Work with all aspects of text, audio, images and video; - Be able to use various multimedia authoring tools - Be able to design and create interactive multimedia products - Apply contemporary theories of multimedia learning to the development of multimedia products. - Evaluate existing multimedia products that can be used to design instructional and informational material.

	• Analyze instructional and informational media (print materials, audio/visual materials and/or web-based materials, games/simulations, etc.) • Describe the types of media and define multimedia system. • Describe the process of digitizing (quantization) of different analog signals (text, graphics, sound and video). • Use and apply tools for image processing, video, sound and animation. • Apply methodology to develop a multimedia system. • Apply acquired knowledge in the field of multimedia inpractice and independently continue to expand knowledge in this field.
BCA-PE(L)-363 (Software Testing & Quality Assurance)	By the end of the course the student will be able to: • Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs. • Implement various test processes for quality improvement • Design test planning. • Manage the test process • Apply the software testing techniques in commercial environment • Use practical knowledge of a variety of ways to test software and an understanding of some of the tradeoffs between testing techniques.

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