



**LOYOLA COLLEGE OF ARTS AND SCIENCE, METTALA**  
**DEPARTMENT OF COMPUTER APPLICATIONS**

<b>Programme Outcomes (PO) – BCA</b>
<ul style="list-style-type: none"><li>• Scientific aptitude will be developed in students.</li></ul>
<ul style="list-style-type: none"><li>• Students will acquire basic practical skills and technical knowledge along with domain knowledge of different subjects in the Computer Science and Humanities stream.</li></ul>
<ul style="list-style-type: none"><li>• Students will become employable and will be eligible for career opportunities in the education field, industry, or will be able to opt for entrepreneurship.</li></ul>
<ul style="list-style-type: none"><li>• Students will possess basic subject knowledge required for higher studies, professional courses, and applied courses.</li></ul>
<ul style="list-style-type: none"><li>• Students will be aware of and able to develop a solution-oriented approach towards various social and environmental issues.</li></ul>
<ul style="list-style-type: none"><li>• Ability to acquire in-depth knowledge of several branches of Computer Science and allied areas. This programme helps learners build a solid foundation for higher studies in Computer Science and its applications.</li></ul>
<ul style="list-style-type: none"><li>• The skills and knowledge gained lead to proficiency in analytical reasoning, which can be utilized in modelling and solving real-life problems.</li></ul>
<ul style="list-style-type: none"><li>• Utilize computer programming skills to solve theoretical and applied problems through critical understanding, analysis, and synthesis.</li></ul>
<ul style="list-style-type: none"><li>• Ability to recognize patterns and identify essential and relevant aspects of problems.</li></ul>
<ul style="list-style-type: none"><li>• Ability to share ideas and insights while seeking and benefiting from the knowledge and insights of others.</li></ul>
<ul style="list-style-type: none"><li>• Students will be moulded into responsible citizens in a rapidly changing and interdependent society.</li></ul>
<ul style="list-style-type: none"><li>• <b>PO1</b> – Knowledge</li></ul>
<ul style="list-style-type: none"><li>• <b>PO2</b> – Problem Analysis</li></ul>
<ul style="list-style-type: none"><li>• <b>PO3</b> – Design / Development of Solutions</li></ul>
<ul style="list-style-type: none"><li>• <b>PO4</b> – Conduct investigations of complex problems</li></ul>
<ul style="list-style-type: none"><li>• <b>PO5</b> – Modern tool usage</li></ul>
<ul style="list-style-type: none"><li>• <b>PO6</b> – Applying knowledge to society</li></ul>



## Programme Specific Outcomes of B.Sc. Degree Programme in Computer Science

• **PSO1:** Think in a critical and logical manner.

• **PSO2:** Familiarize students with suitable software tools of Computer Science and industrial applications to handle issues and solve problems in mathematics, statistics, and real-time application related sciences.

• **PSO3:** Recognize the need for information and be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.

• **PSO4:** Understand, formulate, and develop programming models using logical approaches to address issues arising in social science, business, and other contexts.

• **PSO5:** Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer Science and Industrial Statistics.

• **PSO6:** Provide students with sufficient knowledge and skills enabling them to undertake further studies in Computer Science, Computer Applications, Information Technology, and allied multidisciplinary areas.

• **PSO7:** Equip students with Computer Science technical ability, problem-solving skills, creative talent, and communication skills necessary for various forms of employment.

• **PSO8:** Develop a range of generic skills useful for employment, internships, and societal activities.

• **PSO9:** Provide adequate exposure to global and local concerns, offering a platform for further exploration into multidimensional aspects of computing sciences.

### Course Outcomes (CO)

S.No	Class	Subject Code	Subject	Course Outcomes
				CO1 Learn the basics of python. Do simple programs on python. Learn how to use an array.
				CO2 Develop program using selection statement. Work with Looping and jump statements. Do programs on Loops and jump statements.



1	I BCA	23UCA01	PYTHON PROGRAMMING	CO3	Concept of function, function arguments. Implementing the concept strings in various application. Significance of Modules. Work with functions. Strings and modules.
				CO4	Work with List, tuples and dictionary. Write program using list, tuples and dictionary
				CO5	Usage of File handlings in python. Concept of reading and writing files. Do programs using files.
2	I BCA	23UCAP01	PYTHON PROGRAMMING LAB	CO1	Demonstrate the understanding of syntax and semantics of PYTHON Coding
				CO2	Identify the problem and solve using PYTHON programming techniques.
				CO3	Identify suitable programming constructs for problem solving.
				CO4	Analyze various concepts of PYTHON language to solve the problem in an efficient way.
				CO5	Develop a PYTHON program for a given problem and test for its correctness.
3	I BCA	23UCAF01	STRUCTURED PROGRAMMING IN C	CO1	Remember the program structure of C with its syntax and semantics
				CO2	Understand the programming principles in C (datatypes, operators, branching and looping, arrays, functions, structures, pointers and files)



				CO3	Apply the programming principles learn in real-time problems
				CO4	Analyze the various methods of solving a problem and choose the best method
				CO5	Code.debug and test the programs with appropriate test cases
				CO1	Understand the concepts of dynamic memory management, data types, algorithms, and Big-O notation.
4	I BCA	23UCA03	DATA STRUCTURES AND ALGORITHMS	CO2	Understand basic data structures such as arrays, linked lists, stacks, and queues.
				CO3	Describe hash functions and the concepts of collision and its resolution methods.
				CO4	Solve problems involving graphs, trees, and heaps.
				CO5	Apply algorithms to solve problems such as sorting, searching, insertion, and deletion of data.
4	II BCA	23UCAP03	DATA STRUCTURES AND ALGORITHMS USING C++ LAB	CO1	Understand the concepts of dynamic memory management, data types, algorithms, and Big-O notation.
				CO2	Understand basic data structures such as arrays, linked lists, stacks, and queues.



				CO3	Describe hash functions and the concepts of collision and its resolution methods.
				CO4	Solve problems involving graphs, trees, and heaps.
				CO5	Apply algorithms to solve problems such as sorting, searching, insertion, and deletion of data.
				CO1	Possess the knowledge on the basics of computers and its components
				CO2	Gain knowledge on Creating Documents, spread sheet and presentation.
5	II BCA	23UCAS07	OFFICE AUTOMATION	CO3	Learn the concepts of Database and implement the Query in Database
				CO4	Demonstrate the understanding of different automation tools.
				CO5	Utilize the automation tools for documentation, calculation and presentation purpose.
6	III BCA	23UCA06	ASP.NET	CO1	Develop working knowledge of C# programming constructs and the .NET Framework
				CO2	To develop a software to solve real-world problems using ASP.NET



				CO3	To Work On Various Controls Files
				CO4	To create a web application using Microsoft ADO.NET.
				CO5	To develop web applications using XML
7	III BCA	23UCAP05	ASP.NET LAB	CO1	To create web applications and implement various controls
				CO2	Create a web pages in Rich control.
				CO3	Develop knowledge about file handling operations
				CO4	Anability to design XML classes
				CO5	To develop as oftware to solvereal-world problems using ASP.NET
8	III BCA	23UCA05	OPERATING SYSTEM	CO1	Define the fundamentals of Operating Systems and identify the concepts related to process, process lifecycle, scheduling algorithms, deadlock, and memory management.
				CO2	Analyze processes using various algorithms and gain exposure to threads and semaphores.
				CO3	Understand deadlock concepts and their impact on the Operating System, including algorithms and



					measures used for deadlock handling and recovery.
				CO4	Gain complete knowledge of scheduling algorithms and their different types used in Operating Systems.
				CO5	Understand memory organization and memory management techniques in Operating Systems.
9	III BCA	23UCAE04	CRYPTOGRAPHY	CO1	Analyze the vulnerabilities in any computing system and design a security solution.
				CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms
				CO3	Apply the different cryptographic operations of publickey cryptography
				CO4	Apply the various Authentication schemes to simulate different applications.
				CO5	Understand various Security practices and System security standards
				CO1	Understand the various concepts of AI Techniques.
				CO2	Understand various Search Algorithm in AI.



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11	III BCA	23UCAE13	ARTIFICIAL INTELLIGENCE	CO3	Understand probabilistic reasoning and models in AI.
				CO4	Understand Markov Decision Process.
				CO5	Understand various type of Reinforcement learning Techniques.
12	I B.Com CA	23UCCEP02	PYTHON PROGRAMMING LAB	CO1	Develop and execute simple Python programs
				CO2	Write simple Python programs using conditionals and looping for solving problems
				CO3	Decompose a Python program into functions
				CO4	Represent compound data using Python lists, tuples, dictionaries etc.
				CO5	Apply concept of structures to write programs
				CO1	Knows the basic concept in HTML. Concept of resources in HTML
				CO2	Knows Design concept. Concept of Meta Data Understand the concept of save the files.
13	I B.A. ENG I BBA I B.Com CA	23UCAN02	INTRODUCTION TO HTML	CO3	Understand the page formatting. Concept of list
				CO4	Creating Links. Know the concept of creating link to email address
				CO5	Concept of adding images. Understand the table creation





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### Course Outcomes (CO)

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				CO1	Remember the program structure of C++ with its syntax and semantics.
				CO2	Understand the programming principles in C++ (data types, operators, branching and looping, arrays, functions, structures, pointers, and files).



1	I BCA	23UCA02	OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++	CO3	Apply the programming principles learned to real-time problems.
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OBJECT ORIENTED

S.No	Class	Subject Code	Subject	Course Outcomes	
1	I BCA	23UCA02	PROGRAMMING CONCEPTS USING C++	CO4	Analyze various methods of solving a problem and choose the most efficient one.
				CO5	Code, debug, and test programs with appropriate test cases.
2	I BCA	23UCAP02	C++ PROGRAMMING LAB	CO1	Remember the program structure of C++ with its syntax and semantics.
				CO2	Understand the programming principles in C++ (data types, operators, branching and looping, arrays, functions, structures, pointers, and files).
				CO3	Apply the programming principles learned to real-time problems.
				CO4	Analyze various methods of solving a problem and choose the most efficient one.
				CO5	Code, debug, and test programs with appropriate test cases.
				CO1	Learn the fundamentals of computers, understand their structure and functioning, and apply this knowledge



					effectively.
				CO2	Understand the organizational structure of computer devices and their input/output operations.
3	I BCA	23UCAS01	FUNDAMENTALS OF INFORMATION TECHNOLOGY	CO3	Understand data storage concepts using RAM and ROM. and differentiate between various types of storage devices.
				CO4	Work with different software applications and understand their usage and functionalities.
				CO5	Understand the role and functionality of operating systems as an interface between hardware and software.
4	II BCA	23UCA04	PROGRAMMING IN JAVA	CO1	Understand the basic object-oriented concepts and implement Core Java constructs.
				CO2	Implement inheritance, packages, interfaces, and exception handling in Java programs.
				CO3	Apply multithreading and I/O stream concepts in Java applications.
				CO4	Design and implement GUI programs using AWT and event handling mechanisms.
				CO5	Develop interactive graphical applications using Swing components.



5	II BCA	23UCAP04	PROGRAMMING IN JAVA LAB	CO1	Understand basic object-oriented concepts and implement core Java constructs.
				CO2	Implement inheritance, packages, interfaces, and exception handling in Java programs.
				CO3	Apply multithreading and I/O stream concepts effectively in programs.
				CO4	Develop GUI applications using AWT and event handling.
				CO5	Create advanced graphical applications using Swing components.



S.No	Class	Subject Code	Subject	Course Outcomes	
6	II BCA	23UCASE05	SOFTWARE TESTING	CO1	Apply software testing knowledge and engineering methods effectively.
				CO2	Identify the needs of software test automation and define or develop test tools to support automation.
				CO3	Understand and identify various software testing problems and solve them by designing or selecting appropriate test models, criteria, strategies, and methods.
				CO4	Gain a clear understanding of contemporary issues in software testing, including component-based testing problems.
				CO5	Use software testing methods and modern software testing tools for practical testing projects.
7	III BCA	23UCA07	DATA ANALYTICS USING R PROGRAMMING	CO1	Work with big data tools and its analysis techniques.
				CO2	Analyze data by utilizing clustering and classification algorithms.
				CO3	Learn and apply different mining algorithm and recommendation systems for large volumes of data.
				CO4	Perform analytics on data streams.
				CO5	Learn No SQL databases and management.
				CO1	Acquire programming skills in core RProgramming

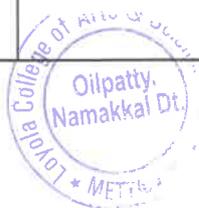


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8	III BCA	23UCAP06	R PROGRAMMING LAB	CO2	Acquire Object-oriented programming skills in R Programming.
				CO3	Develop the skill of designing graphical-user interfaces(GUI) in R Programming
				CO4	Acquire R Programming skills to move into specific branches
				CO5	Acquire R Programming skills to move into real time applications
9	III BCA	23UCA08	COMPUTER NETWORKS	CO1	To Understand the basics of Computer Network architecture, OSI and TCP/I Preference mode
				CO2	To gain knowledge on Telephone systems using wireless network
				CO3	To understand the concept of MAC
				CO4	To analyze the characteristics of Routing and Congestion control algorithms
				CO5	To understand network security and define various protocols such as FTP, HTTP, Telnet, DNS
				CO1	Understand the basic concepts of database systems, differentiate between file systems and DBMS, and compare various data models.
				CO2	Define integrity constraints and understand the fundamentals of the Relational Data Model and Entity-Relationship Model.



## 9 III BCA 23UCAE05 DBMS

S.No	Class	Subject Code	Subject	Course Outcomes	
9	III BCA	23UCAE05	DBMS	CO3	Design database schemas with proper normalization and relationships. construct databases using SQL. and demonstrate skills in managing and retrieving data using DML commands.
				CO4	Classify different SQL functions and join operations. and enhance knowledge of handling multiple tables efficiently.
				CO5	Design and implement database operations using PL/SQL programs. including cursors and exception handling.
10	III BCA	23UCAE07	INTERNET OF THINGS	CO1	Work with big data tools and analysis techniques.
				CO2	Analyze data using clustering and classification algorithms.
				CO3	Apply various data mining algorithms and recommendation systems for large scale data.
				CO4	Perform analytics on real-time data streams.
				CO5	Learn and manage NoSQL databases for IoT data management.
					Work with big data tools and its analysis techniques.
					Analyze data by utilizing clustering and classification algorithms.
11	III BCA	23UCAS05	ADVANCED EXCEL		Learn and apply different mining algorithms and recommendation systems for large volumes of data Perform analytics on data streams.
					Learn No-SQL databases and management.
12	I B.Com CA	23UCASN01	OFFICE AUTOMATION	CO1	Understand the basics of computer systems and its components.



				CO2	Understand and apply the basic concepts of a word processing package
				CO3	Understand and apply the basic concepts of electronic spreadsheet software.
				CO4	Understand and apply the basic concepts of database management system.
				CO5	Understand and create a presentation using PowerPoint tool
				CO1	Learn the fundamentals of computers. understand their structure and functioning, and apply this knowledge effectively.
				CO2	Understand the organizational structure of computer devices and their input/output operations.
13	I B.A. ENG I BBA I B.Com CA	23UCAN01	NMEC - FUNDAMEN TALS OF INFORMATION TECHNOLOGY	CO3	Understand data storage concepts using RAM and ROM, and differentiate between various types of storage devices.
				CO4	Work with different software applications and understand their usage and functionalities.

### I B.Com CA INFORMATION TECHNOLOGY

S.No	Class	Subject Code	Subject	Course Outcomes	
				CO5	Understand the role and functionality of operating systems as an interface between hardware and software.



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