# DON BOSCO ARTS & SCIENCE COLLEGE

**Accredited by NAAC with B++**

Angadikadavu P.O., Kannur Dt., Kerala - 670 706

Web: www.donbosco.ac.in, E-mail: dbascoffice@gmail.com

**Ph: 0490 - 2426014, 2426557 Mob: 09961200787**


## Attainment of Course Outcomes and Program Outcomes in Outcome Based Education (OBE)

### DEPARTMENT OF COMPUTER APPLICATION

### BCA

| Programme Outcomes | |
|---|---|
| **PO 1.** | Critical Thinking |
| **PO 2.** | Effective Citizenship |
| **PO 3.** | Effective Communication |
| **PO 4.** | Interdisciplinarity |
| **PO 5.** | Technical Competency |
| **PO 6.** | Programming Skill |

| Programme Specific Outcomes | |
|---|---|
| **PSO 1:** | Understand the concepts of Computer Science and Applications. |
| **PSO 2:** | Understand the concepts of System Software and Application Software. |
| **PSO 3:** | Understand the concepts of Algorithms and Programming. |
| **PSO 4:** | Understand the concepts of Computer Networks. |
| **PSO 5:** | Design, develop, implement and test software systems to meet the given specifications, following the principles of Software Engineering. |
| **PSO 6:** | Understand the concept of Information Security. |

# Course Outcome

| I SEMESTER | | |
|---|---|---|
| **Course Name** | **Course Outcome** | **Assessment mechanism** |
| **1B01BCA Programming In C** | Understanding the basic concepts in programming. | Class Test |
| | Familiarize the basic syntax and semantics of C language. | Assignment |
| | Familiarize with advanced features of c. | Internal Exam |
| | Develop skill in programming | Lab Assessment |
| **1A11BCA Informatics For Computer Applications** | Understand the basic concepts and functional knowledge in the field of Informatics | Internal Exam-1 |
| | Equip the students with fundamentals of Computer | Assignment -1 |
| | Awareness about social issues and concerns in the use of digital technology | Class test |
| | Skills to enable students to use free software. | Internal Exam-2 |
| **1C01 MAT-BCA MATHEMATICS FOR BCA 1** | Understand rank of a matrix, elementary transformation of a matrix, equivalent matrices, elementary matrices, Gauss-Jordan method of finding the inverse, normal form of a matrix, and partition method of finding the inverse. | Internal exam 2 |
| | Understand solution of linear system of equations-method of determinants-Cramer's rule, matrix invertion method, consistency of linear system of equations, Rouche's theorem, procedure to test the consistency of a system of equations in n unknowns, system of linear homogeneous equations. | Internal exam 2 |
| | Understand linear transformations, orthogonal transformation, and linear dependence of vectors | Internal exam 2 |
| **2B04BCA Lab I: Programming In C** | Can write and execute simple C Programs | Internal Lab Exam |
| II SEMESTER | | |
| Course Name | **Course Outcome** | **Assessment mechanism** |
| **2B03BCA Object Oriented Programming Using C++** | Understanding OOPs concepts such as inheritance and polymorphism and their implementation using C++. | Class test Internal Exam |
| | Ability to develop programs in C++ | Assignment |
| **2B02BCA Digital Systems** | Design simple combinational digital systems | Internal Exam-1 |
| | Familiarize different number systems, codes and data representation in digital systems. | Assignment -1 |
| | Understand functions of two or more variables, limits, and continuity. | CLASS TEST 1 |

| | | |
|---|---|---|
| **2C02 MAT-BCA Mathematics for BCA II** | Understand partial derivatives, homogeneous functions, Euler's theorem on homogeneous functions, total derivative, differentiation of implicit functions and change of variables | Internal exam -1 |
| | Understand polar coordinates | Assignment -1 |
| **2B05BCA Lab II: Programming In C++** | Can write and execute simple C++ Programs | Internal Lab Exam |
| III SEMESTER | | |
| Course Name | **Course Outcome** | **Assessment mechanism** |
| **3A12BCA Data Structures** | Understand the concept of data structures and its relevance in Computer science. | Internal Exam-1 |
| | Familiarize with selected linear and nonlinear data structures. | Class Test |
| | Enhance skill in programming. | Lab |
| **3B07BCA Java Programming** | Learn the features of java | Class Test |
| | Equip Understand the concept of error handling | Internal Exam-1 |
| | Experience the GUI Programming | Lab |
| **3B07BCA Introduction To Microprocessors** | Under Familiarize with 8085 architecture. | Internal Exam-1 |
| | Familiarize with 8086 architecture. | Class Test-1 |
| | Skill in writing assembly language programs. | Assignment -1 |
| **3A13 BCA Database Management System** | Explain the characteristics of DBMS | Internal Exam-1 |
| | Explain DDL commands with example | Assignment -1 |
| | Differentiate between Different Data Models | Class Test-1 |
| | Explain DML commands with example | Internal Exam-1I |
| **3C03 MAT-BCA Mathematics For BCA III** | Understand Ordinary differential equations, Geometrical meaning of y'=f (x, y) and Direction Fields. | Class Test I |
| | Understand Methods of solving Differential Equations, Separable, ODEs, Exact ODEs, Integrating Factors, Linear ODEs and Bernoulli, Equation | Internal Exam-1 |
| | Understand Laplace Transform, Linearity, first shifting theorem, Transforms of Derivatives and Integrals, ODEs, Unit step Function, second shifting theorem, Convolution, Integral Equations, Differentiation and integration of Transforms and to solve special linear ODE's with variable coefficients and Systems of ODEs. | Assignment -1 |
| **4A15BCA Lab III: Data Structure and DBMS** | Can write and execute simple C++ Programs with suitable data structures. | Internal Lab Exam |
| | Can write and execute simple database queries. | |
| **4B11BCA LAB IV: Java Programming, Shell Programming &** | Can write and execute simple Java Programs. | Internal Lab Exam |
| | Can write and execute simple Shell Programs. | |

| | | |
|---|---|---|
| **Linux Administration** | Can write and execute simple Administration commands. | |
| IV SEMESTER | | |
| Course Name | **Course Outcomes** | **Assessment Mechanism** |
| **4A14BCA Discrete Mathematical Structures** | Fundamental Mathematical concepts and terminology for computer science. | Class Test |
| | Acquire knowledge in mathematical logic | Internal exam 1 |
| | Gain knowledge in Boolean algebra | Assignment |
| | Awareness about the importance of graph theory in computer. | Internal exam 2 |
| **4B08 BCA Software Engineering** | To learn what is software and its characteristics | Internal Exam 1 |
| | To understand various life cycle models | Class Test 1 |
| | To learn different types of requirement engineering process | Class Test 2 |
| | To know more about software design | Assignment |
| | To learn software testing | Internal Exam 2 |
| | To learn various types of softwares | Internal Exam 1 |
| **4B09BCA Computer Organization** | Understand the basic operation of a computer system. | Class test 1 |
| | Understand the organization and design of basic digital computer | Assignment |
| | Introduce the concepts of microprogramming and design simple combinational digital systems. | Internal exam |
| | Understand the organization of memory and techniques that computers use to communicate with I/O devices | Class Test 2 |
| **4B 10 BCA Linux Administration** | To learn basic Linux commands and understand the file system structure. | Internal Exam 1 |
| | To understand the Boot loaders and the configuration files. | Class Test 1 |
| | To learn different system services, maintenance and configuring these files. | Class Test 2 |
| | To experience Shell Scripting. | Lab Assignment |
| **4C04 MAT-BCA Mathematics for BCA IV** | Understand the meaning of probability, probability and set notations, random experiment, sample space, event, axioms, notations, addition law of probability, theorem of total probability, independent events and multiplication law of probability | Class Test I<br>Internal Exam I |
| | Understand LPP, canonical and standard form, Graphical solution method, Simplex method and computational procedure | Class Test I<br>Internal Exam I |
| | Understand Network routing problems: introduction, network flow problem, minimal spanning tree problem and shortest route problems. | Class Test II<br>Internal Exam I |

| | | |
|---|---|---|
| | Understand Numerical Integration, Trapezoidal Rule and Simpson 1/3-Rule. Understand Numerical methods to find Solutions of Ordinary Differential Equations: Solution by Euler's method and Runge-Kutta methods. | Class Test II<br>Internal Exam II |
| V SEMESTER | | |
| Course Name | **Course Outcomes** | **Assessment Mechanism** |
| **5B12BCA Operating System** | Understand the basic concepts, structure and functions of operating systems. | Internal Exam-1 |
| | Understand the principles behind the techniques in resource management | Class Test |
| | Knowledge about the basic design of the OS | Assignment |
| **5B13BCA Enterprise Java Programming** | Understand the Enterprise Java platform | Assignment |
| | Learn APIs and runtime environment for developing and running large scale Projects | Internal Exam-2 |
| | Develops programming skills in multi – tiered, scalable, reliable and secure Network application. | Class Test |
| | Understand the structure of a web application. | |
| **5B14BCA Python Programming** | Learn Python for expressing computation | Internal Exam-1 |
| | Familiarize with functions and modules in python | Class Test |
| | Understand object-oriented programming concepts in Python | Assignment |
| | Learn the techniques for database connectivity and GUI programming in Python | Lab Assessment |
| **5B15BCA Web Technology** | Enable students to program for the World Wide Web using HTML, JavaScript, PHP and MySQL | Internal Exam-1 |
| | Create static and dynamic web pages PHP and MySQL. | Assignment -1 |
| | Impart basic knowledge in relational databases and SQL | Internal Exam -2 |
| | Impart basic knowledge in Client-server model. | Class Test |
| **5B16BCA-E01 Information Security** | To be familiar with cryptography and its categories. | Internal Exam |
| | Distinguish public and private key crypto systems and familiarize the RSA crypto System. | Assignment |
| | To attain the knowledge of digital signature and its security services. | Class Test |
| **682l BCA Lab V: Enterprise Java** | Can write and execute simple JDBC Programs. | Internal Lab Exam |

| | | |
|---|---|---|
| **Programming** | Can write and execute simple RMI Programs. | |
| | Can Write and execute simple servlet programs. | |
| | Can write and execute simple CORBA programs | |
| **6B22BCA Lab VI: python Programming** | Can write and execute simple Python Programs. | Internal Lab Exam |
| **6B23BCA Lab VII: Web Technology** | Can write and execute simple html Programs. | Internal Lab Exam |
| | Can write and execute simple javascript Programs | |
| | Can write and execute simple php Programs | |
| **Generic Elective Course (Open Course) 5D03BCA Database Management System** | understand the fundamentals of database management system | Class test |
| | To develop Skill in designing database | Internal exam 2 |
| | To understand the concept of SQL commands | Class test |
| | To develop Skill in writing queries | Assignment |
| VI SEMESTER | | |
| Course Name | **Course Outcomes** | **Assessment Mechanism** |
| **6B17BCA Design and Analysis of Algorithm** | Knowledge about important computational problems. | Class test 1 |
| | Knowledge to design the algorithm. | Class test 2 |
| | Knowledge to analyze a given algorithm. | Assignment |
| | Acquire knowledge to analyze algorithm control structures and solving recurrences | Internal exam |
| **6B18BCA Introduction to Compiler** | Knowledge about various phases of compiler design. | Internal Exam-1 |
| | Describe the scanners and parsers | Assignment-1 |
| | Illustrate the intermediate code generation | Class Test |
| | Perform code optimization and generation | Internal Exam-2 |
| **6B19BCA Data Communication & Networks** | Understand the basics of data communication | Class test 1 |
| | Familiarize with OSI reference model | Class test 2 |
| | Familiarize students with layers of communication model | Assignment |
| | Understand the concepts of network security. | Internal exam |
| **6B20BCA Data Mining and Data Warehousing** | To learn what is Data mining and data warehousing | Internal Exam-1 |
| | To understand various phases of kdd | Assignment-1 |
| | To learn different types of algorithms in data mining | Internal Exam-2 |
| | To know more about classification and clustering | Class Test |

| | | |
|---|---|---|
| **6B24BCA Project** | Develop the ability to design, implement, and document a comprehensive software project by applying theoretical and practical knowledge to solve real-world problems. | Internal Viva and Presentation |

## BSc Artificial Intelligence and Machine Learning

| **Programme Outcomes** | |
|---|---|
| **PO 1.** | Critical Thinking |
| **PO 2.** | Effective Citizenship |
| **PO 3.** | Effective Communication |
| **PO 4.** | Interdisciplinarity |
| **PO 5.** | Technical Competency |
| **PO 6.** | Programming Skill |

| **Programme Specific Outcomes** | |
|---|---|
| **PSO 1:** | Understand the concepts of System Software and Application Software. |
| **PSO 2:** | Understand the concepts of Computer Networks and Operating Systems |
| **PSO 3:** | Design, develop, implement and test software systems to meet the given specifications, following the principles of Software Engineering. |
| **PSO 4:** | Gain knowledge and experience in major areas of Artificial Intelligence and Machine Learning such as Prediction, Classification, Clustering, and Information Retrieval. |
| **PSO 5:** | Learn to analyze large and complex datasets and create systems that adapt and improve over time using machine learning techniques. |

# Course Outcome

| I SEMESTER | | |
|---|---|---|
| **Course Name** | **Course Outcomes** | **Assessment Mechanism** |
| **1B01AIML INTRODUCTION TO COMPUTER SCIENCE** | Explain Functional units of Computer with neat diagram | Internal Exam-1 |
| | Explain various number system and its conversions | Assignment-1 |
| | Differentiate algorithm and flowchart with examples | Class Test |
| | Define Internet and its uses | Internal Exam-2 |
| **1C01STA – AIML DESCRIPTIVE STATISTICS** | Understand the elementary concept in statistics. | Internal Exam-1 |
| | Compute various measures of central tendency and dispersion | Internal Exam-11 |
| | Acquire knowledge in sampling theory. | Internal Exam-11 |
| | Understand the practical use of R | Assignment |
| **1C01MAT – AIML Differentiation and Matrix Theory** | Understand differentiation, derivative of functions namely constant, Successive differentiation and Leibnitz's theorem for tenth derivative of the product of two functions. | Internal Exam-1<br>Internal Exam-2 |
| | Understand different types of Relations and Functions, Composition of functions and invertible functions | Internal Exam-2 |
| | Understand Rank of a matrix, quivalent matrices, elementary matrices, Gauss-Jordan method of finding the inverse, normal form of a matrix and partition method of finding the inverse. | Internal Exam-1 |
| | Understand solution of linear system of equations, Cramer's rule, matrix inversion method, consistency of linear system of equations, Rouche's theorem, procedure to test the consistency of a system of equations in n unknowns, system of linear homogeneous equations. | Internal Exam-2 |
| **II SEMESTER** | | |
| **Course Name** | **Course Outcomes** | **Assessment Mechanism** |
| **2B02 – AIML PROGRAMMING IN C** | Understand about basics of programming. | Internal exam 1 |
| | Analyze the problem and develop simple programs using C. | Lab |
| | Familiar with advanced concept of C program. | Internal exam 2 |
| | Develop C programs using structure union, pointers and files. | Class Test , Assignment |
| **2B03 – AIML-LAB** | Can write and execute simple C Programs. | Internal Lab Exam |

| | | |
|---|---|---|
| **1- C PROGRAMMING** | | |
| **2C03AIML-MAT INTEGRATION AND LINEAR ALGEBRA** | Understand functions of two or more variables limits, and continuity. Understand partial derivatives, homogeneous functions, Eulers theorem on homogeneous functions, total derivative, differentiation of implicit functions and change of variables. | Class Test |
| | Understand basics of integration, Integration by parts, trigonometric integrals, Understand Reduction formulae for trigonometric functions and evaluation of definite integrals Evaluation of the definite integral $\int_0^{\pi/2} sin^n\ x\ dx$, Evaluation of the definite integral $\int_0^{\pi/2} cos^n\ x\ dx$,problems | Internal exam 1 |
| | Understand Vector spaces, Linear Dependence and Linear Independence, Bases and Dimension, Linear transformations. | Assignment |
| | Understand Eigen values, Eigen vectors, properties of Eigen values, Cayley- Hamilton theorem, reduction to diagonal form, similarity of matrices, powers of a matrix, reduction of quadratic form to canonical form and nature of a quadratic form. | Internal exam 2 |
| **2C02STA – AIML STATISTICAL METHODS** | Analyze the relation between two real life data. | Class Test |
| | Compute various index numbers and understand their importance in real life | Internal exam 1 |
| | Acquire knowledge in time series data. | Internal exam 1 |
| | Understand the practical use of R | Assignment |