DON BOSCO ARTS AND SCIENCE COLLEGE

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

Department Name : BCA

PO :

PO STATEMENTS
PO 1. ACADEMIC PURSUIT Capacitating one's potentials to acquire knowledge through critical thinking, creative and innovative methods, and interventions. Learning career management skills to find solutions to problems in the present and future.
PO 2 MORALLY UPRIGHT CITIZENSHIP Honing individuals with sound character built on moral and spiritual values.
PO 3 EFFECTIVE COMMUNICATORS Articulating oneself through oral and written modern languages. Mastering English Language as a passport to global citizenship.
PO 4 SOCIALLY RESPONSIBLE Moulding individuals committed to the service of the needy. Cultivating interdependency through inclusive relationship, gender equality and mutual accountability. **PO 5 ENVIRONMENTALLY COMMITTED** Shaping environmentally conscious citizens to contribute towards the well-being of society and humanity at large.

PSO :

PSO STATEMENTS
1. Explore technical, intellectual capacity in areas of Computer Applications and experience the environment in enhancing required skills.
2. Exhibit the abilities to design and develop algorithms, analyze and interpret data to implement them as software programs.

3. Ability to adapt to modern software engineering tools for analyzing and solving various computer engineering problems and efficient design of computer-based systems of varying complexity.

4. Build skills in computer technology to enable the graduates for higher studies and careers in local, national and global markets.

5. Understand the impact of professional engineering solutions in environmental contexts and the need for sustainable development.

CO/Semester:

Semester 1		
Statements	**Activities**	**Assessment mechanism**
1 A01 ENG **Communicative English**	1. Ensuring a strong base in grammar. 2. Increased storehouse of vocabulary 3. Correcting the Pronunciation. 4. Learning the art of good writing and rhetoric. 5. Enabling proficiency in English	1.Assignments 2.Learning five new words everyday 3.Phonetic transcription & Language Lab 4. Competitions	Viva Class test Internal examination
1 A02 ENG **Readings on Kerala**	1. Introducing the cultural heritage of the state through the native reforms and related works. 2. Creating awareness about the struggle that the history witnessed in forming contemporary Kerala. 3. Getting to know more about the renaissance leaders. 4. Understanding the genealogy of the motherland. 5. Bringing closer to the tastes, value- system, beliefs and ideology of our native culture	Book Reviews Seminars Debates Assignments Writing competitions	 Internal assessment tests Viva Class Tests

1A07-2HIN Naya sahithya	1. Understand the style of Hindi prose 2.Understand the history of Hindi prose 3.Develop critical thinking 4. Analyze Hindi prose and Hindi criticism	Class work Homework Assignment	Class work Homework Assignment
1A 07-2MAL- Sahithyaganangal)	1. To create interest in Malayalam as well as other languages and literature. 2. To understand the beginning and growth of Malayalam language through various ages. 3. Awareness of translation. 4. To introduce the history of origin of Malayalam Language. 5.To improve creative thinking.	1. Translation works 2. Assignment 3. Seminars	1.Class tests 2.Internal examination
1A11BCA Informatics for Computer Application	1. Explain basic concepts & knowledge in the field of computer and informatics	Assignment	Organization Level of content Timely submission
	2. Describe the basics of Linux operating system	Discussion	Presentation style, content, involvement in discussion
	3. Recognize the nature of emerging digital knowledge in the society	Seminar	Knowledge of subject, organization and presentation
	4. Identify the social issues and concerns by the use of digital technology	Presentation	Clarity in presentation, quality of content, presentation style
	5. Apply the digital knowledge resources in	Demonstration	Preparedness, confidence, content

	learning		
1B01BCA Programming in C	1. Explain basic terminology used in computer programming	Presentation Discussion	Presentation style , content, involvement in discussion
	2. Create, compile and debug programs in C language.	Exercises	Correctness in compilation and execution, use of concepts
	3. Design programs involving decision structures, loops and functions	Assignments	Content, presentation, timely submission
	4. Use language concepts to solve real world problems.	Exercises	Accuracy of concepts used, application level of concepts
2B04BCA Lab – I Programming in C	1. Employ the skill of writing algorithms	Practical session	Use of logics, correctness in algorithms
	2. Design flowchart for a problem solution	Exercises	Accuracy of logic, correctness in flowchart components
	3. Develop and execute programs in C Language	practice	Engagement in lab session, use of concepts, quality of programs
1C01 MAT-BCA Mathematics for BCA I	1. Understand the basic ideas of differentiation. 2. Understand the concept of successive differentiation. 3. Analyze leibnitz theorem for the n th derivative of the product of two functions. 4. Understand the basic concepts of Boolean algebra. 5. To learn matrices and system of equations. 6. Understand the ideas of linear transformation.	1. Give assignments on various topics under the syllabus. 2. Conduct unit-wise examinations. 3. Divide students into different groups to solve a problem in different methods.	1 assignment evaluation. 2. assessment of unit examinations. 3.viva
Semester II			

Statements		Activities	Assessment mechanism
2A03 ENG **Readings on Life and Nature**	1. Introduced to a new field of studies; ecological readings. 2. Realize the importance of maintaining environmental balance. 3. Understand the importance of becoming ecologically responsible individuals. 4. Feeling a strong and close bond that humans share with mother nature. 5. Getting to know relevant and famous environmental activists, nature poets, & writers and their concern towards life and nature	Debates Seminars Eco Club Reading, assignments, watching interviews	Viva Class Test Internal Assessment
2A04 ENG **Readings on Gender**	1. Erasing away the pseudo bias against gender discriminations. 2. Understating the fact that gender is a "Social Construct" 3. Educating the future generation that man, woman and the third gender are equally important in creating a balance in the society. 4. The hardships and agonies portrayed stands as an eye-opener to the sufferings of the other gender. 5. Create mentally and socially stable society with zero gender discriminations.	Talks from famous people ex. Ted Talks Debates Seminars Readings Assignments	Class Test Viva Class test

2A08-2HIN Sahithya aur preyog	1. Understand the stories 2. Understand the importance of letter writing and translation 3. Develop communicative skill in Hindi	Classwork Homework Assignment	Class test Viva Internal examination
2A 08 2 **MAL -Gadhya mathrukakal**	1. To create interest in reading 2. To develop creative writing 3. To differentiate the various forms of literature such as prose, poems, short stories, dramas etc. 4. To be aware of the influence of literature on society. 5. To understood the role of literature in films	1.Film review 2. Assignment 3. Seminar	1 Class test 2. Internal examination
2B02BCA Digital Systems	1. Design and demonstrate digital logic circuits	Assignment	Points included, organization of points
	2. Analyze Boolean expression using K- Map.	Problem solving	Use of theorems and rules
	3. Identify logic gates and its operations	Discussion Reviews	Knowledge of subjects, involvement in discussion, relevance of points
	4. Describe the fundamentals of digital electronics	Presentations	Presentation skill, organization of contents
2B03BCA Object Oriented Programming Using C++	1. Describe Object-Oriented programming concepts	Presentation	Presentation skill, organization of contents
	2. Formulate logics for problem solutions	Problem solving	Correctness in logic, accuracy in the use of concepts
	3. Design C++ programs using object-oriented concepts	Exercises	Accuracy of logic, correctness in result
	4. Apply the concepts in C++	Demonstration	Communication skill, tools used for

	to manipulate files		demonstration, knowledge of topic
2B05BCA Lab – II Programming in C++	1. Identify and correct errors in C++ programs	Practice	Engagement in lab session, use of concepts, quality of programs
	2. Design programs that use object-oriented programming concepts	Exercises	Accuracy of logic and proper use of concepts , correctness in result
	3. Analyze the real-world problems in terms of object-oriented programming	Problem solving	Analysis style of problem, data collection, solution implementation
2C02 MAT-BCA Mathematics for BCA II	1. Analyze functions of two or more variable. 2. Understand partial derivatives, differentiation of implicit functions, change of variables. 3. Recall basics of integration, acquire the knowledge of definite and indefinite integration, 4. Evaluating multiple integrals. 5. Understand basic concepts in linear algebra, study Cayley Hamilton theorem, learn the reduction method of matrices to its diagonal form, relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations	1.Seminars 2. Conduct unit-wise examinations. 3. Assignments on various topics under the syllabus	1.Class tests, short quizzes, graded homework, cumulative final exam and viva voice. 2. Assignment evaluation

Semester III			
Statements		Activities	Assessment mechanism
3A12BCA Data Structure	1. Explain features of various data structures such as stacks, queues, linked lists and trees	Presentations	Organization of content, presentation style, communication skill
	2. Design algorithm	Exercises and problem	Proper use of concepts,

		solving	analysis of problem and solution implementation
	for different application, propose data structures suitable for algorithms and analyze the performance of algorithm		
	3. Compare various sorting algorithms like bubble sort, insertion sort, selection sort, merge sort and quick sort	Case studies	Data collection, inferences collected, analysis method
	4. Use various data structures effectively in application programs	Practical sessions	Engagement in lab session, use of concepts, quality of programs
3A13BCA Database Management System	1. Explain the use and advantages of DBMS	Assignment	Contents, organizations
	2. Analyze database models & entity relationship models.	Discussion, case studies	Involvement in discussion, relevance of points, inferences collected
	3. Propose normalization criteria for databases	Exercises	proper use of concepts, correctness in result
	4. Create query to manipulate database.	Practice	Engagement in lab session, use of concepts, quality of programs
	5. Design trigger, views, sequences, join and index to use with databases	Exercises and Assignment	Contents, organizations, use of concepts
	6. Describe Relational model, relational calculus, tuple and domain calculus	Presentation	Organization of content, relevance of content, communication skill
3B06BCA Introduction to Microprocessors	1. Explain 8085 architecture.	Discussion	Involvement in discussion, collaboration with group members, importance of points

	2. Describe 8086 architecture.	Assignment	Importance of Contents, organizations of data, timely submission
	3. Develop assembly language programs	Exercises	Identification of problem, use of concepts
	4. Differentiate various Interrupts and demonstrate working of DMA.	Case studies Discussions	Inferences formulated, collaboration with group members, importance of points
3B07BCA Java Programming	1.Illustrate the features of object-oriented programming and compare it with other programming paradigms	Assignment Quiz	Understanding of concepts, knowledge of new features
	2. Explain the concepts of Java programming	Presentation	Significance of point, communication skills
	3. Apply the Java programming concepts in problem solving	Practical session Exercises	Standard of the program, way of implementing concepts
	4. Design and create application programs using java concepts	Exercises Problem solving	Correctness in design, implementation of idea
4B11BCA Lab–III Data Structures and DBMS	1. Use linear and nonlinear data structures in problem solution	Demonstrations	Clarity of ideas, methods used, perfection in idea delivery
	2. Analyze the performance of different data structures	Case study	Collection of data, use of methods, Inferences formulated,
	3. Apply C++ programs concepts to implement data structure	Practice	Identification of problem, use of concepts
	4. Create Database for different applications	Exercises	Identification level of problem, Correctness in design,
	5. Design and use query for the manipulation of databases	Practical sessions	Use of keyword and operators, accuracy in result
3C03 MAT-BCA Mathematics for BCA III	1. Understand the genesis of ordinary differential equations.	1.Divide students into different groups to solve a problem in different methods 2. Provide exercise	1. Assessment of unit examinations. 2. Class tests, short quizzes, graded homework, cumulative

		questions to students. 3. Conduct unit-wise examinations.	final exam and viva voice.
	2. Learn various techniques of getting exact solutions of solvable first order ordinary differential equations. 3. Grasp the concept of the general solution of 1st and 2nd order differential equations. 4. Learn different methods to solve 1st and 2nd order differential equations. 5. Understand Laplace, differential equations and Fourier series.		

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<tr><td colspan="4" align="center">Semester IV</td></tr>
<tr><td>Statements</td><td></td><td>Activities</td><td>Assessment mechanism</td></tr>
<tr>
<td>4A14BCA
Discrete Mathematical Structures</td>
<td>1. Understand the concepts of mathematical logic such as Connections, Concept of Tautologies etc.
2. Study the concept of relations and functions.
3. Understand the basic concepts in Graph theory such as ath, circuit, subgraph etc.
4. Analyze the concept of Planar graph.
5. Gain knowledge about Boolean algebra and its applications.</td>
<td>1.Group discussions
2.Unit-wise examinations
3.seminars</td>
<td>1.Evaluation of Assignments & Homeworks.
2.Viva –Voice.</td>
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<tr>
<td>4BO8BCA Software Engineering</td>
<td>1. Propose the most suitable software development life cycle model for a project</td>
<td>Develop plans
Case studies</td>
<td>Identifying the problem, defining solution, use of methods, Inferences formulated,</td>
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<tr>
<td></td>
<td>2. Explain the documentation procedure of a software(both</td>
<td>Discussion
Assignment</td>
<td>Participation, ideas proposed, collaboration with other participants, Organization of content,</td>
</tr>
</table>

	SRS & SDD)		language used, references used
	3. Distinguish and compare various software testing process and procedures	Case studies Discussion	use of methods, Inferences formulated, Participation, ideas proposed, collaboration with other participants
	4. Analyze and design complex systems.	Exercise Assignment	Way of implementing concepts, Organization of content, language used, references used
	5. Demonstrate the requirement engineering process	Demonstration Presentation	Clarity of ideas, Knowledge about the topic, communication skill, presentation style methods used, perfection in idea delivery
4B09BCA Computer Organization	1. Explain about digital computer and their fundamental architectures	Presentation	Presentation style, content, interaction
	2. Illustrate different instruction set architectures and their relationship to the CPU design	Demonstrations	Clarity of ideas, methods used, perfection in idea delivery
	3. Demonstrate the internal working of main memory, cache memory, associative memory and various modes of data transfer	Demonstrations and presentation	Perfection in idea delivery, presentation style, communication skills
	4. Explain working of parallel processing.	Assignment	Importance of contents, organizations of data
	5. Describe principles and the implementation of computer arithmetic.	Discussion and assignment	Involvement in discussion, importance of points,
4B10BCA Linux Administration	1. Discuss and recognize open source operating system	Assignment	Importance of content, organizations of data, timely submission
	2. Work confidently in Unix/Linux	Exercises presentations	Correctness in design, Significance of point,

	environment		communication skills
	3. Create shell scripts for various tasks.	Practice Problem solving	Standard of the program, way of implementing concepts
	4. Explain and perform Linux administration tasks	Demonstration Practice	Knowledge of process, Standard of the program, way of implementing concepts
	5. Perform Linux installation and configuration	Demonstration Exercise	Knowledge of process, way of implementing concepts
4B12BCA Lab–IV Java Programming, Shell Programming and Linux Administration	1. Create Java program for various application	Exercise	Programming style, efforts in implementing ideas
	2. Apply java concepts of java in solving real world problems	Creative exercises	The understanding and identification of application level
	3. Perform Linux installation	Demonstration Practice	Knowledge of process, Standard of the program, way of implementing concepts
	4. Create simple shell programs	Problem solving	Logic formulated, way of implementing concepts
	5. Perform Linux administration programs	Practice	Understanding of problem, designing the solution, generated result
4C04 MAT-BCA Mathematics for BCA IV	1. Gain knowledge about the concept of probability. 2. Develop clear idea regarding random experiment, sample space & independent events. 3. Describe mathematical formulation of daily life situations. 4. Understand network flow problem, minimal spanning tree problem. 5. Evaluate numerical integration & numerical solutions of differential	1. Divide students into different groups to solve a problem in different methods. 2. Give assignments on various topics under the syllabus. 3. Problem solving.	1.Viva-voice. 2. Assignment evaluation. 3. Exams and review of home work.

	equations.		
Semester V		
	Statements	Activities	Assessment mechanism
5B12BCA Operating System	1. Explain the working and use of operating system.	Assignment Discussion	Content, organizations of data, Involvement in discussion, relevance of points
	2. Describe the various functions of OS like process management, memory management, device management and file management in operating System.	Presentation Review	Significance of point, communication skills, knowledge in subject, preparation
	3. Explain the virtual memory concept in Operating System	Assignment Presentation	Content, organizations of data, Significance of point, communication skills
	4. Demonstrate deadlock, its conditions and how we can avoid it	Demonstrations Exercise	Knowledge of process, perfection in implementing the concepts
	5. Explain about Linux Operating System and compare different operating systems	Discussion Case study	Participation, ideas proposed, collaboration with other participants, use of methods, Inferences formulated,
5B13BCA Enterprise Java Programming	1. Illustrate database connections and manipulation of database using Java program	Seminar Assignment	Organization of content, language used, references used, knowledge of subject
	2. Identify large scale and real time applications using RMI and CORBA and understand how it can be designed	Discussion Presentations	Participation, ideas proposed, collaboration with other participants, Knowledge about the topic, communication skill, presentation style

	3. Explain about servlet, its use and advantages	Demonstration Presentation	Clarity of ideas, Knowledge about the topic, communication skill, presentation style methods used, perfection in idea delivery
	4. Identify the present business application areas and application of enterprise concepts in them	Discussions Seminar	Participation, ideas proposed, collaboration with other participants, Knowledge of subject, organization and presentation
5B14BCA Python Programming	1. Explain the features of Python Programming Language	Presentations	Organization of content, presentation style, communication skill
	2. Describe the object-oriented features of python programming	Discussions and Assignments	Participation, ideas proposed, collaboration with other participants, Knowledge of subject, organization and presentation
	3. Perform database connectivity and manipulation using python	Exercise Demonstration	Perfection in implementing the concepts, clarity of ideas, knowledge about the topic.
	4. Design GUI applications	Creative exercise	The understanding and identification of application level
5B15BCA Web Technology	1. Explain the WWW and its features	Assignment	Organization of content, language used, references used
	2. Illustrate use of HTML tags to create web pages	Demonstrations	Clarity of ideas, Knowledge about the topic, communication skill,
	3. Explain the creation of dynamic web pages using JavaScript.	Presentation	Organization of content, presentation style, communication skill
	4. Use PHP for web page development	Seminar	Knowledge of subject, organization and presentation
	5. Employ CGI in web development	Demonstrations	Clarity of ideas, Knowledge about the topic, communication skill,

Discipline Specific Elective I 5B16BCA-E01 Information Security	1. Explain about cryptography and its application	Seminar	Knowledge of subject, organization and presentation
	2. Use and explain the important encryption techniques used today.	Presentation	Clarity of ideas, Knowledge about the topic, communication skill
	3. Employ security policies such as authentication, integrity and confidentiality in application development.	Demonstrations	Clarity of ideas, Knowledge about the topic, communication skill
	4. Use and illustrate digital signature technique	Presentation Assignment	Organization of content, presentation style, communication skill Organization of content, language used, references used
	5. Explain about cryptography and its application	Seminar	Knowledge of subject, organization and presentation
682l BCA Lab V: Enterprise Java Programming	1. Develop JDBC programs and establish connection with data base	Practical sessions	Standard of the program, way of implementing concepts
	2. Design application using RMI	Exercise	Standard of the program, way of implementing concepts
	3. Create servlets to solve real world problems	Problem solving	Correctness in logic, accuracy in the use of concepts
	4. Illustrate the use of CORBA program development	Practice	Standard of the program, way of implementing concepts
6B22BCA Lab VI: python Programming	1. Apply the basic programming concept in programming level	Exercise	Standard of the program, way of implementing concepts
	2. Employ functions and represent compound data using Lists, Tuples and Dictionaries	Practice	Standard of the program, way of implementing concepts

	3. Develop database applications in Python	Exercise	standard of the program, way of implementing concepts
	4. Design GUI applications in Python	Creative exercises	The understanding and identification of application level
6B23BCA Lab VII: Web Technology	1. Create web pages using HTML.	Practical session	Use of concepts, way of compiling and running programs, correctness in outputs
	2. Create forms using Java script and validate form inputs.	Exercises	Standard of the program, way of implementing concepts
	3. Develop Web Pages using PHP with database connectivity	Exercises	Standard of the program, way of implementing concepts
Generic Elective Course (Open Course) 5D03BCA Database Management System	1. Explain database concepts, its use and advantages	Assignment	Organization of content, language used, references used
	2. Differentiate data models and distinguish various category of users	Seminar	Knowledge of subject, organization and presentation
	3. Create database and develop queries to manipulate data in it.	Exercise	Standard of the program, way of implementing concepts
	4. Use various types of functions for data manipulation	Practice	Way of implementing ideas

Semester VI			
Statements		Activities	Assessment mechanism
6B17BCA Design and Analysis of Algorithm	1. Describe algorithm design strategies	Discussions	Participation, ideas proposed, collaboration with other participants,
	2. Propose appropriate algorithm design techniques for solving problems	Creative exercises	The understanding and identification of application level
	3. Analyze the performance of	Case studies	Identification and evaluation of problem,

		algorithms		presentation
	4.	Analyze algorithm control structures and solve recurrence	Discussion	Participation, ideas proposed, collaboration with other participants
6B18BCA Introduction to Compiler	1.	Explain the phases of compilation	Assignment	Organization of content, language used, references used
	2.	Describe the scanners and parsers	Discussion	Participation, ideas proposed, collaboration with other participants
	3.	Illustrate the intermediate code generation	Demonstrations	Clarity of ideas, Knowledge about the topic, communication skill,
	4.	Perform code optimization and generation	Exercises	Standard of the program, way of implementing concepts
6B19BCA Data Communication & Networks	1.	Explain the data communication mechanism, its methods and its hardware and software requirements	Assignment Seminar	Organization of content, language used, references used, knowledge of subject
	2.	Describe the OSI reference model and compare it with other models	Presentation Discussion	Communication skill, presentation style, participation, ideas proposed, collaboration with other participants
	3.	Distinguish the functions of each layer of communication model	Discussion Comparative study	Participation, ideas proposed, collaboration with other participants, inferences formulated, data used
	4.	Explain the various algorithms used in network	Assignment	Organization of content, language used, references used
Discipline Specific Elective II 6B20BCA-E01data Mining And Data Warehousing	1.	Explain Data mining and its techniques	Assignment	Organization of content, language used, references used
	2.	Describe data warehousing and its architecture	Seminar	Knowledge of subject, organization and presentation
	3.	Compare and analyze different data warehouse schemas	Presentation	Organization of content, presentation style, communication skill
	4.	Apply the	Demonstrations	Clarity of ideas,

	association rules for mining the data		Knowledge about the topic, communication skill,
	5. Construct Multidimensional Intelligent model from typical system	Creative exercises	The understanding and identification of application level
6B25BCA Lab – VIII Project	1. Prepare SRS and other software engineering documents and designing DFD, ER Diagram etc	Students are advised to develop a software under the guidance of teachers, which enable them to understand the process of software development. They are asked to develop software for use in real life.	Relevance of the developed application, Testing and validations applied, accuracy in acceptance of input and output generation, Language and database used, design and presentation styles, awareness of development procedure
	2. Employ the testing and validation techniques of software		
	3. Propose suitable development model for problem solving		
	4. Apply the database concepts and programming concepts in software development		
	5. Evaluate software based on various evaluation criteria.		