Maharshi Karve Stree Shikshan Samstha's

K. B. Joshi Institute of Information Technology

(*Approved by Govt. of Maharashtra, *NAAC Accredited)
(Affiliated by S.N.D.T. Women's University, Mumbai)

Faculty: Science & Technology

Program Outcome Document

Program: Bachelor of Computer Applications (BCA)

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Program 1: Bachelor of Computer Applications (BCA) ProgramCode:058

Program Outcome:

- To provide basic knowledge and foundation of Computers for solving problem.
- To impart necessary skills to get worthy career in the field of Information Technology

Program Specific Outcome:

After completion of the program, the students are able:

- To pursue higher education in the field of Computer Science and Applications
- To opt lucrative MBA course
- To work in the field of Information Technology as Programmer, System Designer, Analyst, Web Developer, Tester
- To work in public sector under Government.
- To initiate own start-ups

Course Objective and Outcome

BCA Semester I:

Subject: Business and Technical Communication Skills
Subject Code: 1101
Theory: 3+ Tutorial:1
Lecture Timings: 50min
Objectives:

- To develop competency in reading, writing and speaking skills
- To participate actively in technical communication at workplace
- To understand how to apply technical communication knowledge in practical documentation

Outcome:

- Ability to communicate fluently in business English at workplace
- Ability to effectively read and write the technical documents like email, official letters
- Ability to understand and interpret technical documents.

Subject: Principal and Practices of Accounting
Subject Code: 1102
Theory: 3+ Tutorial:1
Lecture Timings: 50min
Objectives:

- Preparing financial statements of the firm.
- Interpreting the business implications of financial statement information.
- Preparing accounting information for evaluation of product

Outcome:
Students are able to:

- Understand the standards of bookkeeping and accounting
- explain functions of accounting
- describe the main elements of financial accounting information – assets, liabilities, revenue and expenses
- generate financial statements

Subject: Problem Solving using C
Subject Code: 1103
Theory: 4
Lecture Timings: 50min
Objectives:

- To introduce students to a basic programming language – C.
- To understand the basic structure of a C program.
- To able to correct the syntax and logical errors in program.
- To develop problem solving attitude using algorithm and flowchart
- To enable the students to develop logics and programs.

Outcome:

- Students can characterize the Fundamentals of C Programming.
- Can Understand Problem solving and steps in problem solving.
- Implement Algorithm and Flowchart for faster computation in program.
- Understand Operators, I/O functions and header files.
- Understand Conditionals and Loop, Decision making structures and Loop Control structures to solve the problem.
- Understand how to apply 1D and 2D array.
- Understand the concept of Functions in C Programming.

Subject: Computer Fundamentals and Operating System
Subject Code: 1104
Theory:4
Lecture Timings: 50min
Objectives:

- To introduce to the students the basic functions of the computer system.
- To help understand the basic functioning of basic units of the computer system(i.e. input unit, output unit, control unit, CPU, etc)
- To give detail knowledge of different processes and its scheduling.
- To give detailed knowledge of routing algorithms for process scheduling
- To understand working of different types of printers.
- To understand working of different types of operating systems.

Outcomes:

- Familiarizes students with the basic functioning of the computer system.
- Help identify the students with different peripheral devices of the computer system.
- Help identify the students with different operating system.
- Familiarizing the students with the concepts such as paging, segmentation, etc

Subject: Linux Lab
Subject Code: 1201
Practical: 2
Lecture Timings: 50min
Objectives:

- To understand and make effective use of linux utilities and shell scripting language to solve problems
- To implement in C some standard Linux utilities like mv,cp,ls etc…
- To Develop the skills the necessary for systems programming including file system programming, process and signal management and inter-process communication
- To develop the basic skills required to write network programs using sockets.

Outcome:

- Students will be able to understand the basic commands of Linux operating system and can write shell scripts.
- Students will be able to create file systems and directories and operate them.
- Students will be able to create processes backgroundand fore ground etc... By fork() system calls.
- Students will be create shared memory segements,pipes ,message queues and can exercise interprocess communication

Subject: Problem Solving in C Lab
Subject Code: 1202
Practical:2
Lecture Timings: 50min
Objective:

- To introduce students to a basic programming language – C.
- To understand the basic structure of a C program.
- To able to correct the syntax and logical errors in program.
- To develop problem solving attitude using algorithm and flowchart
- To enable the students to develop logics and programs.

Outcome:

- Students are able to develop C Program
- Students can write the program source code in C to solve the Problem.
- Apply Conditionals and Loop, Decision making structures and Loop Control structures in C Program.
- Can Implement the program using Operators : Arithmetic, Logical, bitwise,
- Apply built in functions and operators in program.
- Implement 1D and 2D Array in C program.
- Implement User Define functions in C program.

BCA Semester II:

Subject: Logic Circuit and Digital Design
Subject Code: 2101
Theory:3+ Tutorial:1
Lecture Timings: 50min
Objectives:

- To introduce the students with the different types of logic gates and its uses.
- To introduce the students with the working of different types of flip flop.
- To give detail knowledge about combinational circuit.
- To give detail knowledge about sequential circuit.
- To understand and examine various number systems and its conversions.

Outcomes:

- Skills to reduce Boolean expression using K-map.
- Ability to understand logic gates and its operations.
- Skills to understand the working of multiplexers and de-multiplexers.
- Ability to convert given number from one number system to another.

Subject: Discrete Structure and Graph Theory
Subject Code: 2102
Theory:3+ Tutorial:1
Lecture Timings: 50min
Objectives:

- To enhances the ability to reason and ability to present a coherent and mathematically accurate argument.
- To develop logical thinking and its application to computer Applications.
- To impart knowledge regarding relevant topics such as set Theory, basic logic, graphs,

Outcome:
After completing this course the student must demonstrate the knowledge and ability to:

- Learner will able to specify and manipulate basic mathematical objects such as sets, functions, and relations.
- Gain Knowledge in using various techniques of mathematical induction.
- Ability to apply counting techniques like permutation and combination.
- Develops formal reasoning.
- Gain Knowledge of Concepts of Graphs.
- Knowledge of Properties of Integer and Binomial Expansion.

Subject: Advanced C
Subject Code: 2103
Theory:4
Lecture Timings: 50min

Objectives:

- To understand the advanced features of a C programming language
- To gain knowledge of various programming errors.
- To enable the students to understand concepts of structure and graphics
- To enable the students to develop graphical applications

Outcome:

- Understanding of various concepts in Advance C.
- To introduce to student about the computer graphics & Skills to execute various animated graphical functions.
- Discuss various functions in graphics.
- Exercise file concept to show input and output of the files in C.
- Solve the problem using Structure , Union, Pointer, String etc.
- To learn how to use Array, Pointer’s and its functions.
- To learn how dynamically memory allocated in the system

Subject: Environmental Studies and RTI
Subject Code: 2104
Theory:4
Lecture Timings: 50min
Objectives:

- Awareness: To help students to acquire knowledge of pollution and environmental degradation.
- Knowledge: To help students to acquire knowledge of the environment
- Attitudes: To help students to acquire a set of values for environmental protection.
- Participation: To provide social groups and individuals with an opportunity to be actively involved at all levels in environmental decision making.

Outcome:
Students will able to:

- Describe awareness and promote green agenda and green initiatives in their working environments leading to green movement
- Describe awareness of Global Warming with different solutions.
- Be capable to generate best out of waste.
- Describe awareness and promote Right of Information Act among Youth generation.
- Use Green IT Policies and metrics for ICT development.
- Illustrate various best green IT services practices and their role.
- Use new career opportunities available in IT profession, audits and others with special skills such as energy efficiency, ethical IT assets disposal, reporting and development of green products, applications and services.

Subject: Open Source Programming Lab
Subject Code: 2201
Practical:2
Lecture Timings: 50min

Course Outcome:

- Students are able to understand the Concept of Open source Operating system and Open Source application software.
- Install the Red Hat Linux by configuring dual boot system.
- Understand the Apache installation Process.
- Installing PHP, and Binding the PHP installation with Apache.
- Installation of MYSQL, MYSQL database ENGINE install, MYSQL database administration.
- Starting and Stopping MYSQL and setting root password using mysql admin.
- Testing Mysql and PHP setup.

Subject: Advanced C Lab
Subject Code: 2202
Practical:2
Lecture Timings: 50min
Course Outcome:

- Skills to write program code in advance C using basic concepts in C language. It use to solve real world problem.

- Implement various graphics functions & Develop many animations (Moving Car, Traffic Signal, Clock, Smiling Face) using graphics.
- Students will able to develop applications using advance C and write programs
- Programs with pointers and arrays perform pointer arithmetic operations
- Programs to learn how to handling Files in computer.
- String functions applied successfully
- Implement advance concept in C language such as pointers, structure , union etc.
- Program to demonstrate how to use pointers, how dynamically memory allocated in computer.

BCA Semester III:

Subject: Introduction to Microprocessor
Subject Code: 3101
Theory:4
Lecture Timings: 50min
Objectives:

- To deliver detail knowledge of 8085 microprocessor.
- To introduce 8086 microprocessor to the students.
- To understand the different addressing modes of 8085 microprocessor.
- To give knowledge about different types of interrupts.
- To introduce the students with different types of memory.

Outcomes:

- Ability to understand the working & functioning of internal architecture of microprocessor.
- Ability to understand the working of 8259 and 8251.
- Familiarizing the students with the concepts such as SSI, MSI, LSI, VLSI, etc.
- Familiarizing the students with the concepts such as addressing, memory map etc.

Subject: Numerical Methods and Algorithm
Subject Code: 3102
Theory:4
Lecture Timings: 50min
Objective:

- To enhances the ability to reason and ability to present a coherent and mathematically accurate argument.
- To develop the knowledge of application to computer Applications.
- To impart knowledge regarding relevant topics like Interpolation.
- To deal with various topics like finding roots of equations, solving systems of linear algebraic equations, interpolation and regression analysis, numerical integration & differentiation, solution of differential equation,

Outcome:
After completing this course the student must demonstrate the knowledge and ability to:
- Familiar with finite precision computation.
- Get Knowledge of numerical solutions of nonlinear equations in a single variable.

- Familiar with numerical integration and differentiation, numerical solution of ordinary differential equations.
- Ability of calculation and interpretation of errors in numerical method.
- Able to know the application of Numerical Methods in Computer Science.

Subject: Computer Organization and Architecture
Subject Code: 3103
Theory:4
Lecture Timings: 50min
Objectives

- To understand the implementation and functionality of computer to the students.
- To understand how the instruction code executed by the computer and the format of the instruction code
- To gain knowledge of various components inside the computer system.
- To enable the students to understand the knowledge of vector processing

Outcomes

- Ability to gain the knowledge of computer functionality.
- Ability to read computer instruction code and instruction cycle
- Gaining the knowledge of computer memory and its various types
- Familiarization with DMA, RISC and CISC operations.

Subject: Database Management Systems
Subject Code: 3104
Theory:2+Tutorial:2
Lecture Timings: 50min
Objectives:

- To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency
- To understand file organization and indexing
- To Understand query and transaction

Outcome:

- Students Can Define File System, Indexing and Hashing.
- Understand the Concept of B tree and B+ tree.
- Define the Advantages of DBMS over the File System.
- Define Query, Translate SQL query into relational algebra. And Estimate the cost of Query.
- Define transaction, steps in transaction and transaction processing.
- Define the basic properties of transaction (ACID) and Basic transaction operations.
- Define Locks and types of Locks, conversions of lock, starvation of lock to control concurrency.
- Understand Deadlock handling
- Understand 2PL(2 phase locking), Thomas Write rule and Timestamp.

Subject: Microprocessor Lab
Subject Code: 3201
Practical:2
Lecture Timings: 50min
Objectives:

- To introduce the students with the kit (Anshuman Kit) for microprocessor.
- To enable the students to develop logic s and programs.
- To introduce the students to various operations using program.
- To enable the students to develop the algorithm for the given problem.

Outcomes:

- Ability to read, understand and trace the execution of the program.
- Skill to write program code for the given problem.
- Skill to debug the program.
- Ability to use the various operations with their opcodes to write the program of microprocessor.

Subject: DBMS Lab
Subject Code: 3202
Practical:2
Lecture Timings: 50min
Objectives:

- To introduce structured query language
- To teach oracle
- To make student understand table design and table manipulation
- To introduce concepts of nomalization

Course Outcome:

- Students are able to write query in SQL.
- Able to create database and table.
- Implement the operations on database like insertion, deletion, updating, searching etc.
- Able to write and define Constraints.
- Alter Table and Fields.
- Can join two tables with different join operations
- Understand the normalization and its Types.

BCA Semester IV:

Subject: Data Structures and File organization
Subject Code: 4101
Theory: 3+Tutorial: 1
Lecture Timings: 50min
Objectives:

- To understand classification of DS
- To study different data structures like Stack, Queue, Tree, Graph
- To study implementation and applications of Data structures

Outcome:

- Ability to communicate the basic concepts of data structures like array, pointers.
- Understand basic concepts about stacks, queues, lists.
- Ability to write algorithms and step by step approach in solving problems with the help of fundamental data structures.
- Ability to analyse algorithms and algorithm correctness.
- Solve problem involving graphs, trees and heaps
- Ability to solve problems like sorting, searching, insertion and deletion of data elements.

Subject: Introduction to System Analysis and Design
Subject Code: 4102
Theory:3+Tutorial:1
Lecture Timings: 50min
Objectives:

- This Course aims at understanding the core concepts of Software Development which helps Students in its journey of developing software project

Outcomes:

After successfully completing this course, students will be able to understand:

- The types, elements, characteristics and categories of System
- Role of System Analyst
- Data Normalizations
- Various Software Models and SDLC
- Structured tools for analysis and design like DFD, Structured English, Decision table
- and decision tree
- Testing ,User training and implementation of system

Subject: Software Engineering
Subject Code: 4103
Theory:4
Lecture Timings: 50min
Objectives:

- This course introduces the concepts and methods required for the construction of large software intensive systems.
- It aims to develop a broad understanding of the discipline of software engineering.
- To understand the software development life cycle
- It seeks to complement this with a detailed knowledge of techniques for the analysis and design of complex software intensive systems.
- It aims to set these techniques in an appropriate engineering and management context.

Outcome:
Students can

- Able to understand the issues affecting the organisation, planning and control of software-based systems development.
- Able to complete the analysis and design of a small software
- Able to read and understand the requirement specification document
- Able to understand testing and Quality control

Subject: Object Oriented Programming using C++
Subject Code: 4104
Theory:4
Lecture Timings: 50min
Objectives:

- To deliver overview of benefits of Object Oriented Programming (OOP) approach over the Traditional programming approach.
- To understand the basic structure of C++ program.
- To enable the students to develop logic and programs.
- To identify different types of errors in the program.

Course Outcomes:

- Skills to write program code in C++ to solve real world problem.
- In-depth understanding of various OOP concepts.Ability to debug the program.
- Skill to read, understand and trace the execution of the program.

Subject: Data Structure Lab
Subject Code: 4201
Practical:2
Lecture Timings: 50min
Outcome
After completion of Lab session, the student will

- Be learn to add, delete items in stack and queue.
- Be capable to solve linked list problems using pointers.
- Using linked list students can built real time applications of linked list.
- Be capable to decide the appropriate data structure for given problem.
- Have practical knowledge on the applications of data structures

Subject: Object Oriented Programming using C++
Subject Code: 4202
Practical: 2
Lecture Timings: 50min
Objectives:

- To understand the basic structure of C++ program.
- To enable the students to develop logic and programs.
- To identify different types of errors in the program.

Course Outcomes:

- Skills to write program code in C++ to solve real world problem.
- Ability to debug the program.
- Skill to read, understand and trace the execution of the program

BCA Semester V:

Subject: Data Communications & Networking
Subject Code: 5101
Theory:3+Tutorial:1
Lecture Timings: 50min
Objective:

- Build an understanding of the fundamental concepts of computer networking.
- Familiarize the student with the basic taxonomy and terminology of the computer networking area.
- Introduce the student to advanced networking concepts.
- To get Knowledge of Data Communication

Learning Outcomes:
After completing this course the student must demonstrate the knowledge and ability to:

- Independently understand basic computer network technology.
- Understand and explain Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
- Identify the different types of network devices and their functions within a network

Subject: Java Programming
Subject Code: 5102
Theory:4
Lecture Timings: 50min
Objectives:

- 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.
- To learn how to extend Java classes with inheritance and dynamic binding.
- To learn how to use exception handling in Java applications.
- To understand how to design GUI components with the Java Swing API.
- To understand how to design applications with threads in Java.
- To learn how to read and write files in Java.

Outcome:
After completion of course students will able to do

- Write program in java
- Implement the features of java
- Exception handling
- Apple programming
- File handling
- Real time java applications
- Multi-Threading concept

Subject: Visual and Database Programming
Subject Code: 5103
Theory:2
Practical:2
Lecture Timings: 50min
Objectives:

- To introduce the students with .NET framework.
- To understand the designing and development of forms using VB programming language.
- To introduce the students with various controls to design the forms.
- To give detailed knowledge about how to connect your application with the database.
- To understand how to generate the crystal reports.

Outcomes:

- Ability to design and develop windows and web applications.
- Skills to read, understand and trace the execution of program.
- Ability to connect your application with the database.
- Skills to generate the crystal reports.

Subject: Internet Programming
Subject Code: 5104
Theory: 4
Lecture Timings: 50min
Objectives:

- To introduce HTML
- To understand the concept of web page design
- To learn Java Script and XML

Outcome:

- Analyse a web page and identify its elements and attributes.
- Learning HTML tags to build static web page.
- Create web pages using XHTML and Cascading Style Sheets.
- Learn to create dynamic web pages using JavaScript (Client side programming).
- Create XML documents and Schemas.

Subject: Java Programming Lab
Subject Code: 5201
Practical: 2
Lecture Timings: 50min
Objectives:

- To learn how to extend Java classes with inheritance and dynamic binding.
- To learn how to use exception handling in Java applications.
- To understand how to design GUI components with the Java Swing API.
- To understand how to design applications with threads in Java.
- To learn how to read and write files in Java.

Outcome:

- Writing program in java
- Able to use inheritance to extend class
- Able to do applet and GUI programming
- Able to implement file handling in Java

Subject: Internet Programming Lab
Subject Code: 5202
Practical: 2
Lecture Timings: 50min
Outcome:

- Learn about Web Page and the basic HTML tags.
- Learning of cookies and using cookie programs in web applications
- Be able to create and use JavaScript programs
- Learn to create small web sites using HTML and CSS.

BCA Semester VI:

Subject: Management Information System
Subject Code: 6101
Theory:3+ Tutorial: 1
Lecture Timings: 50min
Objectives:

- Understand the leadership role of Management Information Systems 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.

Outcome:

- To Introduce the students to the Management information system
- To learn Basic terms in management & business
- To understand the working of marketing development, designing in the company
- To understand concept of information
- To learn levels in Management
- To understand financial & production functions of MIS
- Understand and evaluate a computer based information system.
- to understand managerial issues related to the information systems.

Subject: Enterprise Recourse Planning
Subject Code: 6102
Theory:3+Tutorial:1
Lecture Timings: 50min
Objectives

- To introduce students to Enterprise Resource Planning.
- To understand the general model of ERP and how it works.
- To gain knowledge of various ERP departments with case studies
- To understand the difference between customer, vendor and suppliers.

Outcomes

- In-depth understanding of various concepts of ERP
- Ability to understand how it works from one department to the another
- Ability to understand supply chain management, ERP methodologies.
- To understand the role of costumer, vendor, supplier in ERP system
- Gain the knowledge of who is order winner and order qualifiers.

Subject: Intellectual Property Rights & Cyber Laws
Subject Code: 6103
Theory:4
Lecture Timings: 50min
Objectives:

- To introduce fundamental aspects of Intellectual property
- To give knowledge on patents, patent regime in India and abroad and registration aspects
- To give knowledge on copyrights and its related rights and registration aspects
- To give knowledge on trademarks and registration aspects
- To give knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design Protection and their registration aspects

Outcome
On completion of this course of study, students should be able to:

- Apply intellectual property law principles (including copyright, patents, designs and trademarks) to real problems and analyse the social impact of intellectual property law and policy
- Understand IT Act 2000
- Analyse ethical and professional issues related to cyber laws and cyber crime.

Subject: Web Technology
Subject Code: 6113
Theory:2
Practical:2
Lecture Timings: 50min
Objectives:

- To understand internet and WWW
- To understand Cryptography
- To understand the syntax of Java script, Perl, ASP
- To learn security issue
- To learn web development software tools

Outcome:

- Explain the history of the internet and World Wide Web.
- Concepts that are important in understanding web development like Digital Signature and Virtual Hosting.
- Discuss the understandings of internet programming with different scripting languages like Java script, Perl , ASP etc.
- Implement complete application over the web.
- Learn the important HTML tags for designing static pages.

- Ability to create separate design page from content using Cascading Style sheet.
- Utilize the concepts of JavaScript
- Use web application development software tools i.e. PHP and XML etc.
- Find the locations currently available in the market to design web sites.

Subject: Project
Subject Code: 6201
Practical:4
Lecture Timings: 50min

Objectives:

- Apply learning in real world
- Understand how real things are different compared to study
- What more needs to be learn before entering into industry
- Also, to learn how SDLC/System Analysis and Design work in real world.
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Outcome:

- Students will able to implement knowledge in real applications
- Develop a software to solve problem
- Students will able to implement all phases of SDLC in practice
- Students are able to perform the job of Analyst, Programmer and tester.
- Insight of Software development process