Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J. R. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Science

Paper Title: Programming in C **Course Code**: BCA 103

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	Introduction to Programming in C. History ,Compilers and Interpreters, Algorithms, Flowcharts, Structure of a C program, C Tokens , Keywords, Variables , Data types , Operators , Formatted I/O Statement, Unformatted I/O Statement	**Understanding basic environment of c**
II	UNIT II	Controlling Statement , Decision Making Statement, If Statement, If- else Statement , Nested if –else Statement, Else if Ladder Statement, Switch Statement, Loop Statement ,For Loop, While Loop , Do-while Loop , Nested for Loop, Break, goto and Continue	Understand how to solve problems using basic concepts
III	UNIT III	Function in C, Functions in C, What is a function, User defined functions , Declaration , Definition , Function calling Recursion	Create users function to perform their own tasks

IV	UNIT IV	Array and Structure, Arrays, Array declaration, initialization , One dimensional Array , Two dimensional Array , Standard String library functions, Creating structures , Accessing structure members (dot Operator) 4.8 Unions	**Understand basic data storage structures**

Specify Course Outcome:

It is general purpose and procedure oriented programming language. In which we are able to develop OS and MAC operating system, application software and programming languages. Programming Language are also used to build students logic for programming.

Specify Program Outcome:

To study of structure of programming languages, structure of c program. To study different keyword for making program. To develop programs using operators and control statement. To describe an array, structure, union, string and functions. Student are able to develop application software.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Khairajani S.U. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Fundamentals of Computer Science and Information Technology
Course Code: BCA 101

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Introduction to Computer and History 1.1 Definition of Computer 1.2 Basic Computer Organization 1.3 Characteristics of Computer 1.4 Generations of Computer 1.5 Types of Computer:- Microcomputer, Minicomputer, Mainframe Computer, Workstations, Client and Server	**Understanding basic structure of computer**
II	UNIT II	Computer Peripherals & Memory 10 Lectures 2.1 Input Devices :- Keyboard, Mouse, Trackball, Joystick, Light pen 2.2 Output Devices :- Monitor, Printer, Projector, Biometric Devices 2.3 Computer Memory :- RAM, ROM, Cache Memory	Understand input and output devices and memory
III	UNIT III	Storage Devices and Operating System 3.1 Compact Disk, Digital Versatile Disk 3.2 Hard Disk Drive 3.3 USB Flash	**Understand storage devices and different operating systems**

		Drive 3.4 Memory Card 3.5 Definition of operating System 3.6 Types of Operating System 3.7 Disk Operating System 3.8 Windows Operating System 3.9 Linux Operating System	
IV	UNIT IV	Introduction to Computer Network & Internet 4.1 Definition of Network 4.2 Types of Network :- LAN,MAN,WAN 4.3 Data Transmission Modes 4.4 OSI Model 4.5 E-Mail 4.6 File Transfer Protocol 4.7 Web Browser 4.8 Types of Web Browser	**Understand computer network and its types**

Specify Course Outcome:

Through this paper Student should learn basic principles of computer. The paper is designed to aim at importing basic level of Computer.

Specify Program Outcome:

To learn Basic Function of Devices like I/O, HDD etc. To Understand the Fundamental of Software and Hardware. Understand the Concept of Operating System and Network.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Dantpalle K. D. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Office Automation **Course Code**: BCA 102

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Introduction to MS-Word. 1.1 Word 2010 Basics: - Opening screen of MS-word, 1.2 Home menu- font tab, 1.3 Paragraph tab, 1.4 Styles tab 1.5 Editing options in MS-Word 1.6 Insert menu- table tool 1.7 Header and Footer tool 1.8 Mail-merge 1.9 Custom dictionary 1.10 Printing in MS-Word 1.11 Creating Index in MS-Word.	**Understanding MS-Word in detail**
II	UNIT II	2. Working with MS-Excel. 2.1 Introduction to MS-Excel 2.2 Formatting cells 2.3 Formatting columns 2.4 Row height 2.5 Merging 2.6 Splitting columns and connecting the worksheets 2.7 Working with Formulas and Functions 2.8 Creating charts 2.9 Goal seek 2.10 Data validation 2.11 Conditional Formatting.	Understand how to create spreadsheet using excel

III	UNIT III	3. Working with Microsoft power point. 3.1 Opening Screen of MS PowerPoint 3.2 Creating a new presentation based on template 3.3 Design template and blank presentation 3.4 Slide Transition 3.5 Custom Animation effects 3.6 Slide show 3.7 Adding audio and video on slides.	Create presentation using powerpoint
IV	UNIT IV	4. Introduction to MS-Access. 4.1 Opening screen of MS-Access 4.2 Advantages and disadvantages of MS-Access 4.3 Performing Queries 4.4 Generating the report 4.5 Creating the database in Access 4.6 Creating forms and adding new records in MS-Access.	**Generating reports and save the records**

Specify Course Outcome:

The main objective of Office Automation is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. It will simplify the task and reduce the paper work means the software improves the working methods by replacing the existing manual system with the computer-based system.

Specify Program Outcome:

After completion of this course student will be able to understand the computer software, hardware, made available to simplify and automate a variety of office operations such as data processing, data manipulating and data presentation with various application those are presents in Microsoft office tools packages.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Muley S. M. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Elective: Mathematical Technique in Computer Science (MTCS)
Course Code: BCA 104B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Set theory 1.1 Definition & types of set 1.2 Venn diagram 1.3 Set operation 1.4 Properties of sets 1.5 Numerical example	**Understanding basic set theory**
II	UNIT II	2. Arithmetical ability 10 Lectures 2.1 Numbers, Asthmatic progression & Geometric progression 2.2 Divisibility tests 2.3 H.C.F.and L.C.M. of numbers 2.4 Time, Work and distance.	Understand how to solve problems using basic concepts like LCM and HCM
III	UNIT III	3. Matrices & determinants 3.1 Matric & types 3.2 Algebra & Matrices 3.3 Definition of determinants 3.4 Adjoint of matrix 3.5 Inverse of matrix	Solve problems related to matrics
IV	UNIT IV	4. Group theory 4.1 Definition & types of groups 4.2 Degree of vertices 4.3 Isomorphism	**Solve problems related to trees**

		graph 4.4 Connected & disconnected group 4.5 Walks, paths & circuits 4.6 Binary tree	

Specify Course Outcome:

Knowledge, skill & understanding develop understanding & fluency in mathematics through inquiry, exploring & connecting mathematical concept choosing & applying problem – solving skills.

Specify Program Outcome:

Able to use standard mathematical techniques to solve elementary problem.

Understand the nature of mathematical proof & be able to write clear &

concise proof.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Muley S. M. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Open Elective: Business Communication **Course Code**: BCA 105B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Basic English Grammar 1.1 Noun 1.2 Verb 1.3 Adjective 1.4 Adverb	**Understanding basic grammer**
II	UNIT II	2. Transformation of Sentences: 2.1 Simple to Complex 2.2 Complex to Compound	Understand how to transform sentences in communication
III	UNIT III	3. Writing Skills 3.1 Essay Writing 3.2 Email Writing 3.3 Resume	**Understand writing skills**
IV	UNIT IV	4. Group Discussion 4.1 Group Discussion: 4.2 Seminar Conference 4.3 Meeting 4.4 Interview	**Used to improve communication**

Specify Course Outcome:

To make a comprehensive use of English in day-to-day life.
To help Students develop the ability to learn and contribute critically.
To develop the writing skills of the students.

To help the students to understand the basic usages of English.

Specify Program Outcome:

By the end of this course students should be able to: Understand and demonstrate Basic English usages for their different purposes. Clear entrance examination and aptitude tests. Write various letters, reports required for professional life.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J. R. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: C Programming **Course Code**: BCA 106

Unit Number	Unit Name
1.	Demonstrate C programming Structure
2.	Use of data types
3.	Use of control statements
4.	Use of looping statements
5.	Demonstrate input output statements
6.	Use of user define function
7.	Demonstrate recursion function
8.	Use of array
9.	Demonstrate string library function
10.	Demonstrate structure

Specify Course Outcome:

It is general purpose and procedure oriented programming language. In which we are able to develop OS and MAC operating system, application software and programming languages. Programming Language are also used to build students logic for programming.

Specify Program Outcome:

To study of structure of programming languages, structure of c program. To study different keyword for making program. To develop programs using operators and control statement. To describe an array, structure, union, string and functions. Student are able to develop application software.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Dantpalle K.D. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Office Automation **Course Code**: BCA 107

Unit Number	Unit Name
1.	Study of Word Opening screen
2.	Study of EXCEL Opening screen
3.	Study of PowerPoint Opening screen
4.	Study of Access Opening screen
5.	Study of Find and Replace Dialog Box in Microsoft Word
6.	Study of Page Setup Dialog Box
7.	Study of Table Formatting
8.	Study of Custom Dictionary & Go to Dialog Box
9.	Study of mail merge
10.	Study of creating charts.

Specify Course Outcome:

The main objective of Office Automation is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. It will simplify the task and reduce the paper work means the software improves the working methods by replacing the existing manual system with the computer-based system.

Specify Program Outcome:

After completion of this course student will be able to understand the computer software, hardware, made available to simplify and automate a variety of office operations such as data processing, data manipulating and data presentation with various application those are presents in Microsoft office tools packages.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kadam V.V. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: JavaScript **Course Code**: BCA 201

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	What is JavaScript? The development workflow Selecting the right tools for the job Just enough HTML and CSS Understanding objects Understanding variables Making comparisons Understanding events Writing your first script 17 Internal vs. external scripts Using comments in scripts Using the No Script Creating alert dialogs Understanding conditional statements Getting confirmations from users Creating prompts for users Understanding functions Making links smarter	Understanding basic environment of Javascript
II	UNIT II	Getting started Creating loops Passing values to functions Detecting objects Reading arrays Returning values from functions Writing arrays Building do and while loops Re-using functions	Understand the basic syntax and structure of the programming language you're using. Learn how to write and execute simple programs.
III	UNIT III	Creating a basic image rollover How to write a better rollover Creating a three-state rollover Making rollovers accessible and 508 compliant	Ability to create a simple rollover effect where one image changes to another when the user hovers over it.

		Making disjointed rollovers Creating slideshows Displaying random images	Use of HTML and CSS (or JavaScript) to swap images on hover.
IV	UNIT IV	Getting started Creating jump menus Creating dynamic menus Requiring fields Cross-checking fields Displaying more informative errors Verifying radio button selections Setting one field with another field Verifying email addresses Responding to window events Responding to mouse movements Responding to mouse clicks Responding to onBlur form events Responding to onFocus form events Responding to keyboard events The DOM, Nodes, and Objects Working with Dates and Times	**Learn the basic structure and functionality of web forms and event handling.** **Understand how to add form elements like text fields, buttons, and menus using HTML.**

Specify Course Outcome:

Understand the JavaScript language & the Document Object Model. Alter, show, hide and move objects on a web page. Check information inputted into a form. JavaScript allows programming to be performed without server interaction. JavaScript can respond to events, such as button clicks. JavaScript can validate data before sending out a request. JavaScript can adjust an HTML document for special effects. JavaScript can create cookies! Cookies can be used to store and retrieve information from the user's computer

Specify Program Outcome:

Students will be a Front-End website developer. JavaScript ensures student to have a responsive, mobile-first website. It paces up the development process by offering resources such as templates and themes, which can be customized according to the project needs.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kandi S.J. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Graphics Design and Content Management Tools **Course Code**: BCA 202

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	Create Flash movie file, Draw the characters and background, Basic drawing tools i.e. Pencil, Brush, Paint Bucket, and Text tools, Previewing and Publishing Movie, Scenes, Layers, and Library Symbols, Frames, Tweening , and Onion Skinning, Creating Curves, Importing Illustrator/Photoshop Files, Understanding Blend Effects Animating 3D motion, Articulated Motion with Inverse Kinematics, Constraining Joints, Inverse Kinematics with Shapes, Designing a Layout, Creating Buttons and Actions, Creating Event Handlers, Using Sounds, Using Adobe Media Encoder, Playback of External Video, Working with Video and Transparency, Embedding Flash Video, Using Components, Creating Masks, Adding Metadata, Publishing Movie for the Web	Learn how to start a new Flash project and create a movie file. Understand file formats (like .fla for editing and .swf for the published output). Gain skills in creating characters and backgrounds using Flash's drawing tools or importing external assets. Use vector graphics to ensure scalability and quality.
II	UNIT II	Introduction to database, Features of MySQL, Basics of Relational Databases, Creating and Selecting a Database,	Understand what a database is and why it's used.

		Creating a Table, Loading Data into a Table, Modifying and Deleting Data from Table, Retrieving Information from a Table, Selecting All Data, Selecting Particular Rows, Selecting Particular Columns,	Learn the basic components of databases, such as tables, records, and fields. Understand the different types of databases, including relational and non-relational. Learn about MySQL as an open-source relational database management system (RDBMS). Understand key features like scalability, security, speed, support for large databases, and cross-platform compatibility.
III	UNIT III	Installing WordPress, Installing Themes, Creating a Child Theme, Modifying a Theme, Setting Up a WordPress Site, Starting the MRP Theme, The WordPress Loop, Continuing with the Loop, Splitting the Page into Templates, Creating a Page for Single Posts, Creating Pages, Customizing the Navigation Menu, Customizing the Sidebar, Creating a Custom Page Template, Adding a Contact Form, Uploading a WordPress Site	Learn how to download and install WordPress on a local server (e.g., XAMPP, WAMP) or a web server (via hosting platforms). Understand the requirements for WordPress installation, including MySQL and PHP setup. Learn how to install and activate themes from the WordPress theme repository or by uploading custom themes.
IV	UNIT IV	What are plugins? Finding plugins, Installing plugins, Activating and deactivating plugins, Editing plugin settings, Deleting plugins, Adding, editing, and deleting users, User roles and permissions, Importing content from another site, Exporting your WordPress data, WordPress General settings, Changing the site title and tagline, Changing your URL, Using a different homepage, Updating the admin email address, Changing time zones Date/Time formats Introduction to Woo Commerce, Woo Commerce installation, Convert	Understand that plugins are add-ons that enhance or extend the functionality of a WordPress site without needing to modify the core code. Learn how to search for plugins using the WordPress plugin directory.

		HTML to Woo commerce using [short-code], Recent Products, Featured Products, Variable Products, Woo commerce Settings, Payment Gateway Integration, Moving woo commerce site from Local Server to Live Server	

Specify Course Outcome:

Create, manipulate, and edit text and graphics to obtain desired graphical outcomes. Define a relational database management system (RDBMS) and describe its structure. Define data definition language (DDL) and data manipulation language (DML). Provide the skills to effectively create and operate WordPress sites.

Specify Program Outcome:

Utilize several Flash tools and tactics learned throughout the course to produce an interactive flash based website. Publish flash movies in numerous formats and contexts in a professional and web friendly manner. Know types of databases and how to design them. Know advanced queries and advanced concepts in MySQL. Plan website by choosing colour schemes, fonts, layouts, and more. Select, install, and activate a theme in word press. Design e-commerce site using woo commerce plugin.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Web Technology **Course Code**: BCA 203

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Introduction of HTML Documents 1.1 Historical Roots of HTML, 1.2 Web page, Website, 1.3 Structure of HTML documents and Basic Tags: HTML, HEAD, TITLE, BODY 1.4 Formatting Tags: Paragraph Tags, List tags, HR Tag. 1.5 Headings Tags, PRE tag, DIV tag, SPAN tag. 1.6 FONT Tag, ADDRESS tag, MARQUEE tag. 1.7 Text-Level Elements & other different formatting tags.	Understand the origins of HTML (HyperText Markup Language) and its development over time. Gain insight into how HTML serves as the foundational language for building web pages and websites.
II	UNIT II	2. Technologies for Web Application 2.1 WWW, Web browser. 2.2 U.R.L. concept. 2.3 Web server, Web protocols: HTTP, FTP, Telnet. 2.4 Hyperlink (Anchor) Tag & it's all attributes, 2.5 Creating Email Hyperlinks (using mail to anchor) 2.6 The Role of Images on the Web, tag & it's all attributes, Using Images as links. 2.7 Tables in HTML:- TABLE, TR, TH, TD tag with example, table with all Attributes	Understand the concept of the **World Wide Web (WWW)** as a global information system where documents and resources are accessed over the internet. Understand what a **URL** is and its components (protocol, domain, path, query string). Learn how the **anchor tag (<a>)** is used to create hyperlinks that link

			to different web pages or resources.
III	UNIT III	3. Basic Interactivity and DHTML 3.1 Frames in HTML: FRAMESET & FRAME tags & its attributes 3.2 Simple Frame Example. Forms in HTML: Introduction to forms. 3.3 FORM element & it's attributes (Action, Method (GET, POST), Name) 3.4 Form controls: Text Controls, Password Field, Multiline Text Input, 1. Pull-Down Menus, Check Box, Radio Buttons, Scrolled List, 2. Reset Button and Submit button. 3.5 Introduction of DHTML, Ramifications of DHTML 3.6 Rollover Buttons.	Frames in HTML: <frameset> and <frame> Tags & Their Attributes Gain practical experience by creating a simple frame-based HTML document. Understand the purpose of **HTML forms**, used to collect input data from users
IV	UNIT IV	4. CSS and Java Script 4.1 Introduction to Cascading Style Sheets 4.2 Embedded Styles, Inline Styles, Imported/External Styles. 4.3 Introduction of JAVA Script 4.4 Adding script to documents with example. Variables. 4.5 Input and Output statements of JAVA Script	Understand what **CSS (Cascading Style Sheets)** is and its role in web development.

Specify Course Outcome:

The main objective of Office Automation is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. It will simplify the task and reduce the paper work means the software improves the working methods by replacing the existing manual system with the computer-based system. To improve the skill to create the static web page. To develop the ability to create the dynamic web pages. To enhance the ability of Insert a graphic within a web page. To improve the skills to Create, validate and publish a web page.

Specify Program Outcome:

Be able to use HTML programming

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Muley S. M. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Elective: E-Commerce **Course Code**: BCA 204A

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Electronic Commerce 1.1 Electronic Commerce 1.2 Electronic Data Interchange (EDI) 1.3 E-commerce Types 1.4 E-Commerce and the world at large 1.5 Internet Connectivity 1.6 E-Commerce Case Studies a. Intel b. Amazon 1.7 E-Governance Case Studies a. The US Government b. The UK Government	Understand the concept of **E-Commerce** as the buying and selling of goods and services over the internet.
II	UNIT II	PCS & Networking 2. Networking Network Topologies Communication Media VSAT Access Schemes c. VSAT Network Components	Understand the fundamentals of networking, including its definition, purpose, and importance in modern communication systems. Explore different types of networks (e.g., LAN, WAN, MAN) and their applications in various environments, such as home, business, and education.
III	UNIT III	3. Electronic Data Interchange (EDI) 3.1 Electronic Data Interchange (EDI) 3.2 Costs and Benefits 3.3 Components of EDI Systems a. EDI Software b. Communication of EDI Messages 3.4 EDI Implementation Issues	Understand the concept of **Electronic Data Interchange (EDI)** as the electronic transfer of business documents between

			organizations in a standardized format. Understand the **benefits** of EDI
IV	UNIT IV	4. Electronic Payment Systems & Internet Banking 4.1 Payment Gateway 4.2 Internet Banking 4.3 PayPal 4.4 The Secure Electronic Transaction Protocol 4.5 Electronic Cash 4.6 Electronic Cheque 4.7 Elements of Electronic Payments	Understand the role of a **payment gateway** as a service that authorizes and processes credit card payments for e-commerce transactions. Gain knowledge of **internet banking.**

Specify Course Outcome:

Examine the ways that marketing can be done, and is being done, using the Internet. Gain an understanding of networked computers and the Internet. Students will learn to use the several Internet services such as the World Wide Web, Email. Use of these services for marketing purposes.**Specify**

Program Outcome:

At the end of the course, the students is expected to realize the problems involved in designing and building e-commerce systems; understand the need to design EC systems that fully meet the requirements of the intended users; appreciate the need to ensure that the implementation of a design is adequately tested to ensure that the completed EC system meets the specifications.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Muley S. M. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Open Elective: Corporate English **Course Code**: BCA 205B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Practical usage of English: 1.1 Group Discussion 1.2 Seminar and Conference 1.3 Interview	**Understanding practical use of English to improve communication skill**
II	UNIT II	2. Business Communication: 2.1 E-mail and Cover letter writing 2.2 Resume and CV 2.3 Report writing	Understand communication with different things
III	UNIT III	3. Functional English 3.1 Articles 3.2 Prepositions 3.3 Conjunctions 4.4 Quantifiers	**Understand proper use of functional english**
IV	UNIT IV	4. Basic Structures: 4.1 Phrases 4.2 Clauses 4.3 Sentence: Basic Structures	**Used to improve communication**

Specify Course Outcome:

A comprehensive use of English in day-to-day life. To help Students develop the ability to learn and contribute critically. To develop the writing skills of the students. To help the students to understand the basic usages of English.

Specify Program Outcome:

Understand and demonstrate Basic English usages for their different purposes. Clear entrance examination and aptitude tests. Write various letters, reports required for professional life.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kadam V.V. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Javascript **Course Code**: BCA 206

Unit Number	Unit Name
11.	Defining interactive response and performance to web pages *** JavaScript provides users to interact with web pages as per the below examples as per the requirements
12.	Show/hide more data or user information using with the click of a button
13.	Change the color of a button after hovering the mouse hovers over it
14.	Slide by a carousel of images on the home webpage
15.	Zooming in/zooming out feature on an image
16.	Performing a timer and defining count-down on a website
17.	Performing animation implementations
18.	Using a drop-down interactive on menu
19.	Performing audio and video on a web page

Specify Course Outcome:

To impart the knowledge on basics concepts of JavaScript. To provide the familiarity in the concept of developing JavaScript Code. To converse an idea of creating application using JavaScript. **Specify**

Program Outcome:

To develop background knowledge as well as core expertise in JavaScript. To understand the Dynamic form creation and provide knowledge for creating applications. To learn the advanced JavaScript.

Signature of Teacher

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA FY **Subject**: Computer Application

Paper Title: Web Technology **Course Code**: BCA 207

Unit Number	Unit Name
11.	Create a web page for describing the structure of HTML
12.	Create a web page on text level elements
13.	Create a web page for p, font, address, marquee tags.
14.	Create a web page with anchor tag with all attributes.
15.	Create a web page for img tag with all attributes.
16.	Create a web page for table tag with all attributes.
17.	Describe a frame tag with all attributes.
18.	Create a web page for user registration form using all controls and attributes of form tag.
19.	Create a web page for rollover button.
20.	Create a web page for CSS of embedded styles
21.	Create a web page for CSS of Inline styles.

22.	Create a web page for CSS for imported/external styles.
23.	Write a program for adding java script to documents in web page.
24.	Write a program on input and output statements of java script.

Specify Course Outcome:

To impart the knowledge on basics concepts of creating web pages. To provide the familiarity in the concept of developing HTML Code. To converse an idea of creating application using HTML.

Specify Program Outcome:

Be able to use HTML programming practically by developing webpages.

Signature of Teacher

DnyanopasakShikshanMandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Dantpalle K.D. **Department: Comp. Sci**
Program: BCA SY SEM III **Subject**: Comp. Application
Course Code: BCA 302 **Paper Title:** Operating System Concepts

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Introduction 1.1 What operating system do? User view, system view, defining OS. 1.2 Importance of Operating system 1.3 Basic concepts and terminology 1.4 An Operating system Resource manager 1.5 An Operating system- Process view point 1.6 Operating system– Hierarchical And Extended machine view 1.7 Multiprocessor Systems 1.8 Operating-System Services	Understanding Environment of operating system
2	UNIT II	2. Memory management 12 Lectures 2.1 Single Contiguous Allocation 2.2 Introduction to Multiprogramming 2.3 Partitioned Allocation 2.4 Relocatable Partitioned Memory Management 2.5 Paged Memory Management2.6 Demand- Paged Memory Management 2.7 Segmented Memory management	Understand the benefits and limitations of this method (e.g., simplicity vs. inefficient memory usage). Analyze scenarios where this method is suitable, such as simple systems or early operating systems.
3	UNIT III	3. Processor Management 12 Lectures 3.1 State Model 3.2 Job Scheduling 3.3 Process Scheduling technique-FCFS,SJF,	Understand the different states of a process and what they represent.

		Priority scheduling, Round Robin scheduling 3.4 Multiprocessor System ,Context switch 3.5 Process Synchronization	Analyze the transitions between states and their triggers (e.g., scheduling decisions, I/O operations). Illustrate the state model with diagrams to enhance comprehension.
4	UNIT IV	4. Device Management 14 Lectures 4.1 Techniques for Device Management 4.2 Device characteristics- Hardware Consideration 4.3 Channels And Control Units 4.4 Device Allocation Consideration 4.5 I/O Traffic controller, I/O Scheduler ,I/O Device Handlers 4.6 Virtual Devices 4.7 A Simple File System 4.8 General Model of a File System 4.9 Symbolic File System 4.10 Basic File System	Understand the different device management techniques (e.g., polling, interrupts, direct memory access). Analyze the trade-offs associated with each technique regarding performance and complexity. Recognize how these techniques impact overall system efficiency.

- **Specify Course Outcome:** Through this paper Student should learn fundamentals of OS design, including memory, processor, device, and data management with lots of discussion on the pros and cons of design choices and problem/question sets to make the reader think through design alternatives
- **Specify Program Outcome:** To understand the different Concept of Operating System.

Signature of Teacher

DnyanopasakShikshanMandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: **Department:** Comp. Sci

Program: BCA SY SEM III **Subject**:Comp. Application
Course Code: BCA 303 **Paper Title:** DBMS

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Introduction to DBMS 20 Lectures 1.1 Introduction, Definition & application area. 1.2 Characteristics of DBMS. 1.3 File processing system Vs DBMS. 1.4 Advantages and Disadvantages of DBMS. 1.5 Users of DBMS. 1.6 Structure of DBMS. 1.7 View of Data –Data abstraction, Instances and Schemas. 1.8 Database Languages 1.9 Index-Introduction, Types of Index 1.10 File	Understand the different device management techniques (e.g., polling, interrupts, direct memory access). Analyze the trade-offs associated with each technique regarding performance and complexity. Recognize how these techniques impact overall system efficiency.

		Organization-Introduction, Types of file organization. 1.11 Data Models-Introduction, Types of Data Models.	
2	UNIT II	2. E-R Data Models: 10 Lectures 2.1 Introduction 2.2 Basic Concepts-Entity and Entity Sets, Attributes and types of attributes 2.3 Relationship and relationship sets 2.4 Constraints, Keys 2.5 Entity-Relationship Diagram – Introduction and basic components of E-R diagram. 2.6 Extended E-R Features: Specialization, generalization, higher- and lower-level entity sets, attribute inheritance, and aggregation. 2.7 Example of E-R data base design.	Understand the importance and applications of E-R models in database design. Explain the role of E-R models in representing data requirements.
3	UNIT III	3. Relational Data Model: 10 Lectures 3.1 Introduction to Relational Data Model. 3.2 Structure of Relational databases and Important Terms-Relation, Tuple, Attribute, Cardinality, Degree, Domain 3.3 Integrity constraints over relations 3.4 Logical Database Design: ER to Relational 3.5 The Relational Algebra: Select, Project, Union, Difference, Intersection, Cartesian Product, Natural Join	Understand the foundational concepts of the relational data model. Explain the key features and advantages of relational databases.
4	UNIT IV	4. Relational Database Design: 10 Lectures 4.1 Introduction 4.2 Anomalies of un-normalized database 4.3 Dependencies in Database 4.4 Normalization 4.5 Normal Form: 1NF, 2NF, 3NF, BCNF	Understand the importance of database design in ensuring data integrity and efficiency. Explain the goals and principles of effective relational database design.

- **Specify Course Outcome:** The objective of the course is to enable students to understand and use the concepts of Data, Database Systems, DBMS, and Applications of DBMS. Understand the structure of DBMS, various Data Models, designing relational database systems, using relational algebra and Normalization.
- **Specify Program Outcome:** Able to master the basic concepts and understand the applications of database systems. • Able to construct an Entity-Relationship (E-R) model from specifications

and to transform to relational model. • Able to construct unary/binary/set/aggregate queries in Relational Algebra. • Understand and apply database normalization principles.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Muley S.M. **Department:** Comp. Sci
Program: BCA SY SEM III **Subject**:Comp. Application
Course Code: BCA 304B **Paper Title:** Intro. To Multimedia

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Multimedia element	Definition,element,application,global structure	Learning medias like audio,video,animation,text,graphics.
2	Data Compression	Storage space, coding requirement, basic compression technique	Learn the techniques to reduce the size of data in each format.
3	Optical Storage Media	Basic technology,video disk,WORMs,CD-ROM,DVD-ROM	Understands different optical storage medias which provides random access.
4	Sound/Audio	MIDI,Digital audio,audio file formats	Understands audio,its storage in digital form, & its different formats like mp3
5	Image/Graphics	Bitmaps,vector drawing,image formats,color	Understands images with its different formats.
6	Video & Animation	Broadcast video standards,T.V.,computer based animation	Learn how to broadcast video on T.V., learn softwares for animation.

- **Specify Course Outcome:** Developed understanding of technical aspect of Multimedia Systems. Understand various file formats for audio, video and text media. Develop various Multimedia Systems applicable in real time. Design interactive multimedia software. Apply various networking protocols for multimedia applications. To evaluate multimedia application for its optimum performance.
- **Specify Program Outcome:** Understands multimedia elements to make appliacations more familier to users.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Patode S.S. **Department:** Comp. Sci

Program: BCA SY SEM III **Subject**:Comp. Application
Course Code: BCA 305B **Paper Title:** Numerical Aptitude

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Average and Equation 1.1 Average: Definition of average, Formulae and theoretical problem on average 1.2 Equation: Simple equation, Linear equation, Quadratic equation, Cubic equation.	Understand the concept of average and its applications. Define average, identify different types of averages (mean, median, mode), and apply the appropriate formulae to solve theoretical problems involving averages.
2	UNIT II	2. Problems on Number and ages 13 Lectures 2.1 Problem on number, ages: Simultaneous equations and their applications. 2.2. Theoretical problems on number and age.	Understand the concepts of cost price, selling price, and profit. Define key terms: cost price (CP), selling price (SP), and profit (or loss). Apply the relevant formulae to calculate profit, loss, and percentage profit or loss based on given data.
3	UNIT III	3. Percentage, Profit and Loss 3.1 Percentage: Concept of percentage, Application of percentage, Results on populations, Result on depreciations, Theoretical problem on percentage.	Understand the concept and applications of percentages in various contexts. Define percentage and explain its significance in everyday calculations. Calculate percentages, including increases and decreases, and interpret the results in real-world situations.
4	UNIT IV	4. Time and Work, Time and Distance and Problems on Train 13 Lectures 3.1 Time and Work: Concept of time and	Understand the relationship between time and work in various contexts.

		work, Relationship between time and work, Theoretical problems on time and work. 4.2 Time and Distance: Concept of time and distance, Formulae of time and distance, Theoretical problems on time and distance. 4.3 Problems on Train: Formulae of problems on train, Theoretical problems on train.	Solve theoretical problems related to time and work, applying relevant formulas and concepts.

- **Specify Course Outcome:** The main objective of numerical aptitude is to test the speed of the student along with his or her accuracy and competent to understand a question and then apply his or her knowledge base to get it solved.
- **Specify Program Outcome:** On successful completion of the course the students will be able to understand the basic concepts of numerical ability.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department:** Comp. Sci

Program: BCA SY SEM III **Subject**:Comp. Application
Course Code: BCA 301 **Paper Title:** Programming in C++

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1.1 Object Oriented Programming 1.2 Basic concepts of OOPs 1.3 Benefits of OOPs. 1.4 C++ Tokens, Variables, Constants and data types 1.5 Scope Resolution Operator 1.6 Basic Input / Output Statements 1.7 Structure of a C ++ program 1.8 Control Structure 1.8.1 Conditional Statements 1.8.2 Looping Statements	Understand the principles and methodologies of OOP. Application: Be able to design and implement software using OOP concepts to create reusable and modular code.
2	UNIT II	2.1 Defining Class, Members , Object 2.2 Visibility modes 2.3 Static members 2.4 Pointer to members 2.5 Pointer to objects 2.6 Constructors & Destructors 2.7 Friend Function	**Class**: A user-defined data type that represents a blueprint for creating objects. It encapsulates data and functions.
3	UNIT III	3.1 Concept of Operator Overloading 3.2 Rules for Overloading 3.3 Unary & Binary operator overloading 3.4 Concept of Inheritance 3.5 Types of Inheritance 3.6 Concept of Polymorphism 3.7	Understand structured overview of the topics related to operator overloading,

		Virtual Base Classes 3.8 Pointer to Derived class 3.9 Virtual functions and Rules for Virtual function 3.10 Pure Virtual functions	inheritance, polymorphism, and virtual functions in C++
4	UNIT IV	4.1 C++ Streams 4.2 C++ Stream Classes 4.3 Unformatted I/O operations 4.4 Formatted I/O operations 4.5 Manipulators 4.6 Opening and closing file 4.7 file modes	Understand an overview of the topics related to C++ streams, I/O operations, and file handling

- **Specify Course Outcome:** The primary purpose of C++ programming was to add object orientation to the C programming language, which is one of the most powerful programming languages. The heart of the pure object-oriented programming is to create an object, which has properties and methods.
- **Specify Program Outcome:** Students are able to define objects which the core part of object oriented programming languages. • It helps to develop and build logic for programming among the learners. • Students are able to develop application software using C++.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA SY **Subject**: Computer Application

Paper Title: C++ Programming **Course Code**: BCA 306

Unit Number	Unit Name
25.	Program to demonstrate C++ programming Structure.
26.	Program to demonstrate use of different data types.
27.	Program to demonstrate Use of Scope Resolution Operator.
28.	Program to demonstrate Use of arrays
29.	Program to demonstrate Use of conditional statements.
30.	Program to demonstrate Use of looping statements.
31.	Program to demonstrate Use of call by value.
32.	Program to demonstrate Use of call by reference.
33.	Program to demonstrate the concept of inline function
34.	Program to demonstrate the concept of default arguments.
35.	Program to demonstrate the concept of Function Overloading
36.	Program to demonstrate the concept of static members.
37.	Program to demonstrate the concept of constructor and destructor.
38.	Program to demonstrate the concept of friend function.
39.	Programs to demonstrate different types of inheritance.

Specify Course Outcome:

The primary purpose of C++ programming was to add object orientation to the C programming language, which is one of the most powerful programming languages. The heart of the pure object-oriented programming is to create an object, which has properties and methods.

Specify Program Outcome:

Students are able to define objects which the core part of object oriented programming languages. It helps to develop and build logic for programming among the learners. Students are able to develop application software using C++.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shaikh K.M. **Department: Computer Science**

Program: BCA SY **Subject**: Computer Application

Paper Title: DBMS **Course Code**: BCA 307

Unit Number	Unit Name
1.	Write procedure for creating database in MS-Access
2.	Create tables in MS ACCESS using different ways.
3.	Perform Import data operation in MS ACCESS.
4.	Perform export data operation in MS ACCESS.
5.	Create queries in MS ACCESS for selection, projection, Cartesian product.
6.	Create queries in MS ACCESS for union, intersection and difference.
7.	Create queries in MS ACCESS for different types of joins
8.	Generate forms and add new records in MS-Access.
9.	Generate the report in MS Access.
10.	Generate the report in MS Access using Report Wizard.

Specify Course Outcome:

Explain fundamental database concepts and the role of Microsoft Access as a relational database management system.Create a new Access database and design its structure, including tables, fields, data types, and relationships between tables.

Specify Program Outcome:

Navigate the Microsoft Access interface efficiently, including menus, ribbons, and navigation panes.Create and set up a new Access database, including defining tables, data types, and primary keys.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department:** Comp. Sci

Program: BCA SY SEM IV **Subject**: Comp. Application

Course Code: BCA 401 **Paper Title:** Programming in JAVA

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Introduction and Overview of Java Language 1.1 Java History 1.2 Java Features 1.3 How Java Differ from C and C++ 1.4 JVM 1.5 Java Environment 1.6 Java Programming Structure 1.7 Java Tokens, Variables, Constants and Data types 1.8 Control Structure 1.8.1 Conditional Statements 1.8.2 Looping Statements 1.8.3 Jumping Statements 1.9 Arrays	Understand the evolution and historical context of the Java programming language. Understand the evolution and historical context of the Java programming language.
2	UNIT II	2. Classes, Objects and Methods 2.1 Defining Class, Fields Declaration, Methods Declaration, Creating Objects 2.2 Visibility controls 2.3 Use of 'this' Keyword 2.4 Method Parameters and Method Overloading 2.5 Constructor and Constructor Overloading 2.6 Static Members 2.7 Finializer Method 2.8 Inheritance and It's Types 2.9 Method Overriding 2.10 Final Variable, Method and Final Class	Understand the fundamental building blocks of object-oriented programming in Java. Define a class, declare fields and methods, and create objects from the class.

3	UNIT III	3. Interface, Package and Exception Handling 3.1 Defining and implementing interface 3.2 Package 3.2.1 Create Package 3.2.2 Accessing Package 3.3 Exception 3.3.1 Types of Error 3.3.2 Multiple catch statement 3.3.3 Creating User defined Exception 3.3.4 Finally clause	Understand the concept of interfaces in Java and their role in defining contracts for classes. Define and implement interfaces, recognizing their importance in achieving abstraction and multiple inheritance.
4	UNIT IV	4. String, Stream and Applet Programming 4.1 Introduction and String Classes 4.2 StringBuffer Class 4.3 Stream Classes 4.3.1Types of Streams 4.3.2 Byte Stream Classes 4.3.3 Character Stream Classes 4.4 Introduction and creating Applets 4.5 Applet Life Cycle 4.6 Applet Tag 4.7 Passing Parameters to Applets	Understand the importance and functionality of string manipulation in Java. Define string classes in Java and demonstrate various methods for string manipulation and operations.

- **Specify Course Outcome:** To learn Java for the design of desktop and web applications. To learn how to implement object-oriented designs with Java. To learn different concepts in Java language To design and program stand-alone Java applications.
- **Specify Program Outcome:** Students learn about the concepts like interface, packages etc. Students are able to develop stand-alone Java applications and web applications.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher:Kadam V.V. **Department:** Comp. Sci

Program: BCA SY SEM IV **Subject**: Comp. Application

Course Code: BCA 402 **Paper Title:** Data Structure and Algorithm

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Introductions and Overview: 15 Lectures 1.1 Introduction 1.2 Basic technology, elementary data organization 1.3 Data structure 1.4 Data structure operation 1.5 Notation and Concept of algorithm 1.6 Complexity, time space tradeoff 1.7 Introduction to Array 1.8 Linear array 1.9	Understand the basic technologies and methods of organizing data. Explain different data organization techniques and their importance in data processing.

		Representation of linear array in memory 1.10 Traversing linear array 1.11 Inserting and Deleting 1.12 Searching methods (Binary and linear search)	
2	UNIT II	2. Sorting and Linked list : 10 Lectures 2.1 Selection sort 2.2 Bubble sort 2.3 Insertion sort 2.4 Introduction to Linked list 2.5 Representation of Linked list in memory 2.6 Searching a linked list 2.7 Memory allocation, Garbage collection 2.8 Insertion and deletion in linked list	Understand the selection sort algorithm. Implement and analyze the selection sort algorithm, explaining its steps and efficiency.
3	UNIT III	3. Stacks, Queues, Recursion: 15 Lectures 3.1 Introduction 3.2 Stacks 3.3 Array representation of stacks 3.4 Arithmetic expression 3.5 Recursion 3.6 Queues :Memory Representation, Insertion, Deletion 3.7 Deques 3.8 Priority queue	Provide an overview of stacks, queues, and recursion as fundamental data structures and concepts. Define stacks, queues, and recursion, and explain their significance in programming and algorithms.
4	UNIT IV	4. Tree: 10 Lectures 4.1 Introduction 4.2 Terminology of Binary tree 4.3 Types of Binary tree 4.4 Traversing of binary tree 4.5 Header Nodes, Threads 4.6 General Tree Introduction	Provide an overview of tree data structures and their significance. Define trees and explain their importance in organizing hierarchical data.

- **Specify Course Outcome:** The data structures paper helps the students to have the practical understanding of the subject.
- **Specify Program Outcome:** Students are able to create and use various data structures like Strings, Arrays, Linked Lists, and Trees.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shaikh K.M. **Department:** Comp. Sci
Program: BCA SY SEM IV **Subject**:Comp. Application
Course Code: BCA 403 **Paper Title:**RDBMS

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1. Introduction and Basic Concepts 10 Lectures 1.1 Introduction to RDBMS 1.2 Characteristics of RDBMS 1.3 Applications and Advantages of RDBMS 1.4 Data models – Entity Relationship (ER), Mapping ER Model to Relational Mode, Network. 1.5 Relational and Object Oriented Data Models	Define what a Relational Database Management System (RDBMS) is and its role in data management.
2	UNIT II	2.1 Introduction to SQL 2.2. SQL Commands and its types (DDL, DML, DQL, DCL, Transaction Control Commands) 2.3 Data types in SQL 2.4 Creating Tables, Selecting from tables, WHERE Clause 2.5 Selecting from tables, DISTINCT Clause, Column aliasing 2.6 Manipulation Table data 2.7 Altering Table structure 2.8 Data Constraints: Unique, Not Null, Primary Key, Foreign Key, Check, Default Constraint	Identify and differentiate between the various types of SQL commands: DDL (Data Definition Language), DML (Data Manipulation Language), DQL (Data Query Language), DCL (Data Control Language), and Transaction Control commands. Describe the different data types available in SQL and their appropriate use cases.
3	UNIT III	3.1 Arithmetic Operators, Relational Operators 3.2 Comparison Operators BETWEEN, IN, LIKE, IS NULL 3.3 LOGICAL Operators: AND OR NOT 3.4 SQL Functions: Single, Multiple Row Functions 3.5 Single Row Character, Single Row Number, Single Row Date, Single Row Conversion, Single Row General Functions 3.6 Multiple Row Functions 3.7 Views	Apply arithmetic operators for calculations in SQL queries and use relational operators to compare values. Construct complex SQL queries using logical operators (AND, OR, NOT) to combine multiple conditions effectively.
4	UNIT IV	4.1 Introduction to Sorting 4.2 Order by Clause, Group by Clause 4.3 Join, Types of Join: Equi Joins, Non Equi Join, Outer Join: Left, Right, Full, Self Join, Cross Join,	Explain the purpose of sorting data and apply the ORDER BY clause to arrange query results in a specified order.

		Joining three tables 4.4 Subqueries & its types 4.5 Overview of PL / SQL 4.5.1 Declarations Section 4.5.2 Executable Commands Section 4.5.3 Exception Handling Section	Use the GROUP BY clause to group data based on specified columns and summarize results with aggregate functions.

- **Specify Course Outcome:** The objective of this course is to expose the students to the fundamentals & basic concepts in relational Data Base Management Systems. This course discusses architecture of Database Systems with concept of relational model & ER model. The course discusses the SQL statements, functions and views. Concepts of PL/SQL also discussed.
- **Specify Program Outcome:** The course will demonstrate an understanding of the basic & advanced features of RDBMS. The course will demonstrate the various database tables and joins them using SQL commands, able to develop structured query language (SQL) queries to create, read, update, and delete relational database data.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department:** Comp. Sci

Program: BCA SY SEM IV **Subject**:Comp. Application
Course Code: BCA 404 B **Paper Title:** Computer Graphics

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1.1 Introduction-Definition 1.2 Application areas of Computer Graphics. 1.3 Advantages of computer graphics. 1.4 Graphical user interface. 1.5 Random scan displays, Raster scan displays 1.6 Display devices: Cathode Ray Tubes, Color CRT monitors, Direct View Storage Tube. 1.7 Plotter. 1.8 Joystick, light pen.	Explain the concept of computer graphics, including its fundamental principles and relevance in various fields. Describe the various application areas of computer graphics, such as gaming, simulation, virtual reality, medical imaging, and design.
2	UNIT II	2.1 Introduction 2.2 Line, Line Segment 2.3 Line drawing algorithms – a. Digital Differential Algorithm, b. Bresenham's line algorithm 2.4 Two dimensional transformation 2.5 Matrix representation. 2.6 Translation. 2.7 Rotation. 2.8 Scaling. 2.9 Reflection 2.10 Shear	Define fundamental concepts in 2D graphics, including lines and line segments, and their significance in computer graphics.

3	UNIT III	3.1 Segment table. 3.2 Functions for segmenting display file 3.3 Posting & unposting segments 3.4 Segment naming scheme 3.5 Default error conditions 3.6 Appending to segments 3.7 Viewing transformation 3.8 2-D clipping 3.9 Simple visibility algorithm 3.10 End point codes 3.11 Midpoint subdivision algorithm 3.12 Polygon clipping algorithm (Sutherland-Hodgman algorithm)	Explain the concept of segment tables and their role in managing display files in computer graphics. Demonstrate the process of posting (rendering) and unposting (removing) segments in a graphics environment.
4	UNIT IV	4.1 Simple modeling example 4.2 Geometric modeling 4.3 Symbols & instances 4.4 Implementation of Instance transformation 4.5 Ground rules for graphics s/w design 4.6 Function domains 4.7 Graphics primitives 4.8 Windowing function 4.9 Example-a graph plotting program 4.10 Implementation of the functions	Explain the principles of simple modeling through practical examples, illustrating the basic concepts of graphical representation. Describe the fundamentals of geometric modeling and its applications in creating complex shapes and objects in computer graphics.

- **Specify Course Outcome:**. To understand the basics of computer graphics, different display devices and applications of computer graphics. To learn about algorithmic development of graphics primitives like: point, line, polygon etc. To impart knowledge of 2D transformations on graphics objects. To familiarize with 2D Viewing and different clipping methods. To understand rules for graphics software design.
- **Specify Program Outcome:** Knowledge of working of display systems. Skill to execute various Scan Conversion algorithms in laboratory so as to draw Graphics primitives. Familiarization with 2D graphics. Skill to execute various 2D transformations on graphics. Use of various graphics packages/functions on graphic.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kandi S.J. **Department:** Comp. Sci

Program: BCA SY SEM IV **Subject**:Comp. Application
Course Code: BCA 405B **Paper Title:** Logical Reasoning

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	UNIT I	1.1 Series: Types of series, Alphabet series, Alpha numeric series, Examples on continues pattern series. 1.2 Analogy: Completing the Analogous	Identify and differentiate between various types of series

		Pair, Direct/Simple Analogy, Choosing the Analogous Pair, Double Analogy, Number analogy, Alphabet analogy, Correlation between letters/numbers. 1.3 Classification: Choosing the odd word, choosing the odd numeral, choosing the odd letter group.	Complete and create analogous pairs by understanding the relationships between different elements. Utilize classification skills to identify odd elements within groups
2	UNIT II	2.1 Coding-Decoding: Letter coding, Direct Letter Coding, Number/Symbol Coding 2.2 Substitution: Concept of substitution, Problem solving by using substitution. 2.3 Deciphering: Deciphering messages word codes, Deciphering numbers/symbol codes for messages.	Explain the concepts of coding and decoding in the context of language and numbers. Describe the concept of substitution in coding and decoding processes.
3	UNIT III	3.1 Introduction to relations. 3.2 Concepts of deciphering relations based problems. 3.3 Problems on deciphering jumbled up descriptions. 3.4 Relation puzzle. 3.5 Coded relations.	Define and explain the concept of relations in various contexts, including mathematical and logical frameworks. Analyze and interpret problems that involve deciphering relations, demonstrating the ability to identify key elements and their interconnections.
4	UNIT IV	4.1 Introduction. 4.2 Problems based on angular changes in direction. 4.3 Problems on Shadows. 4.4 General Problems based on Pythagoras Theorem.	Explain fundamental concepts related to angular changes in direction, shadows, and the Pythagorean theorem. Analyze and solve problems that involve calculating angular changes in direction, applying trigonometric principles when necessary.

- **Specify Course Outcome:** The objectives of studying Logical Reasoning, students will acknowledge the adequate problem solving and analytical skills needed. The person have enough problem solving skills will be able to understand the problem and immediately recognize the correct solution.
- **Specify Program Outcome:** Understand the basic concepts of logical reasoning skills. Solve campus placements aptitude papers and various competitive exams.

Signature of Teacher

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA SY **Subject**: Computer Application

Paper Title: JAVA Programming **Course Code**: BCA 406

Unit Number	Unit Name
40.	Program to demonstrate Java programming Structure.
41.	Program to demonstrate use of different data types.
42.	Program to demonstrate Use of Scope Resolution Operator
43.	Program to demonstrate Use of arrays.
44.	Program to demonstrate Use of conditional statements.
45.	Program to demonstrate Use of looping statements.
46.	Program to demonstrate Use of 'this' Keyword
47.	Program to demonstrate the concept of Method Overloading
48.	Program to demonstrate the concept of static members.
49.	Program to demonstrate the concept of constructor.
50.	Programs to demonstrate different types of inheritance present in Java
51.	Program to demonstrate the concept of Method Overriding.
52.	Program to create Applet.
53.	Program to demonstrate Applet param-tag.
54.	Program to demonstrate Final variable, Method and Final Class.

Specify Course Outcome: Write, compile, and execute Java programs, demonstrating proficiency in using the Java Development Kit (JDK) and an Integrated Development Environment (IDE). Apply OOP principles such as inheritance, encapsulation, polymorphism, and abstraction in designing and implementing Java applications. Effectively use standard Java libraries and APIs to enhance functionality in applications, including collections, I/O, and networking.

Specify Program Outcome: Demonstrate the ability to design, code, test, and debug Java applications for a variety of purposes. Effectively use OOP concepts—such as classes, objects, inheritance, polymorphism, and encapsulation—in program design and implementation.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shaikh K.M. **Department: Computer Science**

Program: BCA SY **Subject**: Computer Application

Paper Title: RDBMS **Course Code**: BCA 407

Unit Number	Unit Name
1.	What is SQL? Types of SQL Commands
2.	Study of Datatypes in ORACLE
3.	Creating Tables & Retrieving, Manipulating Data from tables
4.	Study of Altering Tables in ORACLE

5.	Study of Data Constraints in ORACLE
6.	Study of Operators
7.	Study of SQL Functions
8.	Study of Views in ORACLE
9.	Study of Joining Tables in ORACLE
10.	Study of Subqueries in ORACLE
11.	Study of in PL/SQL Blocks in ORACLE

Specify Course Outcome: Construct and execute complex SQL queries to retrieve and manipulate data from relational databases. Demonstrate knowledge of database schemas, normalization principles, and data modeling concepts.

Specify Program Outcome: Write and execute complex SQL queries to manipulate and retrieve data from relational databases effectively. Demonstrate the ability to design relational databases, including schema creation, normalization, and the use of appropriate data types.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher:Ambhure D.P. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: System Analysis and Design (SAAD) **Course Code**: BCA 501

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Introduction of System Concept & System Development Life Cycle 1.1 System Concept: Definition, Characteristics 1.2 Elements of system, Physical and abstract system 1.3 Open and closed system, man-made information systems 1.4 System Development Life Cycle: Various phases of system development 1.5 Considerations for system planning and control for system success 1.6 Role of system analyst	A system is a set of interrelated components that work together to achieve a common goal.
II	UNIT II	2. System Planning, Feasibility study & Cost-Benefit Analysis 2.1 Basis for planning in system analysis: Dimensions of Planning 2.2 Initial Investigation: Determining user‟s requirements and analysis 2.3 fact finding process and techniques 2.4 Feasibility study: Technical 2.5 Operational & Economic Feasibilities 2.6 Cost/Benefit Analysis U	Aligns the system with organizational goals and long-term vision. Tactical Planning: Focuses on medium-term objectives and the resources needed to achieve them.
III	UNIT III	3. Tools of structured Analysis 3.1 Data Flow diagram 3.2 Data dictionary 3.3 IPO charts 3.4 HIPO charts 3.5 Gantt charts 3.6 Pseudo codes 3.7 Flow charts 3.8 Decision tree 3.9 Decision tables	Clear understanding of the strategic, tactical, and operational dimensions of planning that ensure alignment of system development with

			organizational goals, effective resource allocation, and risk management.
IV	UNIT IV	4. Form and database design 4.1 Input/ Output and Form Design 4.2 Introduction to files and database design 4.3 File structures and organization 4.4 Objectives of database design 4.5 Logical and physical view of data	Development of user-friendly input forms that enhance data entry efficiency and accuracy, while providing clear output formats that facilitate data interpretation and reporting.

Specify Course Outcome: Develop and evaluate system requirements. Work effectively in a team environment as well as explain the need for and value of a formalized step-by-step approach to the analysis, design, and implementation of computer information systems. Use tools and techniques for process and data modeling.

Specify Program Outcome: Upon successful completion of this course, you will be able to gather data to analyze and specify the requirements of a system. Design system components and environments & build general and detailed models that assist programmers in implementing a system. It also design a database for storing data, a user interface for data input and output, and controls to protect the system and its data.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kandi S.J. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: PHP Programming **Course Code**: BCA 502

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1. Introduction to PHP 10 1.1 Introduction to PHP , History and Features of PHP 1.2 Installation & Configuration of PHP 1.3 Embedding PHP code in Your Web Pages 1.4 Understanding PHP, HTML, and White Space. Writing Comments in PHP 1.5 Sending Data to the Web Browser 1.6 Data types in PHP, Keywords in PHP 1.7 Using Variables, Constants in PHP 1.8 Expressions in PHP 1.9 Operators in PHP	Understanding of PHP as a server-side scripting language, its relevance in web development, and its growing popularity in creating dynamic websites.
II	UNIT II	2.1 Conditional statements: if, if-else, switch, The ? Operator 2.2 Looping statements: while Loop, do...while Loop, for Loop 2.3 Arrays in PHP: Introduction- What is Array? 2.4 Types of Arrays: Indexed Vs. Associative arrays, Multidimensional arrays 2.5 Creating Array, Accessing Array, Manipulating Arrays, Displaying arrays…..use of for.. each as loop 2.6 Using Array Functions 2.7 Including and Requiring Files- use of Include() and Require() 2.8 Implicit and Explicit Casting in PHP	Proficiency in using conditional statements (`if`, `if-else`, `switch`, and the ternary `?` operator) to control the flow of PHP scripts based on logical conditions. Understanding of different looping constructs (`while`, `do...while`, `for`) in PHP
III	UNIT III	3.1 Functions in PHP: Defining and calling a function, Returning Value from function 3.2 Date and Time in PHP: Date and Time Functions 3.3 Strings in PHP: String Functions 3.4 Objects in PHP:	Ability to define and call functions in PHP, including understanding function parameters and returning values, promoting modular and

		What is Class & Object, Creating and accessing a Class & Object, 3.5 Object properties, object methods, Overloading, inheritance, Constructor and Destructor 3.6 Creating HTML Form	reusable code. Familiarity with object properties and methods, including concepts of overloading, inheritance, constructors, and destructors, enabling the design of robust and reusable object-oriented code.
IV	UNIT IV	4.1 Introduction to MySQL: Database terms, Data Types, 4.2 Accessing MySQL –Using MySQL Client and Using php MyAdmin 4.3 MySQL Commands 4.4 Using PHP with MySQL: PHP MySQL Functions 4.5 Connecting to MySQL and Selecting the Database 4.6 Executing Simple Queries 4.7 Retrieving Query Results 4.8 Counting Returned Records 4.9 Updating Records with PHP	Understanding key database terms and data types in MySQL, providing a foundational knowledge for database design and management.

Specify Course Outcome: Learn Core-PHP, Server Side Scripting Language. Learn to design dynamic and interactive Web pages. Learn PHP-Database handling.

Specify Program Outcome: Able to design dynamic and interactive web pages, websites. Able to run PHP scripts on server and retrieve results. Able to handle databases like MySQL using PHP in web sites.

Signature of Teacher

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shejul B.V. **Department: Computer Science**

Program: BCA TY [SEM V]

Subject: Computer Application

Paper Title: Mobile Application Development **Course Code**: BCA 503

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 Introduction to Android platform and Achitecture 1.2 Basic components of Android, activity life cycle 1.3 Features of ART & Delvik Virtua machine 1.4 Android Application Structure, device screen size compatibility 1.5 Android emulator, working with AndroidManifest.xml	Understand the Android platform and architecture,its nasic concept,activity life cycle,features of art and dvm and android emulator
II	UNIT II	2.1 Creating application template 2.2 Adding activity, intent, Intents and Intent Filters, Resources 2.3 System Permissions, services to application 2.4 Layouts, Recycler View, List View, Grid View and Web view 2.5 Input Controls: Buttons, Checkboxes, Radio Buttons, Toggle Buttons, Spinners, Input Events, Menus, Toast, Dialogs, Styles and Themes, Creating lists, and	Understand how to set up a new Android project using Android Studio, including selecting project templates and configuring basic settings.

		Custom lists	
III	UNIT III	3.1 Playing Audio, Video 3.2 Rotate Animation, FadeIn / FadeOut Animation 3.3 Zoom Animation, Scale animation 3.4 2D and 3D graphics	Gain proficiency in using Android's MediaPlayer and VideoView classes to play audio and video files. Understand how to manage media playback controls, handle buffering, and respond to playback events.
IV	UNIT IV	4.1 Shared Preferences 4.2 Internal Storage, External Storage 4.3 SQLite Databases 4.4 Content provider and Remote Databases 4.5 Web App, JSON Parsing 4.6 Google maps, Using GPS to find current location 4.7 Sensors, bluetooth/Wi-Fi Connectivity	Understand how to use Shared Preferences for storing small amounts of key-value data persistently. Learn to manage user preferences and app settings effectively.

- **Specify Course Outcome:** To gain an understanding of the processes that are involved in an Android developed application .To become familiar with Android development tools and user interface. To understand Activity and Intends. To understand SQLite Database. Ability to build Many simple apps. To understand the basic operating system command.
- **Specify Program Outcome:** Install and use appropriate tools for Android development, including IDE, device emulator, and profiling tools. Understand the Android OS architecture. Understand the Android application architecture, including the roles of the task stack, activities, & services.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: Computer Network **Course Code**: BCA 504A

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 What is Network? , Benefits of Networking 1.2 Wired Transmission media – Magnetic media, Twisted Pair, Coaxial Cable, Fiber Optics 1.3 Wireless Transmission media – The Electromagnetic Spectrum, Radio Transmission, Microwave Transmission, Infrared 1.4 Topologies with advantages & disadvantages:-Bus, Ring, Star, Tree, Mesh 1.5 Types of Networks – LAN, MAN, WAN	Understand that network is a collection of computers and devices interconnected to share resources and information. Networks can be local (like a home network) or global (like the internet).
II	UNIT II	2.1 The need for layered architecture (protocol hierarchies) 2.2 OSI reference Model 2.3 TCP/IP reference Model 2.4 Ethernet Technology - Types of Ethernet, properties of Ethernet, Collision detection and Recovery, Ethernet hardware address, Ethernet Frame Format 2.5 Wireless LAN 2.6 Bluetooth	overview of the topics you mentioned related to network architecture and technologies Layered architecture organizes network protocols into distinct layers, each responsible for specific functions.
III	UNIT III	3.1 Internet- Architecture, Internet Service Providers (ISP), Internet Addressing System: IP Address, DNS, URL 3.2 Concept of Intranet & Extranet 3.3 Networking protocol: IP,TCP,FTP,HTTP,DHCP	The Internet is a vast network of networks that utilizes a client-server model. ISPs are companies that provide

			access to the Internet.
IV	UNIT IV	4.1 Network Security issues 4.2 Traditional Cryptography- substitution Ciphers, Transposition Ciphers 4.3 Two fundamental cryptographic principles 4.4 DES 4.5 Digital Signature 4.6 Firewalls	Network security involves protecting data and resources from unauthorized access, misuse, and damage.

Specify Course Outcome: To develop an understanding of computer networking basics. To develop an understanding of different components of computer networks, various protocols, modern technologies and their applications.

Specify Program Outcome: Upon successful completion of this course, student will be able to Recognize the technological trends of Computer Networking. Discuss the key technological components of the Network. Evaluate the challenges in building networks.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shaikh K.M. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: Linux Operating System **Course Code**: BCA 505B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 Introduction to Linux 1.2 Features of Linux OS 1.3 Installation steps of Linux 1.4 Linux kernel 1.5 Booting process of Linux OS, Flavors of Linux	Understanding the fundamentals of Linux as an open-source operating system, including its history, significance, and basic architecture.
II	UNIT II	2.1 Working with the Linux File System 2.2 Logging into and working With Linux 2.3 Changing User Information 2.4 Linux Shell 2.5 Text Editors in Linux 2.6 Working with permissions	Understanding the structure and hierarchy of the Linux file system. Knowledge of various text editors available in Linux
III	UNIT III	3.1 Adduser , alias, at ,cat , cd, chmod ,chown,cp, cpio, dd, df, dc, dir, du, find, finger, grep, zip, unzip, gzip, halt, hostname, ifconfig, kill, login, look, lpc, lpd ,lpr, lprm, ls, mail, man, mde, mkdir, mor, mount, mv, netstat, passwd, ping, ps, pwd, rm, rmdir, shutdown, sort, su, tar, tree, moun, umount, unzip, vi, wc, who, whoami, zip.	Proficiency in using fundamental Linux commands for various tasks
IV	UNIT IV	4.1 Choosing Backup Strategies and Operations, Choosing Backup hardware and media 4.2 Using backup software and commands 4.3 Network configuration tools 4.4 DHCP protocol 4.5	Proficiency in using backup software and command-line tools to create, manage, and restore backups,

		Introduction to samba, DNS & Apache web server	ensuring data integrity and security. Understanding of various network configuration tools in Linux, enabling effective setup and management of network interfaces and services.

Specify Course Outcome: This course shall build a platform for students to start their own enterprise. For Making Student Job Ready. To become familiar with open source software and user interface. To securely handle OS without any viruses and malwares. For easily use free software available on internet. To understand the basic operating system command.

Specify Program Outcome: Awareness of existing demanding trends in IT industry in order to get placement & research in open source market. Understand the Linux OS architecture. Install and use different types of distributions available in market.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kandi S.J. **Department: Computer Science**
Program: BCA TY SEM VI **Subject**: Computer Application

Paper Title: PHP Programming **Course Code**: BCA 506

Unit Number	Unit Name
1.	Write a program in PHP to demonstrate looping statements in PHP.
2.	Write a program in PHP to demonstrate conditional statements in PHP.
3.	Write a program in PHP to Create an Array, Insert elements in Array, Accessing Elements from Array and Displaying elements of Arrays.
4.	Write a program in PHP to demonstrate including multiple files in PHP webpage.
5.	Write a program in PHP to Creating and Calling Your Own Functions.
6.	Write a program in PHP to declare a class, creating an Object, demonstrates Writing Methods & Declaring Properties, Accessing Objects.
7.	Write a program in PHP to demonstrate String Functions.
8.	Write a program in PHP to create/design a User Registration Form, validate form data and display entered form data on webpage.
9.	Use MySQL in command line mode for following operations: 9.1 Show Database 9.2 Create a database 9.3 Use Database 9.4 Create Table 9.5 Add data in to a table 9.6 Select data from table
10.	Write a program in PHP to Connecting to MySQL and Selecting the Database,

	Executing Simple Queries, and Retrieving Query Results.

Specify Course Outcome: Grasp the basic concepts and history of PHP as a server-side scripting language. Successfully install and configure PHP on various platforms, including local servers and web hosting environments.

Specify Program Outcome: Demonstrate a solid understanding of PHP syntax, structure, and basic programming concepts. Successfully install and configure a PHP development environment, including web servers and databases.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shejul B.V. **Department: Computer Science**

Program: BCA TY SEM VI **Subject**: Computer Application

Paper Title: Mobile Application Development **Course Code**: BCA 507

Unit Number	Unit Name
•	Installation of Android Studio and eclipse and study of Apps for Working with AndroidManifest.xml
•	Installation of Android Studio and eclipse and study of Apps for Working with AndroidManifest.xml
•	Apps for Demonstration of Activity Life Cycle
•	Apps for demonstration of Buttons and Textbox, Images. To create a simple Calculator App. (Addition, subtraction, division, multiplication, square etc)
•	Sample Apps for Working with Notification.
•	Sample Apps for Demonstration of Context menu and Dialogs
•	Sample Apps for Working with SQLite Database
•	Sample Apps for Demonstration of File Access.
•	Sample Apps for Demonstration of Shared preferences and Preferences activity
•	Create an application to send message between two emulators.

Specify Course Outcome: Manage the Android application lifecycle, including understanding activities and fragments, and handling configuration changes effectively. Implement various data storage options, including SharedPreferences, SQLite databases, and file storage, to manage app data.

Specify Program Outcome: Understand the complete architecture of the Android operating system, including core components, frameworks, and libraries. Implement effective data storage solutions, including local databases, cloud storage, and data synchronization methods.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Ambhure D.P. **Department: Computer Science**
Program: BCA TY [SEM VI] **Subject**: Computer Application

Paper Title: Software Engineering **Course Code**: BCA 601

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 The Evolving Role of Software 1.2 Definition & Concept Software Engineering 1.3 Software Characteristics 1.4 Software Applications 1.5 Software Evolution 1.6 Software Crisis & Horizon 1.7 Software Myths	Understanding the transformative impact of software on industries and society, recognizing how its role has evolved with technological advancements.
II	UNIT II	2.1 Introduction 2.2 Activities of SDLC 2.3 A Generic Process Model 2.4 Prescriptive Process models 2.4.1 Waterfall Model 2.4.2 Incremental Process Models 2.4.3 Evolutionary process Models (Prototyping and Spiral Model) 2.5 Concurrent Models, Types	Understanding the fundamental concepts of the Software Development models
III	UNIT III	3.1 Decision Tree and Decision Table 3.2 Data Flow Diagrams (DFD) 3.3 Data Dictionary 3.3.1 Elements of DD 3.3.2 Advantages of DD 3.4 Input and Output Design 3.5 PseudoCode 3.6 Case Studies on above topics	Understanding the benefits of using a Data Dictionary in software development, including improved communication among stakeholders, enhanced data management, and increased consistency and accuracy in data definitions.
IV	UNIT IV	4.1 Definition 4.2 Verification and Validation 4.3 Black box Testing 4.4 White-Box Testing 4.5 Unit	Understanding the fundamental concepts of software testing, including its purpose, importance,

		Testing	and overall role in ensuring software quality and reliability.

Specify Course Outcome: To know about software engineering and its application in Software development. To identify, formulate, and solve software engineering problems, including the specification, design, implementation, and To Learn testing of software systems that meet specification, performance, maintenance and quality requirements

Specify Program Outcome: How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment. An ability to work in one or more significant application domains. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle. Demonstrate an ability to use the techniques and tools necessary for engineering practice. Demonstrate an ability to use the techniques and tools necessary for engineering practice.

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College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Thite S.M. **Department: Computer Science**

Program: BCA TY [SEM VI] **Subject**: Computer Application

Paper Title: Python **Course Code**: BCA 602

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 Introduction to Python 1.2 Features of python 1.3 What Can I Do with Python? 1.4 Python Interpreter 1.5 Data types, Variables, Comments, Operators, expressions; input, processing and output statements 1.6 Control Structures: loops and decision	Understanding the fundamentals of Python as a programming language, including its history, design philosophy, and overall significance in modern programming.
II	UNIT II	2.1 Strings, String operations and String Slicing 2.2 Defining Classes 2.3 Defining and calling functions passing arguments to functions 2.4 Python and OOP – Inheritance, polymorphism 2.5 Modules – datetime, math 2.6 Packages	Proficiency in working with strings in Python, including performing string operations such as concatenation, formatting, and manipulation. Ability to define and create classes in Python
III	UNIT III	3.1 Exception in python 3.2 Exception roles 3.3 Exception Handling 3.4 Collections in Python – List, Tuples, Dictionaries, Sets	Understanding the concept of exceptions in Python, including what they are and how they can affect program execution.
IV	UNIT IV	4.1 Graphical User Interfaces 4.2 Using the tkinter Module 4.3 Creating Label, Text, Button, info Dialog Boxes, Radiobutton, Checkbutton 4.4 Getting Input. 4.5 Importing MySQL for Python 4.6	Proficiency in importing and setting up MySQL libraries.

		Connecting with a database 4.7 Forming a query in MySQL 4.8 Passing a query to MySQL	

Specify Course Outcome: To acquire programming skills in core Python. To acquire Object Oriented Skills in Python. To develop the skill of designing Graphical user Interfaces in Python. To develop the ability to write database applications in Python

Specify Program Outcome: Upon successful completion of this course, student will be able to. Explain basic principles of Python programming language. Implement object oriented concepts. Implement database and GUI applications.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Agarmore J.R. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: Project Development activity and Seminar **Course Code**: BCA 603

Unit Number	Unit Name	Topics	Unit-wise Outcome
1	Introduction of Software Project Management	Fundamentals of Software Project Management (SPM), Need Identification, Vision and Scope, Project Management Cycle, SPM Objectives, Management Spectrum, SPM Framework.	Learn SPM,vision and scope, project management life cycle, SPM framework
2	Software Project Planning	Software Project Planning, Planning Objectives, Project Plan, Types of project plan, Structure of a Software Project Management Plan, Software project estimation, Estimation methods, Estimation models, Decision process.	Utilize software project planning, project plan and its types, software estimation and decision process
3	Project Organization and Scheduling	Project Elements, Work Breakdown Structure (WBS), Types of WBS, Functions, Activities and Tasks, Project Life Cycle and Product Life Cycle, Ways to Organize Personnel, Project schedule, Scheduling Objectives, Building the project schedule, Scheduling terminology and techniques, Network Diagrams: PERT, CPM, Bar Charts: Milestone Charts, Gantt Charts.	Learn project elements,WBS and its types, product and project life cycle,project schedule, building project schedule, CPM bars and gantt charts
4	Project Monitoring and Control	Dimensions of Project Monitoring & Control, Earned Value Analysis, Earned Value Indicators: 23 Budgeted Cost for Work Scheduled (BCWS), Cost Variance	Learn earned value analysis,earned value

		(CV), Schedule Variance (SV), Cost Performance Index (CPI), Schedule Performance	indicators,BCWS,CV,SV,CPI and schedule performance
5	Project Management and Project Management Tools	Software Configuration Management: Software Configuration Items and tasks, Baselines, Plan for Change, Change Control, Change Requests Management, Version Control, Risk Management: Risks and risk types, Risk Breakdown Structure (RBS), Risk Management Process: Risk identification, Risk analysis, Risk planning, Risk monitoring, Cost Benefit Analysis, Software Project Management Tools: CASE Tools, Planning and Scheduling Tools, MS-Project.	Understand baseline,plan for change,change control,risks and its types,risk analysis,cost benefit analysis and MS-Project

Specify Course Outcome: 1. Understand Project Management principles while developing the software project. 2. Apply extensive knowledge of basic project management concepts, framework, and process models while developing the software. 3. Implement a project to manage project schedule, project progress, expenses and resources with the application of suitable project management tools. 4. Estimate the risks involved in various project activities.

Specify Program Outcome: 1. To understand the basics of software project and its management activities 2. To understand and highlights an importance of software project management 3. To understand the software project planning and evaluation techniques. 4. To plan and manage projects at each stage of the software development life cycle.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Shejul BV. **Department: Computer Science**

Program: BCA TY [SEM V] **Subject**: Computer Application

Paper Title: Digital Image Processing **Course Code**: BCA 604B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	UNIT I	1.1 Introduction 1.2 Advantages and Disadvantages of MATLAB 1.3 MATLAB Environment 1.4 Using MATLAB Scratch Pad 1.5 Variables and Arrays 1.6 Multidimensional Arrays 1.7 Scalar and Array Operations	Learn advantages and disadvantages of MATLAB,its environment,variables and arrays and scalar and array operations
II	UNIT II	2.1 Elements of Digital Image Processing System 2.2 Digital Image Representation 2.3 Reading, displaying and writing images 2.4 Data classes and Image types 2.5 Converting between data classes and image types 2.6 Introduction to M-function Programming	Utilize elements of DIP,reading,displaying and writing images,image types andintroduction to M – function programming
III	UNIT III	3.1 Background : Intensity Transformation Functions 3.2 Using imadjust( ), Using log( ) 3.3 Histogram Processing and function plotting, Spatial filtering 3.4 Linear spatial	Understand intensity transformation function,imadjust(),histogram processing,spatial filtering and linear and non linear

		filtering, Non-Linear spatial filtering	spatial filtering
IV	UNIT IV	4.1 Introduction to Discrete Fourier Transformation (DFT) 4.2 Computing and visualizing 1D-DFT 4.3 Computing and visualizing 2D-DFT 4.4 Filtering in frequency domain 4.5 Color Image Representation 4.6 Converting to other color spaces 4.7 The Basics of color image processing	learn DFT,computing and visualizing,color image represention,filtering in frequency domain and the basics of color image processing

Specify Course Outcome: To learn fundamental concepts of Digital Image Processing. To study basic image processing operations . To understand image analysis algorithms. To expose students to current applications in the field of digital image processing.

Specify Program Outcome: Review the fundamental concepts of a digital image processing system. Analyze images in the frequency domain using various transforms. Evaluate the techniques for image enhancement and image restoration. Categorize various compression techniques. Interpret Image compression standards. Interpret image segmentation and representation techniques.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Kandi S. J. **Department: Computer Science**

Program: BCA TY [SEM VI] **Subject**: Computer Application

Paper Title: Cyber Security **Course Code**: BCA 605B

Unit Number	Unit Name	Topics	Unit-wise Outcome
I	IT Act and Encryption	Object of the Act, Scope of the Act, Symmetric Cryptography, Asymmetric Cryptography, RSA Algorithm, Public Key Encryption	Determine confidentiality of data.
II	Authentication of Electronic records & E-Governance	Authentication of Electronic records, Digital Signature, RSA Digital Signature, Hash Function, Working of Digital Signature, Electronic Governance	Verify identity of users and systems and establish cyber security policies
III	Certifying Authorities	Need of Certifying Authorities, Functioning of Certifying Authorities, Types of Certificates, Identification, Authorizing, Transactional certificate, Appointment of Controller, Functions of Controller	Understand certifying authorities.
IV	Domain name Disputes and Cyber Crimes	Background of Domain Names Where lies the dispute? Insertion of Internet Domain	Understand domain name disputes and reduction of online

		Names and the trademark Law Classification of Cyber Crime, Target of computer crime, Damage to computer System: Unauthorized Access, Packet Sniffing, Tempest attack, Password Cracking, Butter overflow, Computer virus: Viruses, Logic Bomb, Worms, Trojan Horse Programme, Denial of Service, Tampering with Computer Source Documents	fraud.

Specify Course Outcome:

- Analyze and evaluate the cyber security needs of an organization.
- Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.
- Measure the performance and troubleshoot cyber security systems.
- Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools.

Specify Program Outcome:

- Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer networks in an Organization.
- Practice with an expertise in academics to design and implement security solutions.
- Understand key terms and concepts in Cryptography, Governance and Compliance.
- Develop cyber security strategies and policies
- Understand principles of web security and to guarantee a secure network by monitoring and analyzing the nature of attacks through cyber/computer forensics software/tools.

Signature of Teacher

Kandi S. J.

Dnyanopasak Shikshan Mandal's

College of Arts, Commerce and Science, Parbhani

Pro-forma for program and course outcomes (2.6.1)

Name of Teacher: Thite S.M. **Department: Computer Science**
Program: BCA TY SEM VI **Subject**: Computer Application

Paper Title: Python **Course Code**: BCA 606

Unit Number	Unit Name
1.	Program to demonstrate different data types.
2.	Program to demonstrate decision making statement.
3.	Program to demonstrate Looping statement.
4.	Program to demonstrate different string methods.
5.	Program to demonstrate function declaration and passing arguments.
6.	Program to demonstrate inheritance and its Types.
7.	Program to demonstrate polymorphism.
8.	Program to demonstrate exception handling.
9.	Program to demonstrate different collections.
10.	Program to demonstrate database connectivity.

Specify Course Outcome: Demonstrate knowledge of Python's syntax, structure, and basic programming concepts. Successfully install and configure a Python development environment, including

the necessary libraries and tools.

Specify Program Outcome: Successfully download and install the latest version of Python on various operating systems. Set up and configure environment variables to ensure that Python is accessible from the command line or terminal.

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Pro-forma for program and course outcomes (2.6.1)

Name of Teacher:Shejul B.V. **Department: Computer Science**

Program: BCA TY SEM VI **Subject**: Computer Application
Paper Title: Windows Programming and DIP **Course Code**: BCA 607

Unit Number	Unit Name
1.	Write a program for demonstration of creating simple windows application
2.	Write a program for demonstration of Text Box and Button control, List Box and Combo Box Control.
3.	Write a program for demonstration of designing Menus, dialog boxes.
4.	Write a program for demonstration of C# functions, Strings.
5.	Write a program for demonstration of Array, Jagged Array.
6.	Demonstration of Matlab Environment, reading, displaying images.
7.	Demonstration of histogram processing
8.	Demonstration of 1D-DFT and its inverse
9.	Demonstration of frequency domain filtering
10.	Demonstration of color image representation

Specify Course Outcome: Develop functional Android applications by applying theoretical knowledge in practical scenarios, including project-based learning. Utilize version control systems (e.g., Git) to manage code changes, collaborate with peers, and maintain project

histories.

Specify Program Outcome: Successfully design, develop, and deploy fully functional Android applications, demonstrating a comprehensive understanding of the Android platform. Implement various testing strategies, including unit tests and UI tests, to identify and resolve issues, ensuring the quality and performance of applications.

Signature of Teacher