BCA (Bachelor of Computer Application)
BCA (Semester-V)

Course Code	**US05CBCA51**	Title of the Course	**Object Oriented Programming –III**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To study the fundamental concepts related to JDBC. 2. To acquire knowledge about basic concepts of Servlets, JSP and multithreading.

Course Content		
Unit	Description	Weightage (%)
1.	**JDBC & Collection Frame work** – Basic JDBC program Concept – Architecture of JDBC – Making the Connection, Statement & its types – Executing queries – List Interface (Array List, Vector List, Iterator) – Wrapper Class (Integer, Float and Double) and Methods	25
2.	**Servlet** – Introduction – Types of servlet – Life cycle of servlet – Execution process of Servlet Application – Session Tracking – Cookie Management	25
3.	**JSP** – Introduction to JSP and Lifecycle – Components of JSP – Directives , Tags, Scripting Elements – Execution process of JSP Application – Building a simple application using JSP	25
4.	**Multithreading** – Introduction – Thread Life Cycle – Creating Thread – Thread Methods – Thread Synchronization	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	understand of the fundamental concepts related to JDBC.
2.	gain knowledge about basic concepts of Servlets, JSP and multithreading.

Suggested References:	
Sr. No.	References
1.	The Complete Reference – JAVA Herbert Schildt
2.	Core java –II By Cay S. Horstmann and Gary Cornell
3	Compete Reference J2EE – Jim Keogh
4	Programming with Java- A Primer by E. Balaguruswami, 3rd Edition, TMH Publication

On-line resources to be used if available as reference material
On-line Resources
1. https://www.tutorialspoint.com/
2. https://www.w3schools.com/
3. https://www.javatpoint.com/

BCA (Bachelor of Computer Application)
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Course Code	**US05CBCA52**	Title of the Course	**Advanced Web Development Technology**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To acquire knowledge about the features of ASP.NET technology. 2. To understand Web application development using ASP.NET. 3. To learn database programming using ASP.NET.

Course Content		
Unit	Description	Weightage (%)
1.	**Introduction To ASP.NET** – Introduction to .NET Platform and Web – Introduction to ASP (Server-side Technology),.NET Framework (FCL andCLR),Overview of IIS, Processing of ASP.NET page (Executionmodel), Features of .NETIDE, Features ofASP.NET, Working withASP.NET, Coding Model (Inline andCode-behind), – Introduction to Web-Forms and itsEvents – ASP.NET Built-in directory structure – App_data,App_code,Bin – ApplicationConfiguration : Global.asax file, Web.config – Commonproperties : AccessKey, BackColor, BorderWidth, BorderStyle, CSSClass, Enabled, Font, ForeColor, Height, TabIndex, Tooltip, Width, ID, Runat, Text – Using Visual C# in ASP. NET: – Introduction, Variables, Data Types, Value Types, Scope of Variables, Operators, OOPs Concepts (Encapsulations, Inheritance, Polymorphism and Abstraction)	25
2.	**Information Passing, Standard Controls and Master Page** – Passing Information from one page to another – Web Server Controls : Button, Image Button, Link Button, Textbox, – Hyperlink, ImageMap control (Creating Hotspots), CheckBox and – RadioButton, CheckBoxList, RadioButtonList, ListBox, DropdownList – Rich Controls:Calendar, Adrotator control – XML file and Database), FileUpload control – Grouping Controls : Panel, PlaceHolder – Using Navigation Controls :TreeView, SiteMapPath, Menu, Creating – Sitemap file for navigation – Designing Master page	25

3.	**State Management, Validation and Login controls** – State Management : Using View State, QueryString, Cookies, Session State, Application State and Profile – Validationcontrols : Required Field Validator, Range validator, Regular Expression validator, Compare validator, Custom validator, Validation summary – LoginControls:Login, LoginView, PasswordRecovery, LoginStatus, LoginName,CreateUserWizard, ChangePassword. – Creating and Managing Roles – Creating and Managing Access Rules – Creating and Managing Profile	25
4.	**ADO.Net and Data Controls** – Introduction to ADO.NET and Architecture (Connected and Disconnected) – ADO.NET : Connection, Command, DataReader, DataAdapter, DataSet, CommandBuilder – Data controls : GridView, DataList, FormView, DetailsView, Repeater	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	Gain knowledge about the features of ASP.NET technology.
2.	Develop Web applications using ASP.NET.
3.	Understand database programming using ASP.NET.

Suggested References:	
Sr. No.	References
1.	ASP.NET 4.0 Covers C# 2010 & VB 2010 codes BLACK BOOK, DreamtechPress
2.	Programming in C#, E Balagurusamy, TataMcGraw-Hill
3	The Complete Reference C# 4.0, Herbert Schildt, Tata McGraw Hill, Edition 2010 (Third Reprint 2011)
4	ASP.NET 4 UNLEASED by Stephen Walther (Pearson)

On-line resources to be used if available as reference material
On-line Resources
1. https://www.tutorialspoint.com/
2. https://www.w3schools.com/

BCA (Bachelor of Computer Application)
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Course Code	**US05CBCA53**	Title of the Course	**Software Engineering**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To study the fundamental concepts related to software engineering, different phases of software development and various process models. 2. To learn the basic concepts related to requirement specification and software project planning. 3. To acquire basic knowledge about the concepts related to system design, coding and testing.

Course Content		
Unit	Description	Weightage (%)
1.	**Introduction** – Software and Software Engineering – Characteristics of Software process – Phases of Software Development – Process Models: Waterfall, Prototype, Iterative Enhancement, Spiral Model – Introduction to Agile Methodology	25
2.	**Requirement Specification and Software Project Planning** – Introduction: SRS and Needs – Problem Analysis: – Requirement Specifications: – Characteristics & Components of SRS – Specification Languages (Structured English, Regular Expressions & Decision Tables) – Structure of SRS – Validation of SRS – Introduction to software projects, Planning, Categories of Software projects – Overview of Cost estimation, Uncertainty in cost estimation, size estimation, – COCOMO Model (with example) – Project Monitoring Plan (Time sheets, Reviews, Cost-Schedule-Milestone, Earned Value Method)	25

3.	**Software Design** – Introduction: System Design, Design Objectives, Design Principles/Concepts – Top Down & Bottom Up approach – Problem Partitioning Abstraction – Modularity Module Level concept, Coupling, Cohesion – Overview of Structured design – Functional v/s Object-oriented approach – Design Specification, Verification – Introduction: Detailed Design, Module Specification and its Desirable Properties, Functional module Specification, Data Abstraction Specification – Verification - Design Walkthrough, Critical Design, review, Consistency checkers	25
4.	**Coding and Testing** – Introduction: Coding, Top Down & Bottom Up Approach for coding – Structured Programming, Information Hiding – Programming Style – Internal Documentation – Verification (Code Reading ONLY) – Introduction: Testing, Error, Fault, Failure & Reliability – Top down and bottom up approach for testing Levels of Testing – Levels of Testing – Functional Testing v/s Structural Testing – Automated testing tool	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to develop	
1.	understanding of the fundamental concepts related to software engineering, different phases of software development and various process models.
2.	understanding of the basic concepts related to requirement specification and software project planning.
3.	basic knowledge about the concepts related to system design, coding and testing.

Suggested References:	
Sr. No.	References
1.	An Integrated Approach to Software Engineering by PankajJalote ,Narosa Publishing House, Second Edition,1997.
2.	Software Engineering a practitioner's approach by Roger S. Pressman, Tata McGraw-Hill, Fifth Edition, 2001.
3.	Software Engineering Fundamentals by Richard Fairley, Tata McGraw- Hill.
4.	Software Engineering, By Ian Somnmerville, Addition-Wesley, Fifth Edition, 2000.

On-line resources to be used if available as reference material
On-line Resources
1. https://www.tutorialspoint.com/
2. https://www.w3schools.com/
3. https://www.javatpoint.com/

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BCA (Bachelor of Computer Application)
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Course Code	**US05CBCA54**	Title of the Course	**Practicals**
Total Credits of the Course	6	Hours per Week	12

Course Objectives:	1. To implement the advanced features of Java Programming Language. 2. To implement the concept of ASP.NET and its various features.

Course Content		
	Description	Weightage (%)
	Part-1 : Practical based on US05CBCA51	50
	Part-2 : Practical based on US05CBCA52	50

Teaching-Learning Methodology	Hands on training through required ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	30%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	gain the knowledge of advanced features of Java Programming Language.
2.	gain the knowledge of ASP.NET and its various features.

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Course Code	**US05CBCA55**	Title of the Course	**Project - I**
Total Credits of the Course	2	Hours per Week	4

Course Objectives:	1. To enable the students to apply the knowledge of software project development activates.

Course Content		
	Description	Weightage (%)
	Project development	100%

Teaching-Learning Methodology	Hands on Training and Analysis of Software Project Development.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	30%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	-
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Gain the knowledge of software project development activates.

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Course Code	**US05DBCA56**	Title of the Course	**Computer Graphics**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To study the fundamental concepts related to computer graphics. 2. To understand the concepts related to output primitives and their attributes. 3. To learn two–dimensional geometric transformations, viewing & clipping. 4. To acquire knowledge about Graphical User Interface and Interactive Input methods and to learn various 3D Concepts.

Course Content		
Unit	Description	Weightage (%)
1.	**Introduction of Computer Graphics** – A survey of major applications of Computer Graphics – Overview of different video display Devices: CRT, Raster scan, Color, Monitors, DVST, Flat Panels – Input Devices: Keyboard, mouse, Trackball, Space ball, Joystick, Data Glove, Digitizers, Image Scanner, Touch Panel, Light pen &Voice system.	25
2.	**Output Primitives and their attributes** – Output Primitives: Points, Lines, Circles – Line Drawing Algorithms (without program):Digital Differential Analyzer (DDA) and Bresenham. – Circle generating algorithm (without program): Midpoint Circle Algorithm – Filled area primitives – Scan line Polygon Fill Algorithm, – Inside–Outside tests: Odd even rule & Non-zero winding number rule – Boundary-fill algorithm (with procedure), Character generation, Attributes of output primitives	25
3.	**Two– dimensional Geometric Transformations, Viewing & Clipping** – 2-D geometric Transformations: Translation, Rotation, Scaling, – Reflection &Shear (with example) – Viewing Pipeline, Window-to-Viewport transformation – Point Clipping – Line clipping (without program) – Cohen Sutherland line clipping algorithm – Polygon Clipping(without program) Text clipping, Exterior Clipping	25

4.	**Graphical User Interface and Interactive Input methods and 3D Concepts** - Graphical User Interface and Interactive Input methods – - Introduction to user Dialogue, Input of Graphical Data, - Input Functions- Introduction to Input functions and input modes, Interactive Picture Construction Techniques, Virtual -Reality Environments. - 3D Concepts – Three Dimensional Display Methods, - Three Dimensional Object Representations – Introduction to different methods used for representation of Three Dimensional Objects.	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand of the fundamental concepts related to computer graphics.
2.	Discuss the concepts related to output primitives and their attributes.
3.	Gain basic knowledge about two–dimensional geometric transformations, viewing & clipping.
4.	Understand of the Graphical User Interface and Interactive Input methods and basic knowledge of various 3D Concepts.

Suggested References:	
Sr. No.	References
1.	Computer Graphics by Donald Hearn & M. Pauline Baker, PHI, 1995
2.	Computer Graphics, Amarendra N Sinha&Arun D. Udai, - The McGraw-Hill
3	Computer Graphics: Principles and Practice, Andries van Dam; F. Hughes John; James D. Foley; Steven K. Feiner - Person Education

On-line resources to be used if available as reference material
On-line Resources
1. https://www.tutorialspoint.com/
2. https://www.w3schools.com/
3. https://www.javatpoint.com/

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Course Code	**US05DBCA57**	Title of the Course	**Desktop Publishing and Design Tool**
Total Credits of the Course	4	Hours per Week	4

Course Objectives:	1. To acquire knowledge about fundamentals of Desktop Publishing**.** 2. To learn basics of the Drawing Tool, the Page Maker and the Photo Editor

Course Content		
Unit	Description	Weightage (%)
1.	**Introduction to Desktop Publishing** – Types of different Software for publishing – Drawing Tool, Photo Editor and Page Maker – Uses and Importance of Software's.	25
2.	**Drawing Tool** – Using the Toolbox To add Text: Pick, Shape, Crop , Zoom, Curve, Flyout Brush, Sprayer, Calligraphic, Smart Fill, Rectangle, Ellipse, Objects, Perfect Shape Flyout, Text Tool,. Interactive Tool, Eyedropper Tool, Outline Flyout, Fill Flyout – Creating a workspace, Customize the toolbar, Create new toolbar, Restore the Default workspace – Creating the triangles Background, Create & Arrange & the triangles. – Background & Decorative Circle, Add color to outer & circles, Create Diamond shape – Working with Different types of Menu with examples, File, Edit, View, Layout, Arrange, Effects, Bitmaps, Text, Tools, Help	25
3.	**Page Maker** – Introduction to Program Window – Toolbox: Pointer, Text, Rotating, Cropping, Line, Constrained, Rectangle & Rectangle Frame, Ellipse &Ellipse Frame, Polygon & Polygon Frame, Hand and Zoom Tool – Different Types of Control Palette – Working with different types of Menus with Examples: File, Edit, – Layout, Type, Element, Utilities, View and Window	25

4.	**Photo Editor** – To Use Palettes: Navigator, Info, Histogram, Color, Swatches, Styles, History, Action, Layers, Measurements, Channels, Path, Animation, and Clone Source. – Tools and Toolbox: Selection, Painting, Drawing, Retouching, Marquee, Move, Lasso, Quick Selection, Crop, Slice, Healing Brush, Brush, Clone Stamp, History Brush, Eraser, Gradient, Blur, Dodge, Path Selection, Type, Pen, Shape , Notes, Eye Dropper, Hand, Zoom – Working with Screen Mode: Standard, Maximized, Full Screen – Working with Different types of Menu with Examples: File, Edit, Image, Layer, Select, Filter, Analysis, View, Window, Help	25

Teaching-Learning Methodology	Blended learning approach incorporating both traditional classroom teaching as well as usage of ICT tools.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand of basics of Desktop Publishing**.**
2.	Gain basic knowledge about working with the Drawing Tool, the Page Maker and the Photo Editor.

Suggested References:	
Sr. No.	References
1	Desktop Publishing English Edition - By Ashish Joshi, Computer World

On-line resources to be used if available as reference material
On-line Resources
1. https://www.tutorialspoint.com/
2. https://www.w3schools.com/
3. https://www.javatpoint.com/

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