VANITA VISHRAM WOMEN'S UNIVERSITY
SCHOOL OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE

BACHELOR OF COMPUTER APPLICATION (B.C.A.)
HONOURS PROGRAMME
under Learning Outcomes-based Curriculum Framework (LOCF)
for Under Graduate (UG) Education

SEMESTER 5
Core Courses (CC),
Discipline Specific Elective (DSE)

Syllabus applicable to the students seeking admission in the following Programme

B.C.A. HONOURS under LOCF
w.e.f. the Academic Year 2022-2023

1. Preamble – VVWU

Vanita Vishram Women's University (VVWU) is the First-ever Women's University of Gujarat approved by the Government of Gujarat under the provisions of the Gujarat Private Universities Act, 2009. It is a university committed to achieve Women's Empowerment through Quality Education, Skill Development, and by providing employment opportunities to its girl students through its model curriculum, integration of technology in pedagogy and best-in-class infrastructure. The focus is on prioritizing practical component and experiential learning supported through academia-industry linkages, functional MoUs, skill development training, internships etc. It aims at providing opportunities to the girl students for holistic development and self-reliance.

VISION

Empowerment of women through quality education and skill development, so as to make them strong pillars of stability in the society.

MISSION

To provide Education & Professional Training to all women for their all-round development, so as to enable them to become economically independent and socially empowered citizens.

2. Introduction of the Programme

Bachelor of Computer Application is a UG program offered by VVWU. This course is of three years duration with two semesters in each year. The course is designed to make sure that students learn from basic computing to latest technologies in Computer Science & IT field. The curriculum offers perfect blend of theory and practical.

3. Programme Specific Objectives (PSOs)

- To educate students regarding computer Fundamentals, logic building and algorithms.
- To impart knowledge of various programming languages and database concepts.
- To expose the students to networking fundamental and graphics applications.
- To provide hands-on experience of IT industry level projects to the students.
- To develop entrepreneurial skills of the students to launch their own start-ups under Digital India mission.

4. Programme Specific Outcomes (PSOs)

The students will be able:

- to understand the underlying programming logic of writing codes, Design and testing.
- to apply the concepts of software engineering
- to create and manage database using the concept of Database Management System.
- to develop applications using programming languages and various application programs.
- to promote personal growth and understanding of self.

5. Structure of the Programme – Credit Structure

B.C.A. HONOURS STRUCTURE AND DISTRIBUTION OF COURSES						
Semester	**CC Total Credits (84)**	**DSE Total Credits (24)**	**GE Total Credits (24)**	**SEC Total Credits (08)**	**AECC Total Credits (08)**	**Total Credits**
1	CCE101	--	GE101	--	AECC101	**84 + 24 + 24 + 08 + 08 = 148**
	CCE102				AECC102	
2	CCE201	--	GE201	--	AECC201	
	CCE202				AECC202	
	CCE301					
3	CCE302	--	GE301	SEC301	--	
	CCE303					
	CCE401					
4	CCE402	--	GE401	SEC401	--	
	CCE403					
5	CCE501	DSE501	--	--	--	
	CCE502	DSE502				
	CCE503					
6	CCE601	DSE601	--	--	--	
		DSE602				

6. Course Structure – Paper Titles of Two Semesters

B.C.A. Honours (SEMESTERS 5 & 6)					
Sem	**Core Course**	**DisciplineSpecific Elective Courses (DSE)**	**Generic Elective Courses (GE)**	**Ability Enhancement Elective – Skill based (SEC)**	**Ability Enhancement Compulsory (AEC)**
5	Software Engineering Computer Graphics Web Development using PHP	DSE-I Elective-I 1. Web Development using Asp.NET 2. Advanced Java Programming DSE-II Elective-II 1. Mobile Application using Android 2. Mobile Application using iOS	--	--	--
6	Software Development Project	DSE-III Cyber Security DSE-IV Digital Marketing	--	--	--

BCA:

Course Highlights	
Course Level	Bachelor
Duration	3 years
Examination Type	Semester System (1 – 6 Semesters)
Intake	386
Eligibility	Candidate must have Passed (10+2) examination with 45% is eligible for admission in BCA program.
Programme Objectives	• To provide advanced and in-depth knowledge of computer science and its applications • To prepare Postgraduates who will achieve peer-recognition; as an individual or in a team; through demonstration of good analytical, design and implementation skills. • To enable students, pursue a professional career in Information and Communication Technology in related industry, business and research. • To impact professional knowledge and practical skills to the students.
Job Positions	Project Manager, IT Manager, System Analyst, Technical Leaders, Software Consultant, Database Designer, Database Administrator, Application Programmer, Network Planning Manager, etc.

Following is the scheme of assessment followed by the university -

Scheme of Assessment		
Weightage (%)	**Internal (40%)**	**External (60%)**
100%	[Internal written Theory Exam] **(20%)** + [Assignments/ presentations/Viva/ group discussion in class sessions /Journal/ MCQ/ QUIZ + Attendance] **(20%)**	End Term TheoryExams Whole Syllabus

Course Structure Summary:

Semester No	Total Credit
1	22
2	22
3	28
4	28
5	24
6	24
Total	148

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Teaching and Evaluation Scheme

Course Code	Course Type	Course Name	Teaching per week		Credits	Duration	Examination		Total Marks
			T	P			End Term Marks	Continuous Evaluation Marks	
CS11200	CORE COURSE – XI	Software Engineering	3	0	3	2:30 Hrs.	60	40	100
CS11210	CORE COURSE – XII	Computer Graphics	3	0	3	2:30 Hrs.	60	40	100
CS11220	CORE COURSE – XIII	Web Development using PHP	4	0	4	2:30 Hrs.	60	40	100
CS11230	CORE COURSE – XIII PRACTICAL	Web Development using PHP	0	4	2	2:00 Hrs.	60	40	100
CS14010	DISCIPLINE SPECIFIC ELECTIVE (DSE) – I	Web Development using Asp.NET	4	0	4	2:30 Hrs.	60	40	100
CS14020	DISCIPLINE SPECIFIC ELECTIVE (DSE) – I PRACTICAL	Web Development using Asp.NET	0	4	2	2:00 Hrs.	60	40	100
CS14030	DISCIPLINE SPECIFIC ELECTIVE (DSE) – I	Advanced Java Programming	4	0	4	2:30 Hrs.	60	40	100
CS14040	DISCIPLINE SPECIFIC ELECTIVE (DSE) – I PRACTICAL	Advanced Java Programming	0	4	2	2:00 Hrs.	60	40	100
CS14050	DISCIPLINE SPECIFIC ELECTIVE (DSE) – II	Mobile Application using Android	4	0	4	2:30 Hrs.	60	40	100
CS14060	DISCIPLINE SPECIFIC ELECTIVE (DSE) – II PRACTICAL	Mobile Application using Android	0	4	2	2:00 Hrs.	60	40	100
CS14070	DISCIPLINE SPECIFIC ELECTIVE (DSE) – II	Mobile Application using iOS	4	0	4	2:30 Hrs.	60	40	100
CS14080	DISCIPLINE SPECIFIC ELECTIVE (DSE) – II PRACTICAL	Mobile Application using iOS	0	4	2	2:00 Hrs.	60	40	100
		TOTAL	18	12	24	--	--	--	800

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Paper No: CS11200 -- CORE COURSE – XI **L: 3 Hrs.**
Paper Title: Software Engineering **Credit: 3**

Course Code	**CS11200**
Course Title	**Software Engineering**
Credit	3
Teaching per Week	3 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	Software engineers develop the techniques of implementation of system using analysis, design, and development & testing.
Course Objective	Students can learn various components of software engineering and their various process models which help them to develop a system.
Pre- requisite	Prior knowledge software & its usage.
Course Out come	Students can able to develop a software/System.
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	40% Internal assessment 60% External assessment

Course Content:

Unit	Content	Hours	Weightage in%
1	**Unit 1. Introduction of Software Engineering** 1.1 Software types, characteristics and quality factor 1.2 Need of Software Engineering and its crisis. 1.3 SDLC Concept 1.4 Software Process models 1.4.1 Waterfall Model 1.4.2 Prototyping Model 1.4.3 Spiral Model 1.4.4 Incremental Model	09	20%
2	**Unit 2. Software Requirement Analysis and Specifications** 2.1 Requirements gathering techniques 2.2 Requirements Modelling 2.2.1 Data and Functional modelling 2.2.2 Data Dictionary 2.3 SRS structure 2.3.1 Characteristics of SRS 2.3.2 Need of SRS	09	20%
3	**Unit 3. Software Design** 3.1 Design Concepts & Principle 3.2 System level design concepts-Abstraction, top down and bottom up-design, 3.3 Module level design concepts-Cohesion & Coupling, 3.4 Function Oriented Design, DFDs, Structure Chart, 3.5 Object Oriented Design. 3.6 Coding: Top-Down and Bottom–Up programming, Structured programming, Programming style, Do's and Don'ts for Coding 3.7 Case study	12	25%
4	**Unit 4. Software Testing** 4.1 Validation and Verification 4.2 Black Box testing and White Box testing approach, 4.3 Levels of testing: Unit Testing, Integration Testing, Validation testing, System testing and debugging	09	20%
5	**Unit 5. Project Management:** 5.1 Project Scheduling 5.2 Software maintenance and team management 5.3 Overview of Software estimation model	06	15%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Readings:** 1. An Integrated Approach to Software Engineering, Pankaj Jalota – Narosa. 2. Software Engineering - A Practitioners' approach, R. S. Pressman – McGraw Hill.
	Supplementary Reading: 1. Software Engineering concepts, Richard Fairley – McGraw Hill. 2. Software Engineering a Concise Study, Kelkar – PHI. 3. Software Engineering, Ian Sommerville - Pearson Education. 4. Object Oriented Modelling and Designing with UML, Michael R Blaha & James R Rumbaugh - Pearson 5. System Analysis & Design, Elias M – Galgotia Publications.
Teaching Methodology	Class Work, Discussion, Self-Study, Project, Seminars and/or Assignments, Case Study
Evaluation Method	40% Internal Assessment 60% External Assessment

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Paper No: CS11210 - CORE COURSE – XII **L: 3 Hrs.**
Paper Title: Computer Graphics **Credit: 3**

Course Code	**CS11210**
Course Title	**Computer Graphics**
Credit	3
Teaching per Week	3 Hrs.
Minimum weeks per Semester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	The aim of the course is to make student adept various Graphics concepts, methodology and tools of Computer Graphics.
Course Objective	The objective of the course is to Introduce the theoretical and practical knowledge of computer graphics. This course provides detail knowledge of computer graphics environment and its applications.
Pre-requisite	Basic Mathematics and Programming Concepts.
Course Out come	The Student is able to understand the Computer Graphics Concepts and having vision to make their Career in Graphics World.
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	40% Internal assessment 60% External assessment

Course Content:

Unit	Content	Hours	Weightage in %
1	**Unit 1. Introduction** 1.1 Graphics systems & its application areas. 1.2 Graphics file formats & standards: GKS, PHIGS, OpenGL 1.3 Concept of Raster and Random Display 1.4 Mathematical Concepts: 2-3 Dimensional Geometry, Trigonometry, Matrix Algebra, Object Concept–Line, Circle, and Polygon	**06**	**15%**
2	**Unit 2. Line Generation** 2.1 Line Drawing Algorithms 2.1.1 VECGEN Concepts for Line Drawing. 2.1.2 DDA Line Drawing Algorithm 2.1.3 Bresenham Line Drawing Algorithm 2.2 Bresenham Circle Generating Algorithms 2.3 Line Styles & Line Joints 2.4 Anti-aliasing Techniques	**12**	**25%**
3	**Unit 3. Polygons** 3.1 Representation and types of Polygon 3.2 Polygon Inside Tests method 3.3 Even-Odd Method & Winding Number Method 3.4 Polygon Area Filling method 3.5 Flood Fill, Scan – line Fill & Boundary Fill Polygon Pattern Filling Method	**12**	**25%**
4	**Unit 4. Geometric Transformations** 4.1 Basic Transformations: Scaling, Translation and Rotation 4.2 Rotation about origin & Homogeneous Coordinates 4.3 Other Transformations: Reflection & Shearing	**09**	**20%**
5	**Unit 5. Introduction to Advanced Graphics Techniques** 5.1 Concept of Animations 5.2 Image Morphing 5.3 Fractals 5.4 Hilbert's Curve & Koch Snowflake Curve Fractal Surface	**06**	**15%**

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Reading** 1. Computer Graphics - second edition, Donald Hearn & M. Pauline Baker Tata McGraw Hill Pub. 2. Computer Graphics, Harrington S. -Tata McGraw Hill. 3. Computer Graphics, Desai A. A. –PHI.
	Supplementary reading: 1. Computer Graphics: Algorithms & Implementations, Mukherjee & Jana – PHI. 2. Interactive Computer Graphics, Giloi W. K. –Prentice Hall India. 3. Principles of Interactive Computer Graphics, New Man W. & Sproul P. F. – McGraw Hill 4. Procedural Elements for Computer Graphics, Rogers D. F. – McGraw Hill.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments, Case study, Certification
Evaluation Method	40% Internal Assessment 60% External Assessment

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Paper No: **CS11220 - CORE COURSE – XIII** **P: 4 Hrs.**
Paper Title: **Web Development using PHP** **Credit: 4**

Course Code	**CS11220**
Course Title	**Web Development using PHP**
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	• Understand the basic concepts of programming with PHP. • Identify use of functions, array and object oriented concepts and implement those concepts. • Design, develop rich GUI based website. • Developed and dynamic website using PHP MySQLi. • Developing responsive web page.
Course Objective	Students will learn about Web Terminologies. Students learn how to build, design and manage websites.
Pre-requisite	The basics of Internet and Webpage.
Course Out come	Students can able to create and maintain websites using PHP and database features.
Teaching Methodology	Class Room Teaching, Discussion, Assignment and Project
Evaluation Method	40% Internal Assessment 60% External Assessment

Course Content:

Unit	Content	Hours	Weightage in %
1	**Unit 1. PHP Introduction** 1.1 Essential PHP: PHP introduction, inventions and versions, Parsing of PHP code 1.2 Data types, Variables, Constants and Operators 1.3 Control Structure and Loop Statements 1.4 Include and Require Statement	08	15%
2	**Unit 2. PHP Array and Function** 2.1 Overview of Array and Types of array 2.2 User Defined Function 2.3 Function : String, Math and Date Function 2.4 Classes and objects 2.5 Exception handling	08	20%
3	**Unit 3. Reading Data in web pages** 3.1 Setting Up Web Pages 3.2 FORM Element and INPUT Element 3.3 Redirecting Methods: Get post and request 3.4 Handling Basic Controls 3.5 Client-Side Data Validation	20	20%
4	**Unit 4. State Management** 4.1 Overview and Techniques 4.2 Dealing with Cookies 4.3 Session Management 4.4 Advantages and Disadvantages of State Management Techniques 4.5 Variables Scope	12	20%
5	**Unit 5. Working with MySQLi Database,JQuery & Wordpress** 5.1 Introduction of MySQLi 5.2 Manage Database Connection 5.3 CRUD Operation with MySQLi Function 5.4 Overview of Jquery 5.5 Jquery Selectors,Events,Effects 5.6 Jquery Methods – load(), get(),post() 5.7 Introduction of Wordpress	12	25%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books	**Main Readings:** 1. Stever holzner, The Complete Reference PHP, Mc Graw Hill
	Supplementary Reading: 1. Steve Suehring, Tim Converse and Joyce Park, PHP6 and MySQL, Wiley India Pvt. Ltd. 2. PHP and MySQL, Hugh E. Williams, O'Reilly 3. Professional PHP Programming, Jesus Castagnetto, Wrox Press Ltd
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars, Project and/or Assignments
Evaluation Method	40% Internal Assessment 60% External Assessment

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Paper No: **CS11230 - CORE COURSE – XIII PRACTICAL** **P: 4 Hrs.**
PaperTitle: **Web Development using PHP** **Credit: 2**

Practical shall be conducted for the Paper CS11220 - Web Development using PHP

Course Code	**CS11230**
Course Title	**Web Development using PHP**
Credit	2
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	Practical based on **CS11220 (Web Development using PHP)** • Understand importance of practical oriented approach. • Develop ability to implement real life programming problems • Understand the basic concepts of programming with PHP. • Identify use of functions, array and object oriented concepts and implement those concepts. • Design, develop rich GUI based website. • Developed and dynamic website using PHP MySQLi. • Developing responsive web page.
Course Objective	To help learners to • Understand the syntax and semantics of the PHP, MySQLi, jQuery. • Develop efficient programs with their own logic & capabilities. • Students will learn about Web Terminologies. • Students learn how to build and manage websites. • Learn and develop small web design project in php
Pre-requisite	The basics of Internet and Webpage.
Course Out come	After completion of the course, the student will be able to • Understand various concepts about PHP, MYSQLi, jQuery. • Students can able to create and maintain websites using PHP and database features.
Course Content	Practical based on Course: **Web Development using PHP**
Reference Book	As per paper number: **CS11220 (Web Development using PHP)**
Teaching Methodology	Lab Work
Evaluation Method	40% Internal Assessment 60% External Assessment

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Paper No: **CS14010 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – I** **P: 4 Hrs.**
PaperTitle: **Web Development using Asp.NET** **Credit: 4**

Course Code	**CS14010**
Course Title	**Web Development using Asp.NET**
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	March 2023
Purpose of Course	• Understand the basic concepts of programming with ASP.Net. • Develop Simple Web form using various controls and implement the concept of master page • Develop interaction of front end with database using facilities of .NET platform • Design, develop and deploy Web based applications using ASP.net
Course Objective	**To make students** • Set up and configure programming environment for ASP.net programs. • Create ASP.Net applications using standard .net controls.
Pre-requisite	The basics of Internet and Webpage.
Course Out come	Apply technical knowledge and perform specific technical skills, includes: • Design, Debug and Deploy web applications using ASP.NET • Use of ASP.NET controls in web applications. • Creation database driven ASP.NET web applications. • Creation of web services.
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	40% Internal Assessment 60% External Assessment

Course Content:

Unit	Content	Hours	Weightage in %
1	**Unit 1. Introduction to .NET Framework and Asp.NET** 1.1 Introduction to. NET Framework 1.2 .Net framework Architecture 1.3 .Net Framework components(CLR, CLS, CTS, JIT) 1.4 Features of Asp.NET 1.5 Differences between Asp.NET and ASP 1.6 Client Server Architecture	07	15%
2	**Unit 2. Development Using Asp.NET** 2.1 Introduction to Visual Studio 2010 2.2 Creating a New Web Project (Asp.NET) 2.3 Opening an Existing Web Site 2.4 Page Life Cycle	08	15%
3	**Unit 3. Server Control in Asp.NET** 3.1 Web Server Controls (Button, Check Box, Check Box List, Drop Down List, HyperLink, Image, mage Button, Label, Link Button, List Box, List Item, Panel, Place Holder, Radio Button, Radio Button List, Text Box) 3.2 Rich Controls: Calendar, Wizard, File Upload 3.3 Validation Controls(Required Field Validator, RangeValidator Control, Compare Validator, RegularExpression Validator, CustomValidator, Validation Summary) 3.4 Working with Control Properties and Events 3.5 Styles, themes and Master pages in Asp.NET	15	25%
4	**Unit 4. Asp.NET Server Controls** 4.1 Communications with Web Browser 4.2 Response Object and Query String 4.3 Cookies (create, set, add and expire cookie) 4.4 Session Management and Variable Scope 4.5 Asp.NET Configuration	15	25%
5	**Unit 5. Connecting Database Using ADO.NET** 5.1 ADO.NET Architecture 5.1.1 Introduction about ADO.NET 5.1.2 Connection and Command Object 5.1.3 Introduction to DataReader and DataAdapter Object 5.1.4 DataSet and DataView 5.2 Data Binding((Single Value, Repeated Value) 5.3 Database Access using ADO.NET 5.3.1 Inserting ,Selecting, Updating and Deleting Records	15	20%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Reading** 1. ASP.NET: The Complete Reference Books , Matthew Macdonald, McGraw Hill 2. Mastering Asp.net, Russel, BPB Publication 3. ASP.NET 4.5, Kogent Learning Solutions Inc. **Supplementary reading:** 1. Programming in Visual Basic. NET , Julia Case Bradley, Anita C. Millspaugh, McGraw Hill
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
EvaluationMethod	40% Internal Assessment 60% External Assessment

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Paper No: **CS14020 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – I PRACTICAL** **P: 4 Hrs.**

PaperTitle: **Web Development using Asp.NET** **Credit: 2**

Practical shall be conducted for the Paper CS14010 - Web Development using Asp.NET

Course Code	**CS14020**
Course Title	**Web Development using Asp.NET**
Credit	2
Teaching per Week	4 Hrs.
Minimum weeks per Semester	15 (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	Practical based on **CS14010 (Web Development using Asp.NET)** • Understanding and learning basic concepts of designing applications. • Understand importance of practical oriented approach. • Develop ability to implement real life programming problems
Course Objective	To help learners to • Understand the syntax and semantics of the Asp.NET language. • Develop efficient programs with their own logic & capabilities. • Learn added features of using Asp.NET in real life applications. • Learn and develop small application
Pre-requisite	Basic knowledge of programming
Course Out come	After completion of the course, the student will be able to • Understand various concepts about Asp.NET libraries. • Ability to design and develop applications in Asp.NET. • Student will be able to develop real life applications using Asp.NET002E
Course Content	Practical based on Course: **Web Development using Asp.NET**
Reference Book	As per paper number: **CS14010 (Web Development using Asp.NET**)
Teaching Methodology	Lab Work
Evaluation Method	40% Internal Assessment 60% External Assessment

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Paper No: CS14030 **L: 4 Hrs.**
Paper Title: Advanced Java Programming **Credit: 4**

Course Code	**CS14030**
Course Title	**Advanced Java Programming**
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	To Understand the requirements for the development of Web applications Java, Servlet and JSP
Course Objective	• Students will be able to Implement web pages with dynamic content and server side web applications using Servlet and JSP. • Implement Database connectivity in Java for a given application.
Pre-requisite	Basic knowledge about Object Oriented Programming, Java and MySQL is required.
Course Out come	Upon completion of this course, students will be able to do the following: 1. Use various tools, and Validation techniques, use of different templates 2. Implementation and testing strategies in real time applications. 3. Use advanced concepts related to Web Services
Evaluation Method	40% Internal assessment 60% External assessment

Course Content

Unit	Content	Hours	Weightage in %
1	**Unit 1. Servlet API and Overview** 1.1 Servlet Model: Overview of Servlet 1.2 Servlet Life Cycle 1.3 HTTP Methods Structure and Deployment descriptor ServletContext and ServletConfig Interface 1.4 Attributes in Servlet	12	25%
2	**Unit 2. The Filter API** 2.1 Filter Chain 2.2 Filter Config Cookies and Session Management 2.3 Understanding state and session 2.4 Understanding Session Timeout and Session Tracking 2.5 URL Rewriting	10	20%
3	**Unit 3. Introduction to Java Server Pages (JSP)** 3.1 JSP Overview: The Problem with Servlets 3.2 Life Cycle of JSP Page 3.3 JSP Processing 3.4 Setting Up the JSP Environment	12	20%
4	**Unit 4. Java Server Pages (JSP)** 4.1 JSP Directives and JSP Actions 4.2 JSP Implicit Objects and JSP Form Processing 4.3 JSP Session and Cookies Handling 4.4 JSP Exception Handling	12	20%
5	**Unit 5. JDBC Programming** 5.1 The JDBC Connectivity Model 5.2 Database Programming: Connecting to the Database 5.3 Creating a SQL Query for Create and View Records	14	15%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Readings:** • Black Book " Java server programming" J2EE, 1st ed., Dream Tech Publishers, 2008. Kathy walrath " • Complete Reference J2EE by James Keogh mcgraw publication • Professional Java Server Programming by Subrahmanyam Allamaraju, Cedric Buest Wiley Publication
	Supplementary Reading: • Java Server Faces in Action, Kito D. Mann, Manning Publication • Core Java, Volume II: Advanced Features by Cay Horstmann and Gary Cornell Pearson Publication • Java Persistence with Hibernate by Christian Bauer, Gavin King
Teaching Methodology	Class Work, Discussion, Self-Study, Project, Seminars and/orAssignments
Evaluation Method	40% Internal Assessment 60% External Assessment

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TY BCA Semester IV

Paper No: **CS14040 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – I PRACTICAL** **P: 4 Hrs.**
Paper Title: **Advanced Java Programming** **Credit: 2**

Practical shall be conducted for the Paper CS14030– Advanced Java Programming

Course Code	**CS14040**
Course Title	**Advanced Java Programming**
Credit	2
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	Practical based on **CS14030 (Advanced Java Programming)** • Understand importance of practical oriented approach. • Develop ability to implement real life programming problems • Understand the basic concepts of programming using Java, Servlet and JSP. • Design, develop Servlet and JSP based webpages.
Course Objective	To help learners to • Understand the syntax and semantics of the Servlet and JSP. • Develop efficient programs with their own logic & capabilities. • Students will learn about Java Web Terminologies. • Students learn how to build and manage websites. • Learn and develop small web pages using Java Servlet and JSP with SQL database connectivity.
Pre-requisite	The basics of Java, Internet and Web technologies.
Course Out come	After completion of the course, the student will be able to • Understand various concepts about Java Servlet, JSP and SQL • Students can able to create and maintain webpages using Advanced Java concepts Servlet and JSP with database features.
Course Content	Practical based on Course: **Advanced Java Programming**
Reference Book	As Per Paper number: **CS14030 (Advanced Java Programming)**
Teaching Methodology	Lab Work
Evaluation Method	40% Internal assessment 60% External assessment

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Paper No: CS14050 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – II **L: 4 Hrs.**
Paper Title: Mobile Application using Android **Credit: 4**

Course Code	**CS14050**
Course Title	**Mobile Application using Android**
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	To Understand the requirements for the development of mobile applications for various purposes
Course Objective	**To make students** • To be able to understand the process of developing software for the mobile. • To be able to create mobile applications on the Android Platform. • To be able to create mobile applications involving data storage in SQLite database.
Pre-requisite	Knowledge of the Core Java Programming, database concepts
Course Out come	After studying this, students will be able to understand • How to use the Android development environment, use the major components of Android API to develop their own apps, describe the life cycles of Activities. • This course will also help students to appreciate the role of inbuilt functions and packages. After successful completion students will be able to follow programming methodology and how to apply it in their application.
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	40% Internal assessment 60% External assessment

Course Content

Unit	Content	Hours	Weightage in %
1	**Unit 1. Introduction to Android** 1.1 Introduction to Android, History and its Features, 1.2 Architecture of Android, 1.3 Android SDK and it's components 1.4 Installing Android 1.5 Android Development Tools (ADT) and Creating Android Virtual Devices (AVDs).	05	10%
2	**Unit 2. Android Activity, Intent and Fragments** 2.1 Understanding Activities – Life Cycle of an Android Activity 2.2 Implicit and Explicit Intents in Android 2.3 Introduction to Fragments and Lifecycle of Fragments	06	15%
3	**Unit 3. User Interface in Android** 3.1 Android Layout, Creating new views 3.2 UI Elements – TextView, Button, ImageButton, Edittext, Checkbox, ToggleButton, RadioButton, RadioGroup	14	25%
4	**Unit 4. Working with Data in Android** 4.1 Interface of android with SQLite Database 4.2 Database Creation, Methods, content values and cursors in SQLite database	17	25%
5	**Unit 5. Enhancing User Experience** 5.1 Creating and using menus, action menus, Option Menu, Context Menu, Submenu 5.2 Displaying Picture, Gallery and ImageView, Image Switcher 5.3 Playing Audio, Video and adding media	18	25%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Readings:** • Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nd ed. (2011) • Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd (2009) • Sayed Y Hashimi and Satya Komatineni, "Pro Android", Wiley India Pvt Ltd (2009) • Wei-Meng Lee,"Beginning Android Application Development", Wiley Publishing, Inc, Wrox Programmer to Programmer,2013 • Ian F. Darwin,"Android Cookbook", O'Reilly,2012.
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	40% Internal Assessment 60% External Assessment

VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT
SCHOOL OF SCIENCE AND TECHNOLOGY
Department of Computer Science
BCA Programme
TY BCA Semester IV

Paper No: **CS14060 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – II PRACTICAL** **P: 4 Hrs.**
Paper Title: **Mobile Application using Android** **Credit: 2**

Practical shall be conducted for the Paper CS14050– Mobile Application using Android

Course Code	**CS14060**
Course Title	**Mobile Application using Android**
Credit	2
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	Practical based on **CS14050 (Mobile Application using Android)** • Understanding and learning basic concepts of Mobile applications. • Understand importance of practical oriented approach. • Develop ability to implement real life programming problems
Course Objective	To help learners to • To be able to understand the process of developing software for the mobile. • Develop efficient mobile application with their own logic & capabilities. • Learn added features of using Android in real life application development.
Pre-requisite	Basic knowledge of java programming
Course Out come	After completion of the course, the student will be able to • Understand various concepts about Android. • Ability to design and develop mobile applications. • Student will be able to develop real life applications using Android.
Course Content	Practical based on Course: **Advanced Java Programming**
Reference Book	As Per Paper number: **CS14050 (Mobile Application using Android)**
Teaching Methodology	Lab Work
Evaluation Method	40% Internal assessment 60% External assessment

VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT
SCHOOL OF SCIENCE AND TECHNOLOGY
Department of Computer Science
BCA Programme
TY BCA Semester V

Paper No: CS14070 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – II **L: 4 Hrs.**
Paper Title: Mobile Application using iOS **Credit: 4**

Course Code	**CS14070**
Course Title	**Mobile Application using iOS**
Credit	4
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	To Understand the requirements for the development of mobile applications for various purposes
Course Objective	**To make students** • To be able to understand the process of developing software for the mobile. • To be able to create mobile applications on the iOSPlatform. • To be able to create mobile applications involving data storage in core database.
Pre-requisite	Knowledge of the Core Java Programming, objective c, c, database concepts
Course Out come	After studying this, students will be able to understand • How to use the iOS development environment, use the major components of iOS API to develop their own apps, describe the life cycles of Activities. • This course will also help students to appreciate the role of inbuilt functions and packages. After successful completion students will be able to follow programming methodology and how to apply it in their application.
Teaching Methodology	Class Room Teaching, Discussion and Assignment
Evaluation Method	40% Internal assessment 60% External assessment

Course Content

Unit	Content	Hours	Weightage in %
1	**Unit 1. Introduction to iOS** 1.1 Introduction to iOS, XCode, Swift, iphone History, Version and Features 1.2 Architecture Pattern – Model view controller 1.3 Storyboard & interface builder	15	15%
2	**Unit 2. iOS UI Controls and Views** 2.1 UI Controls – Auto Layout, Label, Button, Text Field, Slider, alerts, icons 2.2 iOS Content Views: Activity Indicator View, Image View, Picker View	12	20%
3	**Unit 3. iOS View Controllers and Interfaces** 3.1 Controller Views – UI View, Table View, Collection View, Page View, Scroll View 3.2 Interface -Tab Bar Controller, Tab Bar, Tab Bar item	12	20%
4	**Unit 4. iOS Navigations and Touch** 4.1 UI navigation controller 4.2 Navigation with UI navigation controller 4.3 Appearing and Disappearing Views 4.4 UI navigation bar, items 4.5 Touch Event	11	20%
5	**Unit 5. Integrate With Database and Deployment** 5.1 Manage object model 5.2 Core data 5.3 Overview of submit the app to App Store	10	25%

Reference Books / Teaching Methodology / Evaluation Method:

Reference Books:	**Main Readings:** 1. Christian Keur and Aaron Hillegass – iOS Programming THE BIG NERD RANCH GUIDE 6TH Edition- Big Nerd Ranch 2. Matt Neuberg - iOS 10 Programming Fundamentals with Swift - O′Reilly 3. Vandad Nahavandipoor -iOS 10 Swift Programming Cookbook: Solutions and Examples for iOS Apps - Shroff/O'Reilly 4. Abhishek Mishra - Swift iOS Programming: 24-Hour Trainer, Book + Videos (WROX)- Wiley
Teaching Methodology	Class Work, Discussion, Self-Study, Seminars and/or Assignments
Evaluation Method	40% Internal Assessment 60% External Assessment

VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT
SCHOOL OF SCIENCE AND TECHNOLOGY
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BCA Programme
TY BCA Semester IV

Paper No: **CS14080 - DISCIPLINE SPECIFIC ELECTIVE (DSE) – II PRACTICAL** **P: 4 Hrs.**
Paper Title: **Mobile Application using iOS** **Credit: 2**

Practical shall be conducted for the Paper CS14070– Mobile Application using iOS

Course Code	**CS14080**
Course Title	**Mobile Application using iOS**
Credit	2
Teaching per Week	4 Hrs.
Minimum weeks perSemester	15 weeks (Including Class work, examination, preparation etc.)
Review / Revision	March 2023
Purpose of Course	**To make students** • To be able to understand the process of developing software for the mobile. • To be able to create mobile applications on the iosPlatform. • To be able to create mobile applications involving data storage in core database.
Course Objective	To help learners to • Understand the syntax and semantics of the PHP, MySQLi, jQuery. • Develop efficient programs with their own logic & capabilities. • Students will learn about Web Terminologies. • Students learn how to build and manage websites. • Learn and develop small web design project in php
Pre-requisite	The basics of Internet and Webpage.
Course Out come	After studying this, students will be able to understand • How to use the iOS development environment, use the major components of iOS API to develop their own apps, describe the life cycles of Activities. • This course will also help students to appreciate the role of inbuilt functions and packages. After successful completion students will be able to follow programming methodology and how to apply it in their application.
Course Content	Practical based on Course: **Mobile Application using iOS**
Reference Book	As Per Paper number: **CS14070 (Mobile Application using iOS)**
Teaching Methodology	Lab Work
Evaluation Method	40% Internal assessment 60% External assessment

8. Teaching Methodology

A teaching method comprises the principles and methods used by teachers to enable student learning. In order to achieve its objective of focused process-based learning and holistic development, the teacher/faculty may use a variety of knowledge delivery methods:

8.1 Lectures/Class works:

Lectures should be designed to provide the learners with interesting and fresh perspectives on the subject matter. Lectures should be interactive in a way that students work with their teachers to get new insights in the subject area, on which they can build their own bridges to higher learning. Classwork has the ability to enhance relationships between teachers and students. Create goal-oriented tasks for students to prepare and enable self-learning.

8.2 Discussions/ Seminars/Presentation:

Discussions / seminars / presentation are critical components of learning and can be used as a platform for students to be creative and critical with old and new ideas. Besides developing critiquing skills, arriving at consensus on various real-life issues and discussion groups lead to innovative problem-solving and ultimately to success.

8.3 Case Studies/ Self-Study:

Real case studies, wherever possible, should be encouraged in order to challenge students to find creative solutions to complex problems of individual, community, society and various aspects of knowledge domain concerned. Technology is transforming higher Education learning and teaching though various case studies to improve overall standards.

8.4 Practical/Problem sheet:

Practical ability is the essential requirement for computer science undergraduates' ability structure, and it emphasizes that computer science undergraduates should have a good grasp of theory from practice and then apply the theory to practice, improving them own software developing skills and employ ability.

8.5 Assignments:

Computer science assignments not only help students overcome their fear and

stress but also help them learn more interesting facts about the subjects of computerscience which are part of their syllabus and also out of curriculum.

8.6 Industrial Tours:

Computer Science students have to know the things practically through interaction, working methods and employment practices. Moreover, it gives exposure from academic point of view. Main aim industrial visit is to provide an exposure to students about practical working environment.

8.7 Team Work:

Teamwork based projects challenge the student to apply the technical knowledge they gain in college to solve meaningful and complex problems. Positive collaboration in the form of team work is critical in the classroom environment, for which it is necessary to transcend one's prejudices and predilections so as to achieve the desired outcomes. In the process of team work, learners will acquire the skills of managing knowledge acquisition and other collaborative learners, thereby understanding how to incorporate and balance personalities.

9. Keywords

- Bachelor of computer Application (B.C.A) Honours
- Basics Of Computers
- Office Automation
- Operating System
- Web Development
- Programming Concept
- Database-backend tool
- Web Designing
- Statistical analysis
- Internet
- Algorithms
- Software analysis, coding, design, testing
- Mobile Computing
- Cyber Security
- IT Projects
- Network fundamentals
- Framework
- Frontend tools
- Animation
- Graphics fundamentals