

**SARDAR PATEL UNIVERSITY**  
**Bachelor of Vocation (Software Development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

Course Type	New Course Code	TITLE	T/P	Credit	Exam Duration in Hrs	Contact Hrs Per Week	Component of Marks			Evaluation Responsibility
							Internal	External	Total	
							Total/Passing	Total/Passing	Total/Passing	
<b>General Component</b>	US03FBVS51	Computer Based Numerical and Statistical Methods	T	3	3	3	30/12	70/28	100/40	University/ College
	US03FBVS52	Web Designing	T	3	3	3	30/12	70/28	100/40	University/ College
	US03FBVS53	Object Oriented Programming with C++	T	3	3	3	30/12	70/28	100/40	University/ College
	US03FBVS54	Environment Studies-I	T	3	3	3	30/12	70/28	100/40	University/ College
<b>Skill Component</b>	<b>Lab/Practical</b>									
	US03CBVS51	Web Designing Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	US03CBVS52	Object Oriented Programming with C++ Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	<b>On-Job-Training/Qualification Packs</b>									
	US03CBVS53	Practical Training-II	P	12	-	-	-	-	-	University / College

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03FBVS51</b>	<b>Total Credits:3</b>
<b>Title Of Paper: : Computer Based Numerical and Statistical Methods</b>	

Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Computer Arithmetic &amp; Iterative Methods</b> <ul style="list-style-type: none"> <li>- Absolute, Relative and Percentage error</li> <li>- The method of successive bisection, an algorithm of bisection method to find a root and examples</li> <li>- The method of false position</li> <li>- The method of iterative procedure</li> <li>- Secant method, illustration and algorithm</li> <li>- The method of successive approximations, illustrations and algorithm</li> </ul>	<b>25%</b>
<b>2</b>	<b>Interpolation with Equal and Unequal Intervals</b> <ul style="list-style-type: none"> <li>- Interpolation with equal intervals-finite difference table</li> <li>- The Gregory- Newton formula for forward and backward interpolation corresponding algorithms and examples</li> <li>- Interpolation for unequal intervals using Newton's formula for divided differences</li> <li>- Lagrange interpolation</li> <li>- Central difference formulae</li> <li>- Extrapolation and corresponding examples</li> </ul>	<b>25%</b>
<b>3</b>	<b>Differentiation and Solution of Simultaneous Linear Equations</b> <ul style="list-style-type: none"> <li>- Definition and examples of differentiation</li> <li>- Higher order derivative of standard functions up to second order</li> <li>- The Matrix inversion method</li> <li>- The Gauss-Seidel iterative method</li> <li>- Comparison of direct and iterative methods</li> </ul>	<b>25%</b>
<b>4</b>	<b>. Time Series</b> <ul style="list-style-type: none"> <li>- Meaning, Analysis and Utility of Time Series</li> <li>- Components of Time Series</li> <li>- Moving average method to find secular trend</li> <li>- Simple average method to find seasonal variation</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**MAIN REFERENCE BOOKS :**

1. Sastry S. S. : Introductory Methods of Numerical Analysis, Prentice Hall of India Pvt. Ltd., 1986(2)
2. Salaria R S : Computer Oriented Numerical Methods, Khanna Book Publishing Co. Ltd., 2000(3)
3. Fundamentals of statistics by S.C. Gupta, Himalaya Publishing House.(6)

**OTHER REFERENCE BOOKS :**

1. Rajaraman V. : Computer Oriented Numerical Methods, Prentice Hall of India Pvt. Ltd., 1983
2. Murray R Spiegel : Theory and Problem of Statistics, McGraw-Hill Schaum's Outline Series, 1981.

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03FBVS52</b>	<b>Total Credits:3</b>
<b>Title Of Paper: Web Designing</b>	

Unit	Description in detail	Weightage (%)
1	<b>Web Design Principles :-</b> Basic principles involved in developing a web site, Planning process, rules of web designing aviation bar, Page design, Home Page Layout, Design Concept, Brief History of Internet, what is World Wide Web, Why create a website, Web Standards	25%
2	<b>Introduction to HTML:-</b> What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, Markup Tags, Heading-Paragraphs, Line Breaks, Introduction to elements of HTML, Working with Text, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls.	25%
3	<b>Introduction to Cascading Style Sheets and Java Script:-</b> Concept of CSS, Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format ,Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, CSS Color , Java script Basics, Java script Events, Java script conditions and loop control structures, Alert, Prompt and Confirm statements, Java script validation	25%
4	<b>Introduction to Web Publishing or Hosting And Introduction to Bootstrap:-</b> Creating the Web Site, Saving the site, Working on the website, Creating web site structure, Themes-Publishing web sites. History, Fundamentals of Bootstrap, Bootstrap Grid System, Bootstrap Form and Form Components, Introduction JQuery, Element Selector, Document ready function, Events, Event handling with Html or Bootstrap components	25%
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**MAIN REFERENCE BOOKS :**

1. Ivan Bayross, "Web Enabled Commercial Applications Development using HTML, DHTML, Javascript, Perl CGI"
2. Xavier C : World Wide Web Design With HTML, Tata McGraw Hill Publication, 2000
3. Wilton P. : Beginning JavaScript, 2nd Edition, Wiley DreamTech, 2004

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03FBVS53</b>		<b>Total Credits:3</b>
<b>Title Of Paper: Object Oriented Programming with C++</b>		
Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Object Oriented Programming (OOP) Concepts and Introduction to C++</b> <ul style="list-style-type: none"> <li>- Structured programming vs. object oriented programming</li> <li>- Basic OOP concepts : objects , classes , encapsulation , data hiding , inheritance, polymorphism</li> <li>- Introduction to C++: structure of a C++ program , data types , variables, constants, expressions, statements and operators, Usage of header files</li> <li>- Control flow statements : if else, for loop, while loop, do while loop, switch, break and continue</li> </ul>	<b>25%</b>
<b>2</b>	<b>Input/Output, Arrays and Working with Classes</b> <ul style="list-style-type: none"> <li>- Basic I/O in C++</li> <li>- Arrays in C++ : introduction, declaration, initialization of one , two and multi-dimensional arrays, operations on arrays</li> <li>- Working with strings : introduction, declaration, string manipulation and arrays of string</li> <li>- Classes and objects in C++</li> <li>- Constructors : default, parameterized, copy, constructor overloading and destructor</li> <li>- Access specifiers, implementing and accessing class members</li> <li>- Working with objects : constant objects, nameless objects, live objects, arrays of objects</li> </ul>	<b>25%</b>
<b>3</b>	<b>Functions, Function Overloading and Inheritance</b> <ul style="list-style-type: none"> <li>- Introduction to functions, library and user-defined functions, parameters passing, default arguments</li> <li>- Functions overloading , inline functions, friend functions and virtual functions</li> <li>- Inheritance: Introduction , derived class declaration, forms of inheritance</li> <li>- Inheritance and member access ability, constructor and destructor in derived class, construction invocation and data member initialization.</li> </ul>	<b>25%</b>
<b>4</b>	<b>Operator Overloading, Pointers and Files</b> <ul style="list-style-type: none"> <li>- Operator overloading : Introduction, overloaded operators, unary operator overloading, operator keyword, operator return values, binary operators overloading, overloading with friend function</li> <li>- Usages of Pointers in C++ : basic overview</li> <li>- Dynamic memory allocation</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**MAIN REFERENCE BOOKS :**

1. E Balagurusamy : Object Oriented Programming in C++, Tata McGraw-Hill Publishing Co. Ltd.
2. Robert Lafore : Object Oriented Programming in Turbo C++, Guide, Galgotia Pub. (P) Ltd.
3. Schaum's Outline of Programming with C++ by John Hubbard, McGraw-Hill Education; 2nd edition (June 6, 2000)

**BOOKS FOR ADDITIONAL READING :**

1. Barkakati N. : Object Oriented Programming in C++, PHI.
2. OOP's using C++ for Dummies.

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03FBVS54</b>	<b>Total Credits:3</b>
<b>Title Of Paper: Environmental Studies</b>	

Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Overview of Environmental Studies</b> <ul style="list-style-type: none"> <li>- Definition, Scope, Importance.</li> <li>- Renewable and Non Renewable Resources</li> <li>- Equitable use of resources for sustainable lifestyles</li> </ul>	<b>25%</b>
<b>2</b>	<b>Natural Resources and Associated Problems</b> <ul style="list-style-type: none"> <li>- Forest Resources, Water Resources, Mineral Resources, Energy Resources, Land Resources.</li> <li>- Role of Individual in conservation of Natural Resources</li> <li>- Case Study on various resources</li> </ul>	<b>25%</b>
<b>3</b>	<b>Ecosystems</b> <ul style="list-style-type: none"> <li>- Concept, Structure, Function.</li> <li>- Types, Characteristics</li> <li>- Threats of following ecosystems Forest, Grassland, Desert and Aquatic Ecosystem</li> <li>- Role of Individuals in sustaining the above types of Ecosystems</li> </ul>	<b>25%</b>
<b>4</b>	<b>Biodiversity</b> <ul style="list-style-type: none"> <li>- Introduction, Types – Genetic, Species, Ecosystem</li> <li>- Biodiversity at Global National and Local Levels</li> <li>- India as a mega diversity nation</li> <li>- Threats &amp; conservation of Biodiversity.</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**Basic Text & Reference Books:**

1. Text book of Environmental Studies for undergraduate Courses: Erach Barucha, PublisherUniversity Press, University Grants Commission.
2. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p Mckinney, M.L. & School, R.M. 1996.
3. Environmental Science systems & Solutions, Web enhanced edition. 639p. Jadhav, H &Bhosale, V.M. 1995.
4. Environmental Protectionand Laws. Himalaya Pub. House, Delhi 284 p

Note: Latest Edition of Text books may be used.

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: Code: US03CBVS51</b>	<b>Total Credits:3</b>
<b>Title Of Paper:</b> Web Development using PHP Practical Lab	

<b>Part</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<ul style="list-style-type: none"><li>• Practical based on Web Development using PHP Practical Lab</li></ul>	<b>50%</b>
<b>2</b>	<ul style="list-style-type: none"><li>• Practical based on Graphics Design Practical Lab</li></ul>	<b>50%</b>

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03CBVS52</b>	<b>Total Credits:3</b>
<b>Title Of Paper:</b> Object Oriented Programming with C++ Practical Lab	

<b>Part</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<ul style="list-style-type: none"><li>• Practical based on Object Oriented Programming with C++ Practical Lab</li></ul>	<b>100%</b>

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: III**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US03CBVS53</b>	<b>Total Credits:12</b>
<b>Title Of Paper: Practical Training –II</b>	

<b>Part</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<ul style="list-style-type: none"><li>● Practical Training on C++</li><li>● Practical Training on php</li><li>● Practical Training on Java Script</li><li>● Practical Training on Designing tools</li><li>● Practical Training on Framework(Bootstrap)</li><li>● Practical Training on SQL</li></ul> <p>➤ <b>The students have to undergone for internship/ on the job training under any Concerned Organization in the areas of QP/NOS</b></p> <p>➤ <b>A presentation as well as report has to prepared and presented for the viva-voce and submit it to the concerned faculty.</b></p>	<b>100%</b>

**SARDAR PATEL UNIVERSITY**  
**Bachelor of Vocation (Software Development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

Course Type	New Course Code	TITLE	T/P	Credit	Exam Duration in Hrs	Contact Hrs Per Week	Component of Marks			Evaluation Responsibility
							Internal	External	Total	
							Total/Passing	Total/Passing	Total/Passing	
<b>General Component</b>	US04FBVS51	Fundamental Of Operating System	T	3	3	3	30/12	70/28	100/40	University/ College
	US04FBVS52	Operations Research	T	3	3	3	30/12	70/28	100/40	University/ College
	US04FBVS53	Web Development using PHP	T	3	3	3	30/12	70/28	100/40	University/ College
	US04FBVS54	Object Oriented Programming with Java	T	3	3	3	30/12	70/28	100/40	University/ College
<b>Skill Component</b>	<b>Lab/Practical</b>									
	US04CBVS51	Web Development using PHP Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	US04CBVS52	Object Oriented Programming with Java Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	NSQF Level 5	Web Developer (SSC/Q0503)	P	12		400 hours in Semester				SSC



**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US04FBVS51</b>	<b>Total Credits:3</b>
<b>Title Of Paper:</b> Fundamentals of Operating System	

<b>Unit</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<b>Introduction and Scheduling</b> <ul style="list-style-type: none"> <li>- Introduction to Operating System, Functions of OS</li> <li>- Different types of Operating Systems: Real time, Multi-user, Timesharing</li> <li>- OS Structure – Monolithic, Layered, Virtual Machine, Client-Server</li> <li>- CPU Scheduling: Introduction to process, process control block, process scheduling</li> </ul>	<b>25%</b>
<b>2</b>	<b>Memory Management</b> <ul style="list-style-type: none"> <li>- Memory Management: Concept, Basic memory management techniques, Swapping, Virtual Memory System, Demand Paging               <ul style="list-style-type: none"> <li>a) The Optimal Page Replacement Algorithm</li> <li>b) The NRU Page Replacement Algorithm</li> <li>c) The FIFO Page Replacement Algorithm</li> </ul> </li> </ul>	<b>25%</b>
<b>3</b>	<b>Process Synchronization, Deadlocks and Introduction to Linux</b> <ul style="list-style-type: none"> <li>- Introduction to Cooperating process</li> <li>- Process Synchronization,</li> <li>- Critical Section Problem</li> <li>- Two process solution, Multiple process solution</li> </ul> <b>Deadlock and characterization</b> <ul style="list-style-type: none"> <li>- Introduction to Linux System &amp; History</li> <li>- Features of Linux</li> </ul> <ul style="list-style-type: none"> <li>- Introduction to File System &amp; Memory Management</li> </ul>	<b>25%</b>
<b>4</b>	<b>Basic Linux commands</b> <ul style="list-style-type: none"> <li>- Basic Command-s: login, logout, date, man, pwd, who, whoami, dir, ls, cd, mkdir, rmdir</li> <li>- Use of Wild card characters and introduction to vi editor</li> <li>- Introduction to environment variable like HOME, PATH, PS1</li> <li>- Types of FAP, use of chmod command</li> <li>- Basic commands like cp, mv, rm, rev, file redirection,</li> <li>- grep, cut, paste, find sort commands with example</li> <li>- Introduction to shell script: execution of it, shell script variable, expr, test commands</li> <li>- Control structure: if, if..else, case structure</li> <li>- Iteration: while, for construct, break, continue, exit commands</li> </ul>	<b>25%</b>
	<b>Practical:</b>	
	The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty	

**MAIN REFERENCE BOOKS :**

1. Andrew S. Tanenbaum: Operating System design & Implementation, Prentice Hall International
2. James Peterson and Abraham Silberschatz: Operating System Concept, Addison Wesley
3. Linux Commands Instant reference – Bryan Pfaffenberger, BPB Publication
4. Advanced Linux Programming – Samuel, Techmedia Publications

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US04FBVS52</b>	<b>Total Credits:3</b>
<b>Title Of Paper: Operations Research</b>	

Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Linear Programming Problem (LPP) - I</b> <ul style="list-style-type: none"> <li>- History, meaning and scope of OR</li> <li>- Applications, advantages and limitations of OR</li> <li>- Meaning, Applications and limitationsof LPP</li> <li>- Formulation of LPP</li> </ul>	<b>25%</b>
<b>2</b>	<b>Linear Programming Problem- II</b> <ul style="list-style-type: none"> <li>- Methods to determine solution to LPP : Graphical method, Simplex method, Big M method (Simple examples only)</li> </ul>	<b>25%</b>
<b>3</b>	<b>Transportation Model and Assignment Model</b> <ul style="list-style-type: none"> <li>- Introduction</li> <li>- Mathematical model of Transportation problem</li> <li>- Initial basic feasible solution by North-west corner rule, Least-cost method, Vogel's approximation method.</li> <li>- Introduction to an Assignment Model</li> <li>- Mathematical model of Assignment problem</li> <li>- Solution by Hungarian method</li> </ul>	<b>25%</b>
<b>4</b>	<b>Sequencing and Network analysis</b> <ul style="list-style-type: none"> <li>- Sequencing problems and applications</li> <li>- Network Analysis : Introduction to CPM and PERT, Rules for Network construction</li> <li>- CPM: Calculations of EST, EFT, LST, LFT and SLACKS (Total float, Free float)</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**MAIN REFERENCE BOOKS :**

1. Taha H. A. : Operations Research, Macmillan, New York (1987)
2. Sharma S.D. : Operations Research. Kedar Nath Ram Nath & Co. Meerut , 1988-89.
3. Gillett B. E.: Introduction to Operations Research - a computer oriented algorithmic approach, McGraw-Hill, 1976

**BOOKS FOR ADDITIONAL READING :**

1. Bronson Richard : Operations Research, Schaum's outline Series, 1983.
2. Kapoor V K : Problems and solutions in Operations Research, Sultan Chand & sons, 1996

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US04CFBVS53</b>	<b>Total Credits:3</b>
<b>Title Of Paper:</b> Web Development using PHP	

Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Introduction to PHP and Language basics</b> <ul style="list-style-type: none"> <li>- Intro to PHP for Web Development</li> <li>- History &amp; Future Scope of PHP</li> <li>- Intro to JSP, Advantage of PHP over JSP</li> <li>- Variables, Language Construct, Type Juggling, Deleting a Variable, Operators, Comments, echo, print, conditional statement , Loops (for, while), switch</li> </ul>	<b>25%</b>
<b>2</b>	<b>Datatypes, Arrays and Functions</b> <ul style="list-style-type: none"> <li>- What is Datatype, Types of Datatype, Type Casting, Garbage Value</li> <li>- Arrays: What is an Array, Types of Array, print_r(), foreach</li> <li>- Important Built-in functions of array : explode(), implode(), shuffle(), rand(), count(), array_key_exists(), 2 array_reverse(), sort(), ksort(), rsort(), array_push(), array_pop(), array_merge(), array_key_exists(), array_reverse()</li> <li>- Multi-dimensional Arrays</li> <li>- Functions : What is a function?, Types of Function, return statement</li> <li>- How to call a function</li> <li>- Function without parameters, Function with parameters</li> <li>- Static Variable, Difference between Call By Value and Call By Reference.</li> <li>- Important Built-in functions of array : ceil(), floor(), round(), fun_get_args(), fun_num_args().</li> </ul>	<b>25%</b>
<b>3</b>	<b>Working with forms, regular expressions, session and cookie</b> <ul style="list-style-type: none"> <li>- What is a Form?</li> <li>- Important HTML Tags, Super-Global Variable</li> <li>- Different ways to carry form data (GET, POST) ,isset(), isempty()</li> <li>- Regular Expression: What is Regular Expression?, Important Symbols used in regular expression with explanation, Validations</li> <li>- Session : What is a Session? , Creating a Session, Use of Session, Destroying a Session, Login/Logout</li> <li>- Cookie: What is a Cookie? , Difference between Session &amp; Cookie, Types of Cookie, Creating a Cookie, Fetching value of Cookie, Deleting a Cookie</li> </ul>	<b>25%</b>
<b>4</b>	<b>Introduction to MySQL</b> <ul style="list-style-type: none"> <li>- What is a database?, What is SQL Injection?</li> <li>- Different kinds of Datatypes used in MySQL</li> <li>- Connecting PHP with MySQL</li> <li>- Creating a Database, Creating a Table-Insert, update, delete, select</li> <li>- Truncate, alter, drop, grant, revoke, commit, rollback, rename</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**Reference Books:**

1. Beginning PHP5
- 2, PHP Bible, 3, Professional PHP5, 4, PHP Manual

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: US04FBVS54</b>	<b>Total Credits:3</b>
<b>Title Of Paper:</b> Object Oriented Programming with Java	

Uni	Description in detail	Weightage (%)
<b>1</b>	<b>Introduction</b> <ul style="list-style-type: none"> <li>- History of Java, features, the Java environment, the Java Virtual Machine (JVM)</li> <li>- Structure of a Java program, a simple Java program, implementing a Java program</li> <li>- Tokens, comments, constants, variables and data types</li> <li>- Scope of variables, type casting</li> <li>- Operators: arithmetic, relational, logical, assignment, increment/decrement, conditional, ternary operator &amp; special operators</li> <li>- Decision making: if statement, if...else statement, nesting of if...else, the else if ladder, switch statement</li> <li>- Looping: while, do...while, for, for each loop jumps in loops, labeled loops</li> <li>- Arrays: one, two dimensional arrays</li> </ul>	<b>25%</b>
<b>2</b>	<b>Classes, Objects, Interfaces and Inheritance</b> <ul style="list-style-type: none"> <li>- Defining a class, members of a class: variables and methods, creating objects, constructors, accessing class members</li> <li>- Static members v/s instance members</li> <li>- Introduction to inheritance, <i>super</i> keyword</li> <li>- Interfaces: introduction</li> <li>- Final variables, methods and classes, abstract methods and classes</li> <li>- Introduction to method overloading and overriding</li> </ul>	<b>25%</b>
<b>3</b>	<b>Exception Handling, I/O Management and Packages</b> <ul style="list-style-type: none"> <li>- Managing errors &amp; exceptions: introduction, types of errors, exceptions syntax of exception handling construct, multiple catch statements, the finally clause, defining and throwing user-defined exceptions, the throw statement</li> <li>- Managing I/O files : introduction, concept of streams, Character stream classes</li> <li>- Introduction to the concept of package, Java API packages, using the System package</li> <li>- Using java.lang (String, Math)</li> </ul>	<b>25%</b>

4	<b>Applet Programming and JDBC</b> <ul style="list-style-type: none"> <li>- Applet architecture and skeleton</li> <li>- java.awt package (Button, CheckBox, CheckBoxGroup, Choice, Color, Label, List, TextArea, TextField)</li> <li>- HTML applet tag, display techniques (DrawString, Lines, Rectangle, Ellipses, Circles, Arcs, Polygons, Color)</li> <li>- Introduction to event handling</li> <li>- Introduction to JDBC, types of drivers</li> <li>- java.sql package</li> <li>- Retrieving, inserting, deleting and updating data through Java</li> </ul>	<b>25%</b>
<b>Practical:</b>		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

**MAIN REFERENCE BOOKS :**

1. Programming with Java- A Primer by E. Balaguruswami, 3<sup>rd</sup> Edition, TMH Publication
2. The Complete Reference –Java 2 7<sup>th</sup> Edition Herbert Schildt. TMH Publication

**BOOKS FOR ADDITIONAL READING :**

1. Saba Zame , Handbook of Object technology, CRC Press, Washington DC, 1999
2. Mary Campion and Kathy Walrath, Java tutorial, Second Edition, Addison Wesley Pun. 1998.
3. Java 2 Programming Black Book, Steven Holzner

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: Code: US04CBVS51</b>	<b>Total Credits:3</b>
<b>Title Of Paper: Web Development using PHP Practical Lab</b>	

<b>Part</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<ul style="list-style-type: none"><li>• Practical based on Web Development using PHP Practical Lab</li></ul>	<b>100%</b>

**SARDAR PATEL UNIVERSITY**  
**B.Voc (Software development)**  
**Semester: IV**  
**Syllabus with effect from: June 2021**

<b>Paper Code: Code: US04CBVS52</b>	<b>Total Credits:3</b>
<b>Title Of Paper: Object Oriented Programming with Java Practical Lab</b>	

<b>Part</b>	<b>Description in detail</b>	<b>Weightage (%)</b>
<b>1</b>	<ul style="list-style-type: none"><li>• Practical based on Object Oriented Programming with Java</li></ul>	<b>70%</b>