SYLLABUS FOR THE BATCH FROM THE YEAR 2023 TO YEAR 2026

Programme Code: BVSD

Programme Name: B.VOC (SOFTWARE DEVELOPMENT)

(Semester I-VI)

Examinations: 2023-2026

P.G. Department of Computer Science & Applications

Khalsa College, Amritsar

Programme name: B.VOC (SOFTWARE DEVELOPMENT)
Programme code: BVSD
Programme Duration :3 years / 4 years (as per NEP 2020)

Programme Objectives:

1.	The vocational educational programme mainly focuses on Job specific Skills rather than the board or council-based education.
2.	To provide vertical mobility to students coming out of 10+2 with vocational subjects.
3.	To provide mix of skills relating to a profession and appropriate content of General Education.
4.	To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the program.
5.	To provide flexibility to the students by means of predefined entry and multiple exit points.
6.	To enhance employability of the graduates and meet industry requirements.
7.	This program improves the skills of the candidates by concentrating on theoretical knowledge as well as practical training.

Program Specific Outcomes (PSO):

PSO-1.	Better acquaintance with latest technologies and working of Software industry.
PSO-2.	Creating new ideas in the field of software development and resolving problems related to this field
PSO-3.	Learning, designing and performing programs and projects in lab as per the concepts learn in course
PSO-4.	Better understanding by analysing and developing computer programs in the areas related to mobile application design and web design.
PSO-5.	Deliver a quality product by applying standard software engineering processes and strategies in software project development using open-source programming environment.
PSO-6.	Performing jobs or self-career in various fields like Software/Website Development, Graphic Designing.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

Semester – I

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 114 (Major)	Fundamentals of Information Technology	75	25	-	100	5	1	0	3	1	0	4	4-5
2	BVSD 115 (Major)	Web Technology	75	25	-	100	5	1	0	3	1	0	4	6-7
3	BVSD 116 (Major)	Programming using C Language	75	25	-	100	5	1	0	3	1	0	4	8-9
Ability Enhancement Course (AEC)														
4	BCSV-1129	Communication Skills in English-I	60	25	15	100	4	0	2	3	0	1	4	10-11
5	BHPB-1101/ BPBI-1102/ BPHC-1104	Punjabi (Compulsory)/ *Basic Punjabi/ **Punjab History & Culture	75	25	-	100	6	0	0	4	0	0	4	12-15
Skill Enhancement Course(SEC)														
6	BVSD 117P	Lab I: Office Automation and Web Technology	0	25	75	100	0	0	6	0	0	4	4	16
7	BVSD 118P	Lab II: Programming in C Language	0	25	75	100	0	0	6	0	0	4	4	17
Value Added Course(VAC)														
8	ZDA111	***Drug Abuse: Problem, Management and Prevention(Compulsory paper)-I	-	-	-	50	3	0	0	2	0	0	2	18-19
										Total Credits=30				

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
BVSD 114: Fundamentals of Information Technology
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 marks each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

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Course Objectives:

At the end of the course, the students will be able to:

1.	Understand working of computers and its components such as Input/output devices, hardware, software and other basic terminologies along with their classification.
2.	Make familiar with the part and function of computer, its types, how to use computer in our day-to-day life.
3.	Understand the various Development and Programming Tools.
4.	Learn how computer network hardware and software operate and will make them familiar with the latest and dominant network technologies.

UNIT-I

An overview of computer system: Block diagram of Computer, Components of Computers, and advantages of computer.

I/O and storage Devices: Keyboard, mouse, pens, touch screens, Bar Code reader, joystick, Monitor, printers, plotters, Primary storage (Storage addresses and capacity, type of memory), Secondary storage, Magnetic storage devices and optical storage devices

UNIT-II

Number System: decimal, binary, octal, hexadecimal numbers and their–conversions
Development Tools: Editors, Translators, Compilers, Interpreters, Linkers Loaders, Debuggers.

UNIT-III

Programming Tools: Problem Analysis, Program Constructs (Sequential, Decision, Loop), Algorithms, Flowcharts, Pseudo code, Decision table

UNIT-IV

Data Communications: Introduction to Data Communication, Network and its types, topologies, Transmission Media and modes.

References:

1. **V.K. Jain: Fundamentals of Information Technology, 2007.**
2. **Norton, Peter: Introduction to Computers, McGraw Hill,7th Edition.**
3. **Computer Fundamentals, P.K. Sinha, 6th Edition**

Course Outcomes:

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

CO-1.	Operate computer independently and professionally.
CO-2.	Use various programming and development tools.
CO-3.	Understand binary, hexadecimal and octal number systems and their arithmetic.
CO-4.	Independently understand basic computer network technology.
CO-5.	Understand and explain Data Communications System and its components.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
BVSD-115: Web Technology
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	Gain knowledge about the principles of web environment.
2.	Principles related to web design and transform these theories into practice.
3.	Ability to design static and dynamic web pages.
4.	Learn the web languages: HTML, Java script and CSS.
5.	Learn the concepts of domain, web space and website publishing.

UNIT-I

Introduction to Web Development: Webpage, Website, Static Website, Dynamic Website, Web Servers, Web Browsers

Introduction to HTML/DHTML: HTML Basics, HTML Elements (Tags), Structure of HTML Program, Attributes, Headings, Paragraphs, Formatting, Links, Images, Tables, Lists, Forms, Frames, Where to put Tables, Lists, Images, Forms, CSS in DHTML, Implementation of WebPages using CSS.

UNIT-II

Introduction to JavaScript:
How & Where to put the JavaScript Code, JavaScript Statements, Comments, Variables, Operators, Control Statements, Loops, Popup Boxes, Functions.

UNIT-III

Introduction to Dreamweaver: Understanding Workspace Layout, Managing Websites, Creating a Website, Using Dreamweaver

Templates, Adding New Web Pages, Text and Page Format, Inserting Tables, Lists, Images, Adding Links.

UNIT-IV

Purchasing a Domain Name & Web Space: Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server.

References:

1. Web Enabled Commercial Application Development HTML (Ivan Bayross), 2005
2. JavaScript, a Beginner's Guide John Pollock, 3rd Edition
3. Dreamweaver CS5 for Dummies Janine C. Warner, Paperback Edition, 2010
4. The Essential Guide to Dreamweaver CS4 David Powers.

Course Outcomes (Cos):

At the end of this course student will be able to:

CO-	Gain knowledge of HTML and CSS code and using this knowledge, they are able to create websites.
CO-	Learn to write code using java script.
CO-	Able to create online forms.
CO-	Learn how to publish website to the web.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
BVSD-116: Programming using C Language
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	The course is oriented to those who want to advance structured and procedural programming, understand and improve C programming skills.
2.	The major objective is to provide students with understanding of code organization and functional hierarchical decomposition using complex data types.

UNIT-I

C language preliminaries: Introduction to C, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements.
Operators and I/O functions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, getchar, putchar, printf, gets, puts

UNIT-II

Control Statements: While, Do–while and for statements, Nested loops, If–else, Switch, Break – Continue statements.
Functions: Brief overview, types, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion.

UNIT-III

Arrays and Pointers Defining, processing an array, passing arrays to a function, multi–dimensional arrays, Introduction to pointers, Operations on pointers, Pointers and array.
Structure and Union: A simple structure, specifying the structure, defining a structure variable Accessing Structure member, Structure within structure, union, difference between structure and union.

UNIT-IV

Data Files: Opening, closing, creating, processing and unformatted data files.

References:

1. Let Us C By Yashwant Kanetkar,BPB Publication,14th Edition,2017.
2. The Complete Reference by Herbert Schildt, indian edition 4th edition ,2017
3. Shcaum Outline Series: "Programmingwith C",4th edition,2018

Course Outcomes (COs):

CO-1.	On successful completion of this subject the students will gain the programming ability in C Language.
CO-2.	Students would be capable of developing various applications to solve real world problems.
CO-3.	Understanding a concept of object thinking within the framework of functional model.
CO-4.	They will be able to make system as well as application software.
CO-5.	Provide the ability to handle possible errors during program execution.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
COMMUNICATION SKILLS IN ENGLISH–I
Code: BCSV-1129

Time: 3 Hours **Max. Marks: 100**

Theory: 60
Practical: 15
Internal Assessment: 25

L	T	P	Credits
3	0	1	4

Instructions for the Paper Setters:-
Section A is compulsory. It will consist of Fifteen (15) questions of one mark each. The students will be required to attempt any Twelve (12). (12X1= 12 Marks)
Eight (8) questions of equal marks will be set from Section B-E, comprising 2 questions from the each above mentioned section. Candidates will be required to attempt Four (4) questions, selecting at least one question from each Section.

(4X12=48 Marks)

Course Objectives:
I: To develop competence in written communication.
II: To inculcate innovative and critical thinking among the students.
III: To enable them to grasp the application of communication theories.
IV: To acquire the knowledge of latest technology related with communication skills.
V: To provide knowledge of multifarious opportunities in the field of this programme.

The syllabus is divided in five sections as mentioned below:

Section- A

Grammar: Article, Conjunctions and Prepositions

Section–B

Reading Skills: Reading Tactics and strategies; Reading purposes–kinds of purposes and associated comprehension.

Section–C

Reading for understanding concepts, details, coherence.
Activities:
Short comprehension questions based on content and development of ideas

Section–D

Writing Skills: Writing styles for application, personal letter, official/ business letter.
Activities*:*
Formatting personal and business letters.

Section–E

Resume, memo and notices; outline and revision.

Activities:

Converting a biographical note into a sequenced resume or vice-versa

Writing notices for circulation/boards

Recommended Books:

Oxford Guide to Effective Writing and Speaking by John Seely.

English Grammar in Use (Fourth Edition) by Raymond Murphy, CUP

Course Outcomes:

The completion of this course enables students to:

1. Identify common errors in language and rectify them.
2. Develop and expand writing skills through controlled and guided activities.
3. Develop coherence, cohesion and competence in written discourse through intelligible pronunciation.
4. Develop the ability to handle the interview process confidently and learn the subtle nuances of an effective group discourse.
5. Communicate contextually in specific and professional situations with courtesy.

Practical Marks: 15

Course Contents:-

1. Assignment on selected topics in about 700-1000 words.
2. Reading dialogues
3. Rapid reading

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
Compulsory Course
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ

Credit & Marks Distribution, Eligibility and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Credits	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			Lecture	Tutorial	Practical	Theory	Internal Assessment			
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ **BHPB-1101**	60	4	4	0	0	75	25	3 Hours	Class 12th pass in any stream	Studied Punjabi up to 10th Standard

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	**ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)**
ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪੈਦਾ ਕਰਨਾ। ਆਲੋਚਨਾਤਮਕ ਰੁਚੀਆਂ ਵਿਕਸਤ ਕਰਨਾ। ਮਾਤ ਭਾਸ਼ਾ ਦੀ ਸਮਝ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ।	ਉਸ ਵਿਚ ਸਾਹਿਤ ਰੁਚੀਆਂ ਵਿਕਸਤ ਹੋਣਗੀਆਂ। ਉਸ ਵਿਚ ਸਾਹਿਤ ਸਿਰਜਣਾ ਦੀ ਸੰਭਾਵਨਾ ਵਧੇਗੀ। ਉਸ ਵਿਚ ਕਿਸੇ ਵੀ ਵਿਸ਼ੇ ਦਾ ਗਹਿਨ ਅਧਿਐਨ ਕਰਨ ਦਾ ਬੋਧ ਹੋਵੇਗਾ। ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ ਬਾਰੇ ਗਿਆਨ ਹਾਸਲ ਕਰਨਗੇ

ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਿਲੇਬਸ ਦੇ ਚਾਰ ਭਾਗ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿਚ 1.5-1.5 (ਡੇਢ-ਡੇਢ) ਅੰਕ ਦੇ ਅਤਿ-ਸੰਖੇਪ (Objective Type) 10 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਾਰੇ ਸਿਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ। ਸਿਲੇਬਸ ਦੇ ਬਾਕੀ ਚਾਰ ਭਾਗਾਂ ਵਿਚ 02-02 ਲੇਖ ਨੁਮਾ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ 01-01 ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੋਵੇਗਾ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 15 ਅੰਕ ਹੋਣਗੇ। ਪੇਪਰ ਸੈੱਟਰ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ, ਜੋ ਕਾਲਜ ਵੱਲੋਂ ਨਿਰਧਾਰਿਤ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਅਨੁਸਾਰ ਥਿਊਰੀ ਅੰਕਾਂ ਤੋਂ ਵੱਖਰੀ ਹੋਵੇਗੀ। ਇਸ ਪੇਪਰ ਦੇ ਕੁੱਲ ਅੰਕ 75+25= 100 ਹਨ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਸਾਹਿਤ ਦੇ ਰੰਗ, ਡਾ. ਮਹਿਲ ਸਿੰਘ (ਸੰਪਾ.), ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
ਭਾਗ ਪਹਿਲਾ - ਕਵਿਤਾ ਅਤੇ ਕਹਾਣੀ, ਡਾ. ਮਹਿਲ ਸਿੰਘ ਅਤੇ ਡਾ. ਆਤਮ ਰੰਧਾਵਾ (ਸਹਿ ਸੰਪਾ.)
(ਕਵਿਤਾ ਭਾਗ ਵਿਚੋਂ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ/ਵਿਸ਼ਾ-ਵਸਤੂ। ਕਹਾਣੀ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਵਿਸ਼ਾ-ਵਸਤੂ)

ਭਾਗ-ਦੂਜਾ

ਪੰਜਾਬ ਦੇ ਮਹਾਨ ਕਲਾਕਾਰ (ਸੰਪਾ. ਬਲਵੰਤ ਗਾਰਗੀ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਅੰਮ੍ਰਿਤਾ ਸ਼ੇਰਗਿੱਲ ਤੋਂ ਭਾਈ ਸਮੁੰਦ ਸਿੰਘ ਤਕ)
(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

ਭਾਗ-ਤੀਜਾ

(ੳ) ਪੈਰ੍ਹਾ ਰਚਨਾ (ਤਿੰਨਾਂ ਵਿਚੋਂ ਇਕ)
(ਅ) ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ

ਭਾਗ-ਚੌਥਾ

(ੳ) ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ: ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਵਿਚਲਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪ-ਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ।
(ਅ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ: ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ।

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
Compulsory Course
ਮੁਢਲੀ ਪੰਜਾਬੀ
(In Lieu of Compulsory Punjabi)

Credit & Marks Distribution, Eligibility and Pre-Requisites of the Course

Course title &Code	Total Teaching Hours	Credits	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			Lecture	Tutorial	Practical	Theory	Internal Assessment			
ਮੁਢਲੀ ਪੰਜਾਬੀ **BPBI-1102**	60	4	4	0	0	75	25	3 Hours	Class 12th pass in any stream	NOT Studied Punjabi up to 10th Standard

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	**ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)**
ਵਿਦਿਆਰਥੀ ਨੂੰ ਗੁਰਮੁਖੀ ਲਿਪੀ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਪੜ੍ਹਨਾ-ਲਿਖਣਾ ਸਿਖਾਉਣਾ। ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀਆਂ ਵਿਆਕਰਨਕ ਬਾਰੀਕੀਆਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ। ਸ਼ੁੱਧ ਸੰਚਾਰ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ।	ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀ ਸਿਖਲਾਈ ਵਿਚ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ। ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਚ ਮੁਹਾਰਨੀ, ਲਗਾਂ-ਮਾਤਰਾਂ, ਸਵਰ ਅਤੇ ਵਿਅੰਜਨ ਅੱਖਰਾਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਸੰਬੰਧੀ ਸਮਝ ਵਿਕਸਿਤ ਹੋਵੇਗੀ। ਪੰਜਾਬੀ ਸ਼ਬਦ-ਜੋੜਾਂ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਕੇ ਉਹ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਲਿਖਣ-ਪੜ੍ਹਨ ਦੇ ਸਮਰੱਥ ਹੋਣਗੇ। ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸ਼ੁੱਧ ਰੂਪਾਂ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਨਗੇ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਿਲੇਬਸ ਦੇ ਚਾਰ ਭਾਗ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿਚ 01-01 ਅੰਕ ਦੇ ਅਤਿ-ਸੰਖੇਪ ਉੱਤਰ ਵਾਲੇ (Objective Type) 11 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਾਰੇ ਸਿਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੂਸਰੇ ਭਾਗ ਵਿਚ, ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਭਾਗ ਵਿਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ। ਇਸੇ ਤਰ੍ਹਾਂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਤੀਸਰੇ ਭਾਗ ਵਿਚ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿੰਨਾਂ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਚੌਥੇ ਵਿਚ ਪੰਜ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ ਚਾਰ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 4-4 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਪੰਜਵੇਂ ਵਿਚ ਦਸ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ 8 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਹਰ ਪ੍ਰਸ਼ਨ ਦੇ 2-2 ਅੰਕ ਹੋਣਗੇ।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ, ਜੋ ਕਾਲਜ ਵੱਲੋਂ ਨਿਰਧਾਰਿਤ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਅਨੁਸਾਰ ਥਿਊਰੀ ਅੰਕਾਂ ਤੋਂ ਵੱਖਰੀ ਹੋਵੇਗੀ। ਇਸ ਪੇਪਰ ਦੇ ਕੁੱਲ ਅੰਕ 75+25 = 100 ਹਨ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ: ਨਾਮਕਰਣ ਤੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ: ਗੁਰਮੁਖੀ ਵਰਣਮਾਲਾ, ਅੱਖਰ ਕ੍ਰਮ, ਸਵਰ ਵਾਹਕ (ੳ, ਅ, ੲ), ਲਗਾਂ-ਮਾਤਰਾਂ, ਪੈਰ ਵਿਚ ਬਿੰਦੀ ਵਾਲੇ ਵਰਨ, ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਨ, ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ
(ਅ) ਸਿਖਲਾਈ ਤੇ ਅਭਿਆਸ

ਭਾਗ-ਦੂਜਾ

ਗੁਰਮੁਖੀ ਆਰਥੋਗਰਾਫੀ ਅਤੇ ਉਚਾਰਨ: ਸਵਰ, ਵਿਅੰਜਨ: ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ ਅਤੇ ਉਚਾਰਨ, ਮੁਹਾਰਨੀ, ਲਗਾਂ-ਮਾਤਰਾਂ ਦੀ ਪਛਾਣ

ਭਾਗ-ਤੀਜਾ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਜੋੜ: ਮੁਕਤਾ (ਦੋ ਅੱਖਰਾਂ ਵਾਲੇ ਸ਼ਬਦ, ਤਿੰਨ ਅੱਖਰਾਂ ਵਾਲੇ ਸ਼ਬਦ), ਸਿਹਾਰੀ ਵਾਲੇ ਸ਼ਬਦ, ਬਿਹਾਰੀ ਵਾਲੇ ਸ਼ਬਦ, ਔਂਕੜ ਵਾਲੇ ਸ਼ਬਦ, ਦੁਲੈਂਕੜ ਵਾਲੇ ਸ਼ਬਦ, ਲਾਂ ਵਾਲੇ ਸ਼ਬਦ, ਦੁਲਾਵਾਂ ਵਾਲੇ ਸ਼ਬਦ, ਹੋੜੇ ਵਾਲੇ ਸ਼ਬਦ, ਕਨੌੜੇ ਵਾਲੇ ਸ਼ਬਦ, ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) ਵਾਲੇ ਸ਼ਬਦ

ਭਾਗ-ਚੌਥਾ

ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ ਸ਼ਬਦ

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I

PUNJAB HISTORY & CULTURE (From Earliest Times to C 320)(Special Paper in lieu of Punjabi compulsory)

(For those students who are not domicile of Punjab)
Course Code: BPHC-1104

Time: 3 Hours **Total Marks: 100**

Theory: 75

Internal Assessment: 25

L	T	P	Credits
4	0	0	4

Instructions for the Paper Setters:

Question paper should consist of two sections—Section A and Section B. The paper setter must ensure that questions in Section–A do not cover more than one point, and questions in Section–B should cover at least 50 per cent of the theme.

Section–A: The examiner will set 15 objective type questions out of which the candidate shall attempt any 10 questions, each carrying 1½ marks. The total weightage of this section will be 15 marks. Answer to each question should be in approximately one to two sentences.

Section–B: The examiner will set 8 questions, two from each Unit. The candidate will attempt 4 questions selecting one from each Unit in about 1000 words. Each question will carry 15 marks. The total weightage of this section will be 60 marks.

Note: **The examiner is to set the question paper in two languages: English & Hindi.**

Course Objectives: The main objective of this course is to educate the history and culture of the Ancient Punjab to the students who are not domicile of the Punjab. It aims to familiarize these students with the physical features of ancient Punjab and its impact on its history and culture. It also provides them information about the different sources to construct the history and culture of the ancient Punjab. The course intends to provide knowledge of social, economic, religious life of the Harappan civilization, Indo-Aryans, teachings and impact of Jainism and Buddhism in the Punjab.

Unit-I

1. Physical features of the Punjab and impact on history.
2. Sources of the ancient history of Punjab.

Unit-II

3. Harappan Civilization: Town planning; social, economic and religious life of the Indus Valley People.
4. The Indo-Aryans: Original home and settlement in Punjab.

Unit-III

5. Social, Religious and Economic life during Rig Vedic Age.
6. Social, Religious and Economic life during later Vedic Age.

Unit-IV

7. Teachings and impact of Buddhism.
8. Jainism in the Punjab.

Suggested Readings:-

a. L. Joshi (ed), *History and Culture of the Punjab,* Art-I, Patiala, 1989 (3rd edition)

b. L.M. Joshi and Fauja Singh (ed*), History of Punjab,* Vol. I, Patiala 1977.

c. Budha Parkash, *Glimpses of Ancient Punjab,* Patiala, 1983.

d. B.N. Sharma, *Life in Northern India*, Delhi. 1966.

Course Outcomes:

On Completing the Course, the Students will be able to:

CO-1 Learn the history and culture of the Ancient Punjab.
CO-2 Study the physical features of ancient Punjab.
CO-3 Understand about the sources of the history of the Punjab.
CO-4 Analyse the social, economic, religious life of the Harappan civilization and Vedic-Aryans.
CO-5 Learn the teachings and impact of Jainism and Buddhism in the Punj

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
BVSD 117P: Lab – I: Office Automation and Web Technology
Skill Enhancement Course (SEC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
0	**0**	**4**

Practical Marks: 75

Practical Internal Assessment Marks:25

Course Objectives:

1.	Enable the students to create professional word documents, excel spread sheets and PowerPoint presentations.
2.	Provides in-depth knowledge of various web languages: HTML and DHTML.
3.	Allow students to build and publish web pages.

Practical based on Office Automation and Web Technology

- **Office Automation:** MS Word, MS Excel, MS PowerPoint
- **Web Technology:** HTML, DHTML, Dreamweaver

Course Outcomes (Cos):

At the end of this course student will be able to:

CO-1.	Creating word documents and mail merge.
CO-2.	Acquire the required presentations skills and learn to perform accounting operations by using formulas.
CO-3.	Learn how to create and insert tables.
CO-4.	Learn to apply various formatting schemes.
CO-5.	Hands on practice to develop web pages using HTML and DHTML, and publish website using Dreamweaver.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
BVSD 118P: Lab – II: Programming in C Language
Skill Enhancement Course (SEC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
0	**0**	**4**

Practical Marks: 75

Practical Internal Assessment Marks:25

Course Objectives:

1.	The course is oriented to those who want to advance structured and procedural programming understating and to improve C programming skills.
2.	The major objective is to provide students with understanding of code organization and functional hierarchical decomposition with using complex data types.

Practical based on Programming in C language

Course Outcomes:

CO-1.	Students would be capable to use the fundamentals of C programming in trivial problem solving.
CO-2.	Students can identify solution to a problem and apply control structures and user defined functions for solving the problems.
CO-3.	Understanding the concept of arrays and their different types.
CO-4.	Read, understand and trace the execution of programs.
CO-5.	Ability to handle possible syntax and run time errors at the time of program execution

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-I
Course Code: ZDA111
Course Title- Drug Abuse: Problem, Management and Prevention
PROBLEM OF DRUG ABUSE
(Compulsory for all Under Graduate Classes)

Credit hrs./wk.:2
Time: 3 Hours Max. Marks: 50

Instructions for the Paper Setters:
1) There will be a total of 9 questions of which 5 are to be attempted.
2) Question 1 is compulsory and having 10 short answer type questions (1 mark each).
3) The remaining 8 questions (10 marks each) shall include 2 questions from each unit. Candidates shall be required to attempt 4 questions, one from each unit. Preferably, the question should not be split into more than two sub-parts.

Course Objectives- The course aims to:

CO-1.	Generate the awareness against drug abuse.
CO-2.	Describe a variety of models and theories of addiction and other problems related to substance abuse.
CO-3.	Describe the behavioral, psychological, physical health and social impact of psychoactive substances.
CO-4.	Provide culturally relevant formal and informal education programs that raise awareness and support for substance abuse prevention and the recovery process.
CO-5.	Describe factors that increase likelihood for an individual, community or group to be at risk of substance use disorders.

UNIT–I

- **Meaning of Drug Abuse**

Meaning of drug abuse
Nature and Extent of Drug Abuse: State and National Scenario

UNIT-II

- **Consequences of Drug Abuse for**

Individual: Education, Employment, Income.
Family : Violence.
Society : Crime.
Nation : Law and Order problem.

UNIT-III

- **Management of Drug Abuse**

Medical Management: Medication for treatment of different types of drug abuses.
Medication to reduce withdrawal effects.

UNIT-IV

- Psychiatric Management: Counseling, Behavioral and Cognitive therapy.
- Social Management: Family, Group therapy and Environmental Intervention.

References:

1. Ahuja, Ram (2003), Social Problems in India, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. The Drug Crime Connection. Beverly Hills: Sage Publications. 23
4. Jasjit Kaur Randhawa & Samreet Randhawa, "Drug Abuse-Problem, Management & Prevention", KLS, ISBN No. 978-81-936570-6-5, (2018).
5. Jasjit Kaur Randhawa & Samreet Randhawa, "Drug Abuse Problem, Management & Prevention", KLS, ISBN No. 978-81-936570-8-9, (2019).
6. Jasjit Kaur Randhawa & Samreet Randhawa, "voZrI d[otos'A^(BPky'oh) ;wZf;nk, gqpzXB ns/o'eEkw", KLS, ISBN No. 978-81-936570-7-1, (2018).
7. Jasjit Kaur Randhawa, "Drug Abuse -Management & Prevention", KLS, ISBN No. 978-93-81278-80-2, (2018).
8. Kapoor. T. (1985) Drug epidemic among Indian Youth, New Delhi: Mittal Pub.
9. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.
10. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
11. Rama Gandotra & Jasjit Kaur Randhawa, "voZrI d[otos'A^(BPky'oh) gqpzXB ns/ o'eEkw", KLS, ISBN No. 978-93-81278-87-1, (2018).
12. Sain, Bhim 1991, Drug Addiction Alcoholism, Smoking obscenity New Delhi: Mittal Publications.
13. Sandhu, Ranvinder Singh, 2009, Drug Addiction in Punjab: A Sociological Study. Amritsar. Guru Nanak Dev University.
14. Singh, C. P. 2000. Alcohol and Dependence among Industrial Workers: Delhi: Shipra.
15. Sussman, S and Ames, S.L. (2008). Drug Abuse: Concepts, Prevention and Cessation, Cambridge University Press.
16. World Drug Report 2010, United Nations office of Drug and Crime.
17. World Drug Report 2011, United Nations office of Drug and Crime.

Course Outcomes:

The students will be able:

CO-1.	To describe issues of cultural identity, ethnic background, age and gender in prevention, treatment and recovery.
CO-2.	To describe warning sign, symptoms, and the course of substance use disorders.
CO-3.	To describe principles and philosophy of prevention, treatment and recovery.
CO-4.	To describe current and evidenced-based approaches practiced in the field of drug addiction.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
Semester – II

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 124 (Major)	Internet Applications	75	25	-	100	5	1	0	3	1	0	4	21-22
2	BVSD 125 (Major)	Data Structures	75	25	-	100	5	1	0	3	1	0	4	23-24
3	BVSD 126 (Major)	Object Oriented Programming	75	25	-	100	5	1	0	3	1	0	4	25-26
Ability Enhancement Course (AEC)														
4	BCSV-1229	Communication Skills in English-II	60	25	15	100	4	0	2	3	0	1	4	27-28
5	BHPB-1201/ BPBI-1202/ BPHC-1204	Punjabi (Compulsory) / * Basic Punjabi / ** Punjab History & Culture.	75	25	-	100	6	0	0	4	0	0	4	29-32
Skill development Course (SEC)														
6	BVSD 127P	Lab I: Programming in C++	-	25	75	100	0	0	6	0	0	4	4	33
7	BVSD 128P	Lab II: Practical based on Data Structure	-	25	75	100	0	0	6	0	0	4	4	34
Value Added Course (VAC)														
8	ZDA121	***Drug Abuse: Problem, Management and Prevention(Compulsory paper)-II	-	-	-	50	3	0	0	2	0	0	2	35-36
												Total=30		

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II
BVSD 124: Internet Applications
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	The elementary goal of this course is to provide full exposure regarding usage of internet along with working model of Internet.
2.	Providing in-depth knowledge of various internet protocols and their working.

UNIT–I

Introduction: About internet and its working, business use of internet, services offered by internet,evolution of internet, internet service provider (ISP), windows environment for dial up networking (connecting to internet), audio on internet, internet addressing (DNS) and IP addresses)

UNIT–II

E–Mail: Concept, Advantage and disadvantage, structure of an e–mail message, working of e–mail (sending and receiving messages), managing e–mail (creating new folder, deleting messages, forwarding messages, filtering messages) Implementation of outlook express.
Internet Protocol: Introduction, file transfer protocol (FTP), Gopher, Telnet, other protocols like HTTP and TCP/IP.

UNIT-III

WWW: Introduction, working of WWW, Web browsing (opening, viewing, saving and printing a web page and bookmark).
Intranet and Extranet Introduction, application of intranet, business value of intranet, working of intranet, role of extranet, working of extranet, difference between intranet and extranet.

UNIT–IV

Search Engine: About search engine, component of search engine, working of search engine, Difference between search engine and web directory.
News Group: Basic concepts of newsgroup, connecting to a news server, subscribing to newsgroup, organization of articles, reading messages, posting replies and new messages, managing newsgroup and messages.

References:

1. Internet and its Applications by Ackerman.
2. Internet – The Complete Reference, 2nd Edition.

Course Outcomes:

CO-1.	Students will completely know how to use internet effectively such as internet surfing, browsing etc.
CO-2.	Students become able to use all features of email facilities such as creating, sending, receiving, attachments, replying emails etc.
CO-3.	Students can opt website development field in well manner after studying this course.
CO-4.	Knowledge of Network topologies will also make able students to make career in networking field.
CO-5.	Developing ability in students to design basic to moderate web-sites in HTML.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II
BVSD 125: Data Structures
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

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Course Objectives:

1.	To Present the basic concepts of data structures and algorithms
2.	To provide practical base knowledge to students in this area.
3.	To teach structured memory management mechanisms of data for an easy access.
4.	To teach students the designing and implementation of various basic and advanced data structures.
5.	To introduce various techniques for representation of the data in the real world.
6.	To enhance the logical ability.

.UNIT-I

Basic Data Structure: Introduction to Data Structure, Common Operations on Data Structures, Algorithm Complexity, Big O Notation, Time – Space trade off between Algorithms.

Arrays: Define Array, Representing Arrays in Memory, Various Operations on Linear Arrays, Linear Search and Binary Search

UNIT-II

Linked Lists: Types of Linked Lists, Representing Linked Lists in Memory, Advantages of using Linked Lists over Arrays, Various Operations on Linked Lists.

Stacks: Description of STACK structure, Implementation of Stack using Arrays and Linked Lists, Push and Pop operations of Stack, Applications of Stacks – Converting Arithmetic expression from infix notation to polish and their subsequent evaluation

UNIT-III

Queues: Description of queue structure, Implementation of queue using arrays and linked lists, Insertion and Deletion operations in Circular Queue, description of priorities of queues, dequeues.

Trees: Description of Tree Structure and its Terminology, Binary Trees and Binary Search trees and their representation in Memory

UNIT IV

Graphs: Description of Graph Structure, Implement Graphs in Memory using Adjacency Matrix and Adjacency list, BSF and DFS traversal of the graph

Sorting techniques: Sorting Algorithms, Bubble Sort, Insertion Sort, Selection Sort, Merge Sort

References:

1. Seymour Lipschutz, Theory and Problems of Data Structures, Schaum's Outline Series, McGraw Hill Company,2017
2. Data Structures through C by Yashwant Kanetkar,BPB Publications,3rd edition,2017
3. Data Structures through C++ ,by Yashwant Kanetkar, BPB Publications 4th edition,2018

Data Structures and Algorithms Made Easy By Narasimha Karumanchi5th edition, 2016

Course Outcomes:

The students, after the completion of the course, are expected to:

CO-1.	Use data structures effectually to solve practical problems.
CO-2.	Implement effective programs that employ efficient algorithms.
CO-3.	Choose basic data structures and algorithms for realization of simple programs or program parts.
CO-4.	To debug the programs, recognize needed basic operations with data structures.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II
BVSD 126: Object Oriented Programming
Discipline Specific Course (DSC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

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Course Objective:

1.	The objective of the course is to develop programming skills of students, using object oriented programming concepts.
2.	Learn the concept of class and object using C++ and develop classes for simple applications.

UNIT-I

Object-Oriented Programming Concepts: Introduction, comparison between procedural programming paradigm and object-oriented programming paradigm, basic concepts of object-oriented programming, Data Types, Operators and Control Structures.

Standard Input/output: Concept of streams, hierarchy of console stream classes, input/output using cin (>>) and cout (<<), formatting output using ios class functions, flags and manipulators.

Functions: Defining and accessing function, passing arguments to functions, inline functions, static function and storage classes.

UNIT-II

Classes and Objects: Specifying a class, creating class objects, accessing class members, access specifiers, static members, friend function, empty classes and nested classes**.**

Pointers and Dynamic Memory Management: dynamic memory management using *new* and *delete* operators, pointer to an object, *this* pointer, pointer related problems - dangling/wild pointers, null pointer, memory leak and allocation failures**.**

UNIT-III

Constructors and Destructors: Need for constructors and destructors, Default Constructor, Parameter Constructor and Copy Constructor, destructors, constructors and destructors with static members.

Inheritance: Introduction, defining derived classes, types of inheritance: Multiple, Multilevel, Hybrid and Hierarchical Inheritance, virtual base class, overriding member functions,

UNIT-IV

Operator Overloading: Overloading operators, rules for overloading operators, overloading of various operators: unary and binary operators, type conversion: implicit and Explicit.

Polymorphism: Concept of binding - early binding and late binding, function overloading, virtual functions, pure virtual functions, abstract classes, virtual destructors.

References:

1. C++ & Graphics by Vijay Mukhi's, BPB Publications,Vol V,1992.
2. Turbo C++ by Robert Lafore, Galgotia Publications, 1991
3. C++ Programming Language by Schaum's outline series, McGraw Hill LLC, 2nd Edition, 2000
4. Object –Oriented Programming with C++ by E. Balagursamy, Mc Graw Hill Education, 8th Edition,2021.
5. C++, The Complete Reference by Herbert Schildt, Mc Graw Hill Education, 5th Edition,2012.

Course Outcome (Cos):

CO-1.	Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.
CO-2.	Understand dynamic memory management techniques using pointers, constructors, destructors, etc
CO-3.	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
CO-4.	Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.
CO-5.	Demonstrate the use of various OOPs concepts with the help of programs.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II
COMMUNICATION SKILLS IN ENGLISH–II
BCSV-1229

Time: 3 Hours **Max. Marks: 100**

Theory: 60
Practical: 15
Internal Assessment: 25

L	T	P	Credits
3	0	1	4

Instructions for the Paper Setters:-
Section A is compulsory. It will consist of Fifteen (15) questions of one mark each. The students will be required to attempt any Twelve (12). (12X1= 12 Marks)
Eight (8) questions of equal marks will be set from Section B-E, comprising 2 questions from the each above mentioned section. Candidates will be required to attempt Four (4) questions, selecting at least one question from each Section.

(4X12=48 Marks)

Course Objectives:
I: To develop competence in oral and visual communication.
II: To inculcate innovative and critical thinking among the students.
III: To enable them to grasp the application of communication theories.
IV: To acquire the knowledge of latest technology related with communication skills.
V: To provide knowledge of multifarious opportunities in the field of this programme.

The syllabus is divided in five sections as mentioned below:

Course Contents:

SECTION-A

Grammar: Tenses and Change of Voice

SECTION–B

Listening Skills: Barriers to listening; effective listening skills.
Activities: Listening exercises- News and TV reports

SECTION–C

Attending telephone calls; note making.
Activities: Taking notes on a speech/lecture

SECTION–D

Speaking and Conversational Skills: Components of a meaningful and easy conversation; understanding the cue and making appropriate responses; forms of polite speech; asking and providing information on general topics.

Activities: 1) Making conversation and taking turns

2) Oral description or explanation of a common object, situation or concept

SECTION–E

Situation based Conversation in English, Essentials of Spoken English

Activities: Giving Interviews

Recommended Books:

Oxford Guide to Effective Writing and Speaking by John Seely.

English Grammar in Use (Fourth Edition) by Raymond Murphy, CUP

Course Outcomes:

The completion of this course enables students to:

1. Identify common errors in language and rectify them.
2. Develop and expand writing skills through controlled and guided activities.
3. Develop coherence, cohesion and competence in oral discourse through intelligible pronunciation.
4. Develop the ability to handle the interview process confidently and learn the subtle nuances of an effective group discourse.
5. Communicate contextually in specific and professional situations with courtesy.

Practical Marks: 15

Course Contents:-

1. Oral Presentation
2. Group Discussion
3. Mock Interview

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II

Compulsory Course

ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ

Credit & Marks Distribution, Eligibility and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Credits	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			Lecture	Tutorial	Practical	Theory	Internal Assessment			
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ **BHPB-1201**	60	4	4	0	0	75	25	3 Hours	Class 12th pass in any stream	--

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	**ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)**
ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪੈਦਾ ਕਰਨਾ। ਆਲੋਚਨਾਤਮਕ ਰੁਚੀਆਂ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਦਫ਼ਤਰੀ ਅਤੇ ਘਰੇਲੂ ਚਿੱਠੀ ਪੱਤਰ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ। ਭਾਸ਼ਾਈ ਗਿਆਨ ਵਿਚ ਵਾਧਾ ਕਰਨਾ।	ਉਸ ਅੰਦਰ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪ੍ਰਫੁਲਿੱਤ ਹੋਣਗੀਆਂ। ਉਸ ਅੰਦਰ ਸਾਹਿਤ ਸਿਰਜਣਾ ਦੀ ਸੰਭਾਵਨਾ ਵਧੇਗੀ। ਵਿਦਿਆਰਥੀ ਚਿੱਠੀ-ਪੱਤਰ ਦੀ ਲਿਖਣ ਸ਼ੈਲੀ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ। ਉਹ ਭਾਸ਼ਾਈ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਿਲੇਬਸ ਦੇ ਚਾਰ ਭਾਗ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿਚ 1.5-1.5 (ਡੇਢ-ਡੇਢ) ਅੰਕ ਦੇ ਅਤਿ-ਸੰਖੇਪ (Objective Type) 10 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਾਰੇ ਸਿਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ। ਸਿਲੇਬਸ ਦੇ ਬਾਕੀ ਚਾਰ ਭਾਗਾਂ ਵਿਚ 02-02 ਲੇਖ ਨੁਮਾ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰੇਕ ਭਾਗ ਵਿਚੋਂ 01-01 ਪ੍ਰਸ਼ਨ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੋਵੇਗਾ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 15 ਅੰਕ ਹੋਣਗੇ। ਪੇਪਰ ਸੈੱਟਰ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ, ਜੋ ਕਾਲਜ ਵੱਲੋਂ ਨਿਰਧਾਰਿਤ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਅਨੁਸਾਰ ਥਿਊਰੀ ਅੰਕਾਂ ਤੋਂ ਵੱਖਰੀ ਹੋਵੇਗੀ। ਇਸ ਪੇਪਰ ਦੇ ਕੁੱਲ ਅੰਕ 75+25= 100 ਹਨ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਸਾਹਿਤ ਦੇ ਰੰਗ, ਡਾ. ਮਹਿਲ ਸਿੰਘ (ਸੰਪਾ.), ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
ਭਾਗ ਦੂਜਾ - ਵਾਰਤਕ ਅਤੇ ਰੇਖਾ-ਚਿੱਤਰ, ਡਾ. ਪਰਮਿੰਦਰ ਸਿੰਘ, ਡਾ. ਭੁਪਿੰਦਰ ਸਿੰਘ ਅਤੇ ਡਾ.ਕੁਲਦੀਪ ਸਿੰਘ ਢਿੱਲੋਂ (ਸਹਿ ਸੰਪਾ.)
(ਵਾਰਤਕ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਵਿਸ਼ਾ-ਵਸਤੂ। ਰੇਖਾ-ਚਿੱਤਰ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

ਭਾਗ-ਦੂਜਾ

ਪੰਜਾਬ ਦੇ ਮਹਾਨ ਕਲਾਕਾਰ (ਸੰਪਾ. ਬਲਵੰਤ ਗਾਰਗੀ)
ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।
(ਸਤੀਸ਼ ਗੁਜਰਾਲ ਤੋਂ ਸੁਰਿੰਦਰ ਕੌਰ ਤਕ)
(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

ਭਾਗ-ਤੀਜਾ

(ੳ) ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ
(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

ਭਾਗ-ਚੌਥਾ

(ੳ) ਸ਼ਬਦ-ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ-ਰਚਨਾ - ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਮੁੱਢਲੇ ਸੰਕਲਪ
(ਅ) ਸ਼ਬਦ-ਸ਼੍ਰੇਣੀਆਂ

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II

Compulsory Course

ਮੁਢਲੀ ਪੰਜਾਬੀ

(In Lieu of Compulsory Punjabi)

Credit & Marks Distribution, Eligibility and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Credits	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			Lecture	Tutorial	Practical	Theory	Internal Assessment			
ਮੁਢਲੀ ਪੰਜਾਬੀ **BPBI-1202**	60	4	4	0	0	75	25	3 Hours	Class 12th pass in any stream	

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	**ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)**
ਵਿਦਿਆਰਥੀ ਅੰਦਰ ਸ਼ਬਦ ਬਣਤਰ ਦੀ ਸਮਝ ਵਿਕਸਤ ਕਰਨਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਸ਼ਬਦ ਪ੍ਰਕਾਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ। ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਕ ਪ੍ਰਬੰਧ ਸੰਬੰਧੀ ਗਿਆਨ ਕਰਾਉਣਾ। ਸਿਖਲਾਈ ਤੇ ਅਭਿਆਸ ਦੁਆਰਾ ਪੰਜਾਬੀ ਸ਼ਬਦ ਭੰਡਾਰ ਵਧਾਉਣਾ।	ਉਹ ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਕੇ ਭਾਸ਼ਾਈ ਗਿਆਨ ਨੂੰ ਵਿਕਸਿਤ ਕਰਨਗੇ। ਪੰਜਾਬੀ ਸ਼ਬਦ-ਰਚਨਾ ਸੰਬੰਧੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ। ਵਿਦਿਆਰਥੀ ਸ਼ਬਦਾਂ ਦੀਆਂ ਭਿੰਨ-ਭਿੰਨ ਕਿਸਮਾਂ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ 'ਚ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਭੰਡਾਰ 'ਚ ਵਾਧਾ ਹੋਵੇਗਾ।

ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਿਲੇਬਸ ਦੇ ਚਾਰ ਭਾਗ ਹਨ ਪਰ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਪੰਜ ਭਾਗ ਹੋਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿਚ 01-01 ਅੰਕ ਦੇ ਅਤਿ-ਸੰਖੇਪ ਉੱਤਰ ਵਾਲੇ (Objective Type) 11 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜੋ ਕਿ ਸਾਰੇ ਸਿਲੇਬਸ ਵਿਚੋਂ ਹੋਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੂਸਰੇ ਭਾਗ ਵਿਚ, ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਭਾਗ ਵਿਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ ਕੋਈ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ। ਇਸੇ ਤਰ੍ਹਾਂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਤੀਸਰੇ ਭਾਗ ਵਿਚ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿੰਨਾਂ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਚੌਥੇ ਵਿਚ ਪੰਜ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ ਚਾਰ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 4-4 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਪੰਜਵੇਂ ਵਿਚ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ, ਜੋ ਕਾਲਜ ਵੱਲੋਂ ਨਿਰਧਾਰਿਤ ਦਿਸ਼ਾ ਨਿਰਦੇਸ਼ਾਂ ਅਨੁਸਾਰ ਥਿਊਰੀ ਅੰਕਾਂ ਤੋਂ ਵੱਖਰੀ ਹੋਵੇਗੀ। ਇਸ ਪੇਪਰ ਦੇ ਕੁੱਲ ਅੰਕ 75+25 = 100 ਹਨ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ: ਧਾਤੂ, ਵਧੇਤਰ (ਅਗੇਤਰ, ਮਧੇਤਰ, ਪਿਛੇਤਰ), ਪੰਜਾਬੀ ਕੋਸ਼ਗਤ ਸ਼ਬਦ ਅਤੇ ਵਿਆਕਰਨਕ ਸ਼ਬਦ

ਭਾਗ-ਦੂਜਾ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਪ੍ਰਕਾਰ:
(ੳ) ਸੰਯੁਕਤ ਸ਼ਬਦ, ਸਮਾਸੀ ਸ਼ਬਦ, ਦੋਜਾਤੀ ਸ਼ਬਦ, ਦੋਹਰੇ/ਦੁਹਰੁਕਤੀ ਸ਼ਬਦ ਅਤੇ ਮਿਸ਼ਰਤ ਸ਼ਬਦ
(ਅ) ਸਿਖਲਾਈ ਤੇ ਅਭਿਆਸ

ਭਾਗ-ਤੀਜਾ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਰਚਨਾ:ਇਕ-ਵਚਨ/ਬਹੁ-ਵਚਨ, ਲਿੰਗ-ਪੁਲਿੰਗ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਸਮਾਨਅਰਥਕ ਸ਼ਬਦ, ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਲਈ ਇਕ ਸ਼ਬਦ, ਸ਼ਬਦ ਜੁੱਟ, ਵਿਰੋਧਅਰਥਕ ਸ਼ਬਦ, ਸਮਨਾਮੀ ਸ਼ਬਦ

ਭਾਗ-ਚੌਥਾ

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ

ਖਾਣ-ਪੀਣ, ਸਾਕਾਦਾਰੀ, ਰੁੱਤਾਂ, ਮਹੀਨਿਆਂ, ਗਿਣਤੀ, ਮੌਸਮ, ਬਜ਼ਾਰ, ਵਪਾਰ, ਧੰਦਿਆਂ ਨਾਲ ਸੰਬੰਧਿਤ

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER-II

PUNJAB HISTORY & CULTURE (C 321 TO 1000 A.D.)

(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)
Course Code: BPHC-1204

Time: 3 Hours **Total. Marks: 100**
Theory: 75
Internal Assessment: 25

Credits		
L	T	P
4	0	0

Instructions for the Paper Setters:
Question paper should consist of two sections—Section A and Section B. The paper setter must ensure that questions in Section–A do not cover more than one point, and questions in Section–B should cover at least 50 per cent of the theme.

Section–A: The examiner will set 15 objective type questions out of which the candidate shall attempt any 10 questions, each carrying 1½ marks. The total weightage of this section will be 15 marks. Answer to each question should be in approximately one to two sentences.

Section–B: The examiner will set 8 questions, two from each Unit. The candidate will attempt 4 questions selecting one from each Unit in about 1000 words. Each question will carry 15 marks. The total weightage of this section will be 60 marks.

Note: **The examiner is to set the question paper in two languages: English & Hindi.**

Course Objectives: The main objective of this course is to educate the students who are not domicile of the Punjab about the history and culture of the Ancient Punjab. It is to provide them knowledge about the social, economic, religious, cultural and political life of the people of the Punjab during the rule of various dynasties such as The Mauryans, The Khushans, The Guptas, The Vardhanas and other ancient ruling dynasties of the period under study.

Unit-I

1. The Punjab under Chandragupta Maurya and Ashoka.
2. The Kushans and their Contribution to the Punjab.

Unit-II

3. The Punjab under the Gupta Emperors.

4. The Punjab under the Vardhana Emperors

Unit-III

5. Political Developments 7th Century to 1000 A.D.

6. Socio-cultural History of Punjab from 7th Century to 1000 A.D.

Unit-IV

7. Development of languages and Literature.

8. Development of art & Architecture.

Suggested Readings:-

1. L. Joshi (ed.*), History and Culture of the Punjab*, Part-I, Patiala, 1989 (3rd edition).
2. L.M. Joshi and Fauja Singh (ed), *History of Punjab*, Vol.I, Patiala 1977.
3. Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma, *Life in Northern India*, Delhi. 1966.

Course Outcomes:

On completing the course, the students will be able to:

CO-1 Understand the history and culture of the Punjab in Ancient Period.
CO-2 Analyse social, economic, religious, cultural and political life of Ancient Indian dynasties.
CO-3 Study about the political developments from 7^{th} century to 1000AD.
CO-4 Understand socio-cultural history of the Punjab from 7^{th} century to 1000 AD.
CO-5 Analyse language, literature, art and architecture of Ancient Punjab.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II

BVSD 127P: Lab – I: Programming in C++
Skill Enhancement Course (SEC)

Time: 3 Hrs. **Total Marks: 100**

Practical Marks: 75

Practical Internal Assessment Marks:25

Credits		
L	**T**	**P**
0	**0**	**4**

Course Objectives:

1.	The primary goal is to understand the structured and procedural programming.
2.	To understand code organization.
3.	To learn problem solving Techniques.
4.	To learn to break large problem into smaller parts, writing each part as a module.

Practical based on Programming in C++

Course Outcomes:

CO-1.	Enhance skill on Problem Solving by constructing algorithms.
CO-2.	Demonstrate the use of Strings and String Handling Functions.
CO-3.	Ability to work with textual information, characters and strings.
CO-4.	Ability to work with arrays.
CO-5.	Ability to write diversified solutions using C language.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II

BVSD 128P: Lab – II: Practical based on Data Structures
Skill Enhancement Course (SEC)

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
0	**0**	**4**

Practical Marks: 75

Practical Internal Assessment Marks:25

Course Objective:

1.	To provide the knowledge of basic data structures and their implementations.
2.	To understand importance of data structures in contest of writing efficient programs.
3.	To implement stack, queue, linked list, tree and graph data structures.

Practical based on Data Structure

Course Outcome:

At the end of this course student will:

CO-1.	Able to learn the basic types of data structures, implementation and applications.
CO-2.	Able to use linear and non-linear data structure like stacks, queues, linked list etc.
CO-3.	Implement various searching and sorting algorithms
CO-4.	Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
CO-5.	Develop programming skills which require solving given problems.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-II

Course Code: ZDA121

Course Title-DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTIONDRUG ABUSE: MANAGEMENT AND PREVENTION
(Compulsory for all Under Graduate Classes)

Credit hrs/wk.: 2
Time: 3 Hours Max. Marks: 50

Instructions for the Paper Setters:
1) There will be a total of 9 questions of which 5 are to be attempted.
2) Question 1 is compulsory and having 10 short answer type questions (1 mark each).
3) The remaining 8 questions (10 marks each) shall include 2 questions from each unit. Candidates shall be required to attempt 4 questions, one from each unit. Preferably, the question should not be split into more than two sub-parts.

Course Objectives:
The course aim is to

CO-1.	Describe the role of family in the prevention of drug abuse.
CO-2.	Describe the role of school and teachers in the prevention of drug abuse.
CO-3.	Emphasize the role of media and educational and awareness program.
CO-4.	Provide knowhow about various legislation and Acts against drug abuse.

UNIT-I

- **Prevention of Drug abuse**

Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.

UNIT-II

- School: Counseling, Teacher as role-model.
- Parent-teacher-Health Professional Coordination, Random testing on students.

UNIT-III

- **Controlling Drug Abuse**

Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program

UNIT-IV

- Legislation: NDPS act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

References:

1. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
2. Gandotra, R. and Randhawa, J.K. 2018. voZrI d[otos'A (BPky'oh) gqpzXB ns o'eEkw. Kasturi Lal & Sons, Educational Publishers, Amritsar- Jalandhar.
3. Inciardi, J.A. 1981. The Drug Crime Connection. Beverly Hills: Sage Publications.
4. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.
5. Randhawa, J.K. and Randhawa, Samreet 2018. Drug Abuse-Management and Prevention. Kasturi Lal & Sons, Educational Publishers, Amritsar- Jalandhar.
6. Sain, Bhim 1991, Drug Addiction Alcoholism, Smoking obscenity New Delhi: Mittal Publications.
7. Sandhu, Ranvinder Singh, 2009, Drug Addiction in Punjab: A Sociological Study. Amritsar: Guru Nanak Dev University.
8. Singh, C. P. 2000. Alcohol and Dependence among Industrial Workers: Delhi: Shipra.
9. World Drug Report 2011, United Nations office of Drug and Crime.
10. World Drug Report 2010, United Nations office of Drug and Crime

Course Outcomes:

The students will be able to:

CO-1.	Understand the importance of family and its role in drug abuse prevention.
CO-2.	Understand the role of support system especially in schools and inter-relationships between students, parents and teachers.
CO-3.	Understand impact of media on substance abuse prevention.
CO-4.	Understand the role of awareness drives, campaigns etc. in drug abuse management.
CO-5	Learn about the Legislations and Acts governing drug trafficking and Abuse in India.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
Semester – III

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 231 (Major)	Database System	75	25	-	100	5	1	0	3	1	0	4	38-39
2	BVSD 232 (Major)	Programming in Python	75	25	-	100	5	1	0	3	1	0	4	40-41
3	BVSD 233 (Major)	Software Engineering Methodology	75	25	-	100	5	1	0	3	1	0	4	42-43
Skill development Course (SEC)														
4	BVSD 234P	Lab I: SQL & PL/SQL	-	13	37	50	0	0	6	0	0	2	2	44
5	BVSD 235P	Lab II: Programming in Python	-	13	37	50	0	0	6	0	0	2	2	45
6	BVSD 236P	Minor Project	-	38	112	150	0	0	18	0	0	6	6	46
Value Added Course (VAC)														
7	ESL-221	* Environmental Studies-I	-	-	-	50	3	0	0	2	0	0	2	47-49
													Total=24	

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER-III
BVSD-231: DATABASE SYSTEM

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	To get acquaint students with the basics of DBMS, different Architectural Models for DBMS, Normalization of data, Concurrency control problems and its management, Protection, Security and recovery aspects of databases along with practical knowledge of databases using SQL and PL/SQL.
2.	The key goal is to prepare students for a professional career in the field of data administration and database design.
3.	To get acquaint students with basics of database security and administration.
4.	To get acquaint students with good knowledge of DBMS. During the course, students will learn about database design and database handling activities.

Unit I

Basic Concepts: Database, Database system, Database management system, Data independence, advantages and disadvantages, 3 level architecture and mapping DBMS vs. File System, DBA's Role, RDBMS.

Data Models: Relational model, Hierarchical model, Network model, comparison of these model, An overview of the E/R Model, E/R diagrams, Database design with the E/R model.

Unit II

Normalization: Introduction to Normalization, Need of Normalization, various forms of Normalization (1NF, 2NF, 3NF, BCNF)

SQL: Introduction, Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL) statements, Views, Sub–queries, Access Rights.

Unit III

Transaction Management and Concurrency Control: Introduction to Transaction Processing, Properties of Transactions, Concurrency Control, purpose of concurrency control, Techniques for concurrency control.

Unit IV

Database Recovery of database: Introduction, Need for Recovery, Recovery Techniques.
Database Security: Introduction, Threats, Counter Measures.

References:

1. C.J. Date: *An Introduction of Database System*", The Systems Programming Series,
   6/Ed, Addison-Wesley Publishing Company, Inc., 1995.
2. Silberschatz, Korth & Sudarshan, "*Database System Concepts*", Third Ed., McGraw
   Hill International Editions, Computer Science Series-1997.
3. Parteek Bhatia and Gurvinder Singh, "Simplified Approach to DBMS", Kalyani Publishers, 2010.
4. Ivan Bayross, "SQL/PLSQL: The Programming Language of Oracle, 3rd Revised Edition, 2006.

Course Outcomes (COs):

On Completing the course, the students will be able to:

CO-1.	On successful completion of this subject the students have the knowledge of databases and their designs.
CO-2.	Students would be capable of developing various concepts of relational data model, ER model, relational database designs.
CO-3.	Understanding a concept of database design.
CO-4.	They can also learn to make Views, Queries and Sub-queries.
CO-5.	Ability to handle the various forms of Normalization.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER-III
BVSD-232: Programming in Python

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	It aims to familiarize students with Computational Problem-Solving process in better way.
2.	Develops strong logics to solve computation problems in data science.

UNIT-I

Introduction to Python: Process of Computational Problem Solving, Python Programming Language

Data and Expressions: Literals, Variables and Identifiers, Operators, Expressions, Statements and Data Types

Control Structures: Boolean Expressions (Conditions), Logical Operators, Selection Control, Nested conditions, Debugging

UNIT-II

Lists: List Structures, Lists (Sequences) in Python, Iterating Over Lists (Sequences) in Python

Functions: Fundamental Concepts, Program Routines, Flow of Execution, Parameters & Arguments

Iteration: While statement, Definite loops using For, Loop Patterns, Recursive Functions, Recursive Problem Solving, Iteration vs. Recursion

UNIT-III

Dictionaries: Dictionaries and Files, Looping and dictionaries, Advanced text parsing

Files: Opening Files, Using Text Files, String Processing, Exception Handling

Objects and Their Use: Introduction to Object Oriented Programming

UNIT-IV

Modular Design: Modules, Top-Down Design, Python Modules

Using Databases and SQL: Database Concepts, SQLite Manager Firefox Add-on, SQL basic summary, Basic Data modeling, Programming with multiple tables

References:

1. Python for Informatics, Charles Severance, version 0.0.7
2. Introduction to Computer Science Using Python: A Computational Problem-Solving Focus, Charles Dierbach, Wiley Publications, 2012, ISBN : 978-0-470-91204-1
3. Introduction To Computation And Programming Using Python, GUTTAG JOHN V, PHI, 2014, ISBN-13: 978-8120348660
4. Introduction to Computating& Problem Solving Through Python, Jeeva Jose and Sojan P. Lal,Khanna Publishers, 2015, ISBN-13: 978-9382609810
5. Introduction to Computing and Programming in Python, Mark J. Guzdial, Pearson Education, 2015, ISBN-13: 978-9332556591
6. Fundamentals of Python by Kenneth Lambert, Course Technology, Cengage Learning , 2015
7. Learning Python by Mark Lutz, 5th Edition, O'Reilly Media, 2013

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Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Strong Knowledge and Understanding of Python Programming Language.
CO-2.	Students will become capable to handle computational and data science problems efficiently.
CO-3.	Students will know theoretical as well as practical concepts of programming thoroughly.
CO-4.	Develops capability in students to make successful career in Data analysis and Data sciences.
CO-5.	Provides ability to become freelancer software developer in python.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER-III
BVSD-233: SOFTWARE ENGINEERING METHODOLOGY

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	To inculcate in students different concepts of software engineering principles.
2.	To produce efficient, reliable, robust and cost- effective software solutions.
3.	Ability to develop, maintain and evaluate large-scale software systems

UNIT-I

Introduction to Software Engineering: Definition, Software characteristics, Software components, Software crisis, Software Applications, Software Engineering Paradigms, Software Development Life Cycle

Software Project Management: Introduction, Project planning, metrics for project size estimation, project estimation techniques, Cost estimation, COCOMO model, Project scheduling and milestones

UNIT-II

Software Requirement Specification (SRS): Definition, Problem analysis, structuring information, Data flow diagram and data dictionary, structured analysis, Characteristics and component of (SRS), Metrics of SRS.

Software Design and coding: Introduction, classification of design activities and design Methodologies, Cohesion and Coupling, Verification and validation, approaches to software design, introduction to various design approaches, Structured programming, Coding standards and guidelines.

UNIT-III

Software Testing and metrics: Software Testing, levels of testing, Test case design, Design metrics, Coding metrics, Technical metrics, testing metrics.

Software maintenance: Definition need and types of Software maintenance

UNIT-IV

Reverse Engineering: Need of reverse engineering, Reverse engineering process, Reverse engineering to understand data, Reverse engineering user interfaces, Tools for reverse engineering.

Software Reuse: Software Reuse Success Factors, Reuse Driven Software Engineering in a Business, Use case Components, Object Components, Layered Architecture

References:

1. Pressman: Software Engineering: A Practitioner's Approach, 3rd Ed., TMH 2004
2. Flecher and Hunt: Software Engineering and CASE: Bridging and Culture G
3. An Integrated Approach to Software Engineering, Second Edition, Pankaj Jalote
4. Fundamentals of Software Engineering, Rajib Mall

.

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Decompose the given project in various phases of a lifecycle.
CO-2.	Choose appropriate process model depending on the user requirements.
CO-3.	Perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.
CO-4.	Know various processes used in all the phases of the product.
CO-5.	Apply the knowledge, techniques, and skills in the development of a software product.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER-III
BVSD-234P: LAB-I: SQL & PL/SQL

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Practical Internal Assessment Marks:13

Course Objectives:

1.	Explore the differences between SQL and PL/SQL.
2.	Examine the characteristics of PL/SQL and how it is used to extend and automate SQL to administer the Oracle database.
3.	This course culminates with a project that challenges students to program, implement, and demonstrate a database solution for a business or organization.

Practical Lab based on SQL and PL/SQL

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	On successful completion of this subject the students have the knowledge of databases and their designs.
CO-2.	Students would be capable of developing various concepts of relational data model, ER model, relational database designs.
CO-3.	Understanding a concept of database design.
CO-4.	They can also learn to make Views, Queries and Sub-queries.
CO-5.	Ability to handle the various forms of Normalization.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–III
BVSD-235P: LAB – II: Programming in Python

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Practical Internal Assessment Marks:13

Course Objectives:

1.	It aims to develop practical skills in students to solve computational problems.
2.	Provides hands on practice to apply all theoretical concepts in python.
3.	Strengthens the programming logics by developing programs of different problems from tuples, dictionaries, lists and arrays etc.

Practical based on Programming in Python

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Provides strong and in-depth applications of python programming language concepts.
CO-2.	Students will be capable to solve computational and data science problems efficiently.
CO-3.	Students will understand how to apply theoretical concept to design solution of any problem in right way.
CO-4.	Develops capability in students to make successful career in Data analysis and Data sciences.
CO-5.	Provides ability to get placement in any IT company or become freelancer software developer in python.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–III
BVSD-236P: MINOR PROJECT

Time: 3 Hrs. **Total Marks: 150**

Credits		
L	**T**	**P**
0	**0**	**6**

Practical Marks: 112

Internal Assessment Marks:38

Course Objectives:

1.	Understand the web technologies to create adaptive web pages for the web application.
2.	Use of CSS to implement a variety of presentation effects in the web application.
3.	Know the concept and implementation of cookies as well as related privacy concerns.
4.	Develop a sophisticated web application that employs the MVC architecture.

Minor Project: Software Module based on Web Technology/Database/ Programming Language.

General Instructions:

1. The Software Module of the Minor Project shall be submitted to the College/Institute till 15^{th} November.
2. The minor project shall be developed in groups, consisting of at most two students in a group.
3. The evaluation of the Minor Project (Software Module) shall be done by one external examiner appointed by the University and one internal examiner from College (as per other practical examination)

Course Outcomes (COs):

On Completing the course, the students will be able to:

CO-1.	Integrate frontend and backend web technologies in distributed systems.
CO-2.	Facilitate interface between frontend and backend of a web application
CO-3.	Debug, test and deploy web applications on different web servers.
CO-4.	Migrate the web applications to the other platforms like .Net technologies.
CO-5.	To develop and deploy real time web applications in web servers and in the cloud and extend this knowledge to .Net platforms.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

Course code: ESL–221
Course Title: ENVIRONMENTAL STUDIES–I (COMPULSORY)

Credit Hours (Per Week): 2

Total Hours: 30
Maximum Marks: 50 Marks

Instructions for Paper Setters: The question paper will consist of three sections. Candidate will be required to attempt all the sections. Each unit of the syllabus should be given equal weightage of marks. Paper to be set in English, Punjabi and Hindi.
Section–A: (16 Marks): It will consist of five short answer type questions. Candidates will be required to attempt four questions, each question carrying four marks. Answer to any of the questions should not exceed two pages.
Section–B: (24 Marks): It will consist of five questions. Candidates will be required to attempt four questions, each question carrying six marks. Answer to any of the questions should not exceed four pages.
Section–C: (10 Marks): It will consist of two questions. Candidate will be required to attempt one question (carrying ten marks) only. Answer to the question should not exceed 5 pages.

Course Objectives

CO-1	The main goal of Environmental studies is to create the environmental awareness to create a safe, green and sustainable environment.
CO-2	To make students aware about the importance of ecosystem, types of ecosystem, energy flow in an ecosystem, ecological succession, food chain and food web.
CO-3	To make students aware of water conservation, global warming, consumerism and waste products. and, also about the environmental protection acts.
CO-4	Role of National Service Scheme (NSS). Health and hygiene.

Unit-I

The Multidisciplinary Nature of Environmental Studies: Definition, components, scope and importance of environment/environmental studies, Need for public awareness.

Natural Resources: Definition, types, use, over exploitation, benefits, case studies (if any) and associated problems of following natural resources: Forest Resources, Water Resources, Mineral Resources, Food Resources, Energy Resources, Land Recourses *etc.*

Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

Unit-II

Ecosystem: General introduction, types (Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems *viz.* ponds, streams, lakes, rivers, oceans, estuaries), Structure and functions of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids.

Unit-III

Social Issues and Environment: Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting. Resettlement and rehabilitation of people: its problems and concerns. Case studies, Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and its cause. Case studies.Wasteland reclamation.

Environmental Protection Act: Air (prevention and Control of Pollution) Act.Water (prevention and Control of Pollution) Act. Wildlife Protection Act, Forest Conservation Act. Issues involved in enforcement of environmental legislation. Public awareness

Unit-IV

National Service Scheme

Introduction and Basic Concepts of NSS: History, philosophy, aims & objectives ofNSS; Emblem, flag, motto, song, badge *etc.;* Organizational structure, roles and responsibilities of various NSS functionaries.

Health, Hygiene & Sanitation: Definition, needs and scope of health education; Food and Nutrition; Safe drinking water, water borne diseases and sanitation (Swachh Bharat Abhiyan); National Health Programme; Reproductive health.

Suggested Books:

1. Agarwal, K. C. 2001. Environmental Biology, Nidhi Publications Ltd. Bikaner.
2. Bharucha, E. 2013 . Textbook of Environmental Studies, Universities Press, Hyderabad.
3. Basu, M., Xavier, S. 2016. Fundamentals of Environmental Studies, Cambridge University Press, India
3. Down to Earth, Centre for Science and Environment, New Delhi.
4. Jadhav, H. and Bhosale, V. M. 1995. Environmental Protection and Laws. Himalaya Pub.
5. Joseph, K. and Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pvt. Ltd., Delhi.
6. Kaushik, A. and Kaushik, C. P. 2004. Perspective in Environmental Studies, New Age

International (P) Ltd, New Delhi.

7. Mahapatra, R., Jeevan, S.S. and Das, S. 2017. Environment Reader for Universities, Centre for Science and Environment, New Delhi.
8. Miller, T. G. Jr. 2000. Environmental Science, Wadsworth Publishing Co.
9. Raven, P.H., Hassenzahl, D.M. and Berg, L.R. 2012. Environment. 8th edition. John Wiley & Sons.
10. Sharma, P. D. 2005. Ecology and Environment, Rastogi Publications, Meerut.
11. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex,

    Amritsar
12. Kanta, S., 2012. Essentials of Environmental Studies, ABS Publications, Jalandhar.
13. Saroj A., Kaur R., Walia H., Kaur T, 2021. Environmental Studies - A Holistic Approach, KLS Publishers.

Suggested Websites:

1. https://nss.gov.in
2. https://moef.gov.in
3. http://punenvis.nic.in
4. https://www.unep.org

Course Outcomes:

CO-1	To learn about the sustainable environment.
CO-2	To gain the knowledge ecosystem and its functioning.
CO-3	To know about the water conservation programs like rain water harvesting and water shedding and to gain knowledge of environmental (air, water and pollution) protections acts.
CO-4	To know about the role and importance of NSS– a volunteer organization, in making up a better environment and to maintain better health and hygiene.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

Semester – IV

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 241 (Major)	Open Source Software	**75**	**25**	-	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**51-52**
2	BVSD 242 (Major)	Information Security	**75**	**25**	-	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**53-54**
3	BVSD 243 (Major)	Operating System	**75**	**25**	-	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**55-56**
Skill development Course (SEC)														
4	BVSD 244P	Lab I: Practical based on Android Development	-	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**57**
5	BVSD 245P	Lab II: Open Source Software Tools	-	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**58**
6	BVSD 246P	Lab III: Practical based on ASP.Net using C#	-	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**59**
Value Added Course (VAC)														
7	ESL-222	* Environmental Studies-II	-	-	-	**50**	**2**	**0**	**0**	**2**	**0**	**0**	**2**	**60-62**
												Total=20		

*** Marks of Paper EVS will not be included in Grand Total.**

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-241: OPEN SOURCE SOFTWARE

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	The objectives of this course are to introduce students to open source software. Open source software provides the facility to students to use pre-existing code to improve the software and even come up with their own innovations.
2.	Students will study common open source software licenses, open source project structure, distributed team software development, and current events in the open source world.
3.	Open source provides great learning opportunities for new Students. Students will also work on an open source project and will be expected to make a significant contribution.
4.	Open source comes with a built-in community that continuously modifies and improves the source code.

UNIT-I

Open Source Software: Introduction to Open Source Software, Need of Open Source Software, Advantages of Open Source Software, Application of Open Source Software, Categories of Open Source Software and Specific Characteristics of OSS.

Organization and Management of OSS: OSS development Process, Taboos and norms in OSS development, The OSS development life cycle.

UNIT-II

Development of OSS: Methodology and languages used to develop open source products, Cross Platform code

Software and Intellectual Property Rights: Basic Principles of Copyright Law, Contracts, Patents, Licenses, Issues with copyrights and patents, Open-Source Software Licensing

UNIT -III

Open-source operating systems: LINUX: Introduction, General Overview, Kernel Mode and user mode, Process, Advanced Concepts, Scheduling, Personalities, Cloning, Signals, Development with Linux.

UNIT-IV

Open-Source Database: MYSQL: Introduction, setting up account, starting, terminating and writing your own SQL programs, Record selection Technology, working with strings, Date and Time, Sorting Query Results, Generating Summary, working with metadata Using sequences, MYSQL and Web.

References:

1. Joseph Feller & Brian Fitzgerald, Understanding Open Source Software Development, Pearson Education Limited, 2002.
2. Paul Kavanagh, Open Source Software: Implementation and Management, Elsevier Digital Press, 2004.
3. Remy Card, Eric Dumas and Frank Mevel, "The Linux Kernel Book", Wiley Publications, 2003
4. Steve Suchring, "MySQL Bible", John Wiley, 2002
5. Joseph Feller, Perspectives on Free and Open Source Software, MIT Press Books, 2005.
6. Chris Dibona, Danese Cooper, Mark Stone, Open Sources 2.0, The Continuing Evolution, O' Reilly, 2006

Course Outcomes:

At the end of this course student has:

CO-1.	Ability to install and run open-source operating systems.
CO-2.	Ability to gather information about Free and Open Source Software projects from software releases and from sites on the internet.
CO-3.	Ability to build and modify one or more Free and Open Source Software packages.
CO-4.	Ability to use a version control system and to interface with version control systems used by development communities.
CO-5.	Ability to contribute software to and interact with Free and Open Source Software development projects.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-242: INFORMATION SECURITY

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	T	P
3	1	0

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	The main objective of this course is to impart the necessary knowledge to students about securing the sensitive information.
2.	This course provides the knowledge about the concept of Encryption and Network Security and guarantees a secure network by identifying different types of attacks and threats.
3.	This course also creates awareness among learners about the laws associated with the protection of data and information.

UNIT-I

Introduction to Security: Meaning of Security, Attacks, Computer Crime, Methods of Defense

Encryption: Cryptography, Substitution Ciphers, Transpositions, Encryption Algorithms**,** Symmetric Encryption Data Encryption Standards (DES), Advanced Encryption Standards(AES), Public Key Encryption, Hash Functions, Key exchange, Digital Signatures.

UNIT-II

Viruses and Malicious Code: Program security, Control against Program Threats

Operating Systems Security: Access Control, File Protection, User Authentication, Security Policies, Models of Security

Database Security: Security requirements, Reliability and Integrity, Protecting sensitive data, multilevel security

UNIT-III

Security in Networks Threats, Attacks, Protocol Flaws, Impersonation, Spoofing, Denial of Service, Networks security control

Security in Networks Firewalls, Intrusion Detection, Secure e–mail

Risk Analysis and Security Planning Security Policies, Physical Security

UNIT-IV

Legal and Ethical Issues: Protection of data and Information Laws, Employees rights, Software failure, Computer Crime, Privacy and Ethics.

Cyber Security: Essential Terminologies: CIA, Risks, Breaches, Threats, Attacks, Exploits. Information Gathering (Social Engineering, Foot Printing & Scanning).Open Source/ Free/ Trial Tools: nmap, zenmap, Port Scanners, Network scanners.

References:

1. The Basics of Information Security: Understanding the Fundamentals of InfoSec in Theory and Practice by Jason Andress Syngress; 1 edition (June 24, 2011)
2. Information Systems Security: Security Management, Metrics, Frameworks And Best Practices by Nina Godbole, Wiley India Pvt Ltd

Course Outcomes (Cos):

On Completing the course, the students will be able to:

CO-1.	To understand the concepts, such as, security, attacks, vulnerability, exploits, and methods of defence.
CO-2.	To acquire required information about different encryption methods that helps to securely transmit the sensitive information over the internet.
CO-3.	To get the knowledge about the needs of operating system and database security along with the techniques ensuring the security of these systems.
CO-4.	To identify and examines advanced network attacks and also identify different methods and techniques helpful in preventing these attacks.
CO-5.	To get an idea of different tools and techniques which are commonly used by hackers to collect the sensitive information.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-243: OPERATING SYSTEM

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

The objectives of the operating system are –

1.	Define and list the functions of an operating system. Explain the list resources involved in process creation and management.
2.	To act as an intermediary between the hardware and its users, making it easier for the users to access and use other resources.
3.	To manage the resources of a computer system.
4.	To keep track of who is using which resource, granting resource requests, and mediating conflicting requests from different programs and users.
5.	To learn different process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.

UNIT-I

Introduction: Definition, Early Systems, Simple Batch system, Multi programmed Batch. Time Sharing Systems, Personal Computer System, Parallel Systems, Distributed Systems, Real–time Systems.

Processes: Process concepts, Process Scheduling, threads.

UNIT-II

CPU–Scheduling: Basic concepts, scheduling criteria, scheduling algorithms, algorithm evaluation.

Process Synchronization: Background critical – section problem, semaphores, classical problem of synchronization.

UNIT-III

Memory Management: Background, Logical v/s Physical address space, mapping, continuous allocation, paging, segmentation.

Virtual Memory: Background, demand paging, performance of demand paging, page replacement, page replacement algorithms, allocation of frames, thrashing.

UNIT-IV

Secondary Storage Structures: Disk structures, Disk scheduling, Disk Reliability.

Deadlocks: System Model, Deadlock characterization, methods for handing deadlocks, Deadlocks Prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock, combined approach to deadlock handling.

References:

1. "Operating System Concepts", Fourth edition by Silberschatz Galvin Addison Wesley.
2. "Operating Systems: A Design Oriented Approach" by Crowley, Published by Tata McGraw Hill.
3. "Operating Systems" Second edition by Dietel, Addison Wesley.

Course Outcomes:

At the end of this course student will:

CO-1.	Understands the different services provided by Operating System at different level.
CO-2.	Describe the general architecture of computers, also contrast and compare differing structures for operating systems
CO-3.	Learn real life applications of Operating System in every field.
CO-4.	Understands the use of different process scheduling algorithm and synchronization techniques to avoid deadlock.
CO-5.	Learn different memory management techniques like paging, segmentation and demand paging etc.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-244P: LAB I: PRACTICAL BASED ON ANDROID DEVELOPMENT

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Internal Assessment Marks:13

Course Objectives:

1.	Encourage beginners for App development and create some awesome android projects.
2.	This will help them learn, practice, and understand Android development right from the basics.
3.	Android has a vast number of users, and the future of android professionals is very bright.
4.	An android development gives all the flexibility and the ability to work from anywhere.

Practical based on Application Development in Android
Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Able to write simple GUI applications
CO-2.	Capable to Design and develop user Interfaces for the Android platform.
CO-3.	Able to use different layouts, sound, picture effects.
CO-4.	Able to use the professional, managerial, interdisciplinary skill set, and domain specific tools in development processes.
CO-5.	Ability to handle different codes of different blocks.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-245P: LAB – II: OPEN SOURCE SOFTWARE TOOLS

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Internal Assessment Marks:13

Course Objectives:

1.	To expose students to free open source software environment and introduce them to use open source packages.
2.	Demonstrate different open source technology like Python, PHP & Perl with different packages
3.	The practical objective of the course is to teach students how they can begin to participate in a OSS project in order to contribute to and improve aspects of the software that they feel are wrong.
4.	Learn some important OSS tools and techniques for contributing to projects and how to set up their own OSS projects.

Practical based on Open Source Software Tools
Case Study of Open Source Software like PHP, PYTHON, PERL & Mozilla

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Implement various applications using build systems like Python,Perl, PHP etc.
CO-2.	Understand the installation of various packages in open source operating systems.
CO-3.	Understand to build a simple application/software using Pyhton.
CO-4.	Create simple Website applications using PHP Language.
CO-5.	Able to Execute programs related to PERL Language.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–IV
BVSD-246P: LAB – III: PRACTICAL BASED ON ASP.NET USING C#

Time: 3 Hrs. **Total Marks: 50**

Practical Marks: 37

Internal Assessment Marks:13

Credits		
L	**T**	**P**
0	**0**	**2**

1.	Provide insight into .Net technologies for web development.
2.	Design and develop interactive and responsive web applications using C#
3.	To create website using different ASP.Net controls.

Practical based on ASP.Net using C#

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Gain knowledge about the architecture of .Net platform.
CO-2.	Learn to apply different validation controls in a web page.
CO-3.	Able to create database connectivity.
CO-4.	Gain knowledge to create simple web forms and implement the concept of master page.
CO-5.	Creation of user interactive web pages using combination of client side and server side applications

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)-IV

Course Code: ESL–222
Course Title: ENVIRONMENTAL STUDIES–II (COMPULSORY)

Credit Hours (Per Week): 2
Total Hours: 30
Maximum Marks: 50

Instructions for Paper Setters: The question paper will consist of three sections. Candidate will be required to attempt all the sections. Each unit of the syllabus should be given equal weightage of marks. Paper to be set in English, Punjabi and Hindi.
Section–A: (16 Marks): It will consist of five short answer type questions. Candidates will be required to attempt four questions, each question carrying four marks. Answer to any of the questions should not exceed two pages.
Section–B: (24 Marks): It will consist of five questions. Candidates will be required to attempt four questions, each question carrying six marks. Answer to any of the questions should not exceed four pages.
Section–C: (10 Marks): It will consist of two questions. Candidate will be required to attempt one question (carrying ten marks) only. Answer to the question should not exceed 5 pages.

Course Objectives

CO-1	To study the concept of Biodiversity – role, importance, values and its conservation. Hot spots and threats to biodiversity.
CO-2	To create awareness regarding environmental pollution, its causes and effects and preventive measure to control the different types of pollution.
CO-3	To make students aware of growing human population – causes and concern. Family welfare programs. Road safety (Traffic) rules.
CO-4	To know about entrepreneurship development and civil/self defense.

Unit-I

Biodiversity and its Conservation:

- Definition: Genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of Biodiversity: Consumptive use; productive use, social, ethical, aesthetic and optionvalues.
- Biodiversity of global, National and local levels.
- India as mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to Biodiversity: Habitat loss, poaching of wild life, man wildlife conflicts. Threatened and endemic species of India.
- Endangered species, vulnerable species, and rare species.
- Conservation of Biodiversity: In situ and Ex-situ conservation of biodiversity. National Parks, Wild life sanctuaries, Biosphere reserve, Project Tiger, Project Elephant.

Unit-II
Environmental Pollution:

Environmental Pollution: Concepts and Types

- Definition, causes, effects and control measures of:
  a) Air Pollution
  b) Water Pollution
  c) Soil Pollution
  d) Marine Pollution
  e) Noise Pollution
  f) Thermal Pollution
  g) Nuclear Hazards
  h) Electronic Waste
- Concepts of hazards waste & human health risks.
- Solid Waste Management: Causes, effects and control measures of municipal, biomedical and e-waste
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster Management: Floods, Earthquake, Cyclone and Landslides.

Unit-III

Human Population and the Environment

- Human population growth: impacts on environment.
- Population explosion-Family welfare programme.
- Environment and human health: Concept of health and disease, common communicable and non communicable diseases, public awareness
- Human rights.
- Value education.
- Women and child welfare.
- Role of information technology in environment and human health.
- Environment movments in India: Chipko movement, Silent valley movement and other case studies.
- Road Safety Rules & Regulations**:** Use of Safety Devices while Driving, Do's and Don'tswhile Driving, Role of Citizens or Public Participation, Responsibilities of Public underMotor Vehicle Act, 1988, General Traffic Signs.
- Accident & First Aid**:** First Aid to Road Accident Victims, Calling Patrolling Police &Ambulance.

Unit-IV

National Service Scheme:

- **Entrepreneurship Development:** Definition & Meaning; Qualities of good entrepreneur; Steps/ ways in opening an enterprise; Role of financial and support service Institutions.

- **Civil/Self Defense:** Civil defense services, aims and objectives of civil defense; Needs for self-defense training.

Field Visits:

Visit to a local area to document environmental assets–river/forest/grassland/ hill/mountain.

- Visit to a local polluted site–Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems–pond, river, hill slopes etc.
- Contribution of the student to NSS/any other social cause for service of society.
- Visit to Museum/Science City
- Municipal solid waste management and handling.

Note: In this section the students will be required to visit and write on the environment of an area/ ecosystem/vi1lage industry/disaster/mine/dam/agriculture field/waste management/ hospital etc. with its salient features, limitations, their implications and suggestion for improvement.

References/Books:

1. Agarwal, K. C. 2001. Environmental Biology, Nidhi Publications Ltd. Bikaner.
2. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
3. Down to Earth, Centre for Science and Environment, New Delhi.
4. Jadhav, H. & Bhosale, V. M. 1995. Environmental Protection and Laws. Himalaya Pub.
5. Joseph, K. and Nagendran, R. 2004. Essentials of Environmental Studies, PearsonEducation (Singapore) Pte. Ltd., Delhi.
6. Kaushik, A. & Kaushik, C. P. 2004. Perspective in Environmental Studies,New Age International (P) Ltd, New Delhi.
7. Miller, T. G. Jr. 2000. Environmental Science, Wadsworth Publishing Co.
8. Sharma, P. D. 2005. Ecology and Environment, Rastogi Publications, Meerut.
9. Booklet on Safe Driving. Sukhmani Society (Suvidha Centre), District Court Complex,Amritsar
10. Asthana, D.K. 2006. Text Book of Environmental Studies, S. Chand Publishing.
11. Kanta, S., 2012. Essentials of Environmental Studies, ABS Publications, Jalandhar.
12. Basu, M., Xavier, S. 2016. Fundamentals of Environmental Studies, Cambridge University Press, India.
13. Mahapatra, R., Jeevan, SS, Das S. 2017. Environment Reader for Universities, Centre for Science and Environment, New Delhi.

Course Outcomes:

CO-1	To know about the meaning of Biodiversity and its role in environment.
CO-2	To know about the causes of different forms of pollution and their control measures.
CO-3	To know about the causes and challenges of growing human population. Women and child welfare programs.
CO-4	To know the development of entrepreneurship and techniques of civil/self defense.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

Semester – V

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 351 (Major)	Software Project Management and Business Solution	**75**	**25**	**-**	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**64-65**
2	BVSD 352 (Major)	Software Re-engineering	**75**	**25**	**-**	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**66-67**
3	BVSD 353 (Major)	Software Testing & Quality Assurance	**75**	**25**	**-**	**100**	**5**	**1**	**0**	**3**	**1**	**0**	**4**	**68-69**
Skill development Course (SEC)														
4	BVSD 354P	Lab I: Soft Skills in IT	**-**	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**70**
5	BVSD 355P	Lab II: System and Network Administration	**-**	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**71**
6	BVSD 356P	Lab III: Software Testing (Case Tools)	**-**	**13**	**37**	**50**	**0**	**0**	**6**	**0**	**0**	**2**	**2**	**72**
													18	

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–V

BVSD-351: Software Project Management and Business Solution

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

1.	Understand the five distinctive phases of project are Initiation, Planning and Design, Construction and Execution, Monitoring and Control, Completion. These five steps ensure the success of a project.
2.	Understand the various project evaluation techniques such as Cost benefits evaluation techniques and risk evaluation.
3.	Understand the important project constraints are, Scope in that the main goal of the project is completed within the estimated Time, while being of the expected Quality and within the estimated Budget.
4.	Understand the optimization of the allocated necessary inputs and their application to meeting the project's pre-defined objectives.

UNIT-I

Introduction to Software Project Management: Project Definition, Contract Management, Activities covered By Software Project Management, Overview of Project Planning, Stepwise Project Planning.

Project Evaluation: Strategic Assessment, Technical Assessment, Cost Benefit Analysis, CashFlow Forecasting, Cost Benefit Evaluation Techniques, Risk Evaluation.

UNIT-II

Activity Planning Objectives, Project Schedule, Sequencing and Scheduling Activities, Network Planning Models – Forward Pass , Backward Pass , Activity Float , Shortening Project Duration ,Activity on Arrow Networks , Risk Management , Nature Of Risk , Types Of Risk , Managing Risk , Hazard Identification , Hazard Analysis , Risk Planning And Control.

UNIT-III

Monitoring and Control Creating Framework ,Collecting The Data , Visualizing Progress , Cost Monitoring , Earned Value , Prioritizing Monitoring , Getting Project Back To Target ,Change Control , Managing Contracts , Introduction , Types Of Contract , Stages In Contract Placement , Typical Terms Of A Contract , Contract Management , Acceptance.

UNIT-IV

Managing People and Organizing Teams Introduction,Understanding Behavior, Organizational Behaviour: A Background, Selecting The Right Person For The Job, Instruction In The Best Methods, Motivation, The Oldham, Hackman Job Characteristics Model, WorkingIn Groups, Becoming A Team, Decision Making, Leadership, Organizational Structures , Stress,Health And Safety, Case Studies.

Business Solutions Information system in Global Business: How Businesses use Information system, ethical and Social Issues in IS, DSS: Enhancing Decision making, Business Intelligence tools, E-commerce: types, web-based business, ERP, EDI

References:

1. Bob Hughes, Mike Cotterell, “Software Project Management”, Third Edition, Tata McGraw Hill, 2004.
2. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
3. Royce, “Software Project Management”, Pearson Education, 1999.
4. Jalote, “Software Project Management in Practice”, Pearson Education, 2002.

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Develop a plane, which is cost effective, and ensure the success of a project.
CO-2.	Identify the types of risk that will possible to come in project.
CO-3.	Estimate and cost the human and physical resources required, and make plans to obtain the necessary resources.
CO-4.	Break work down into tasks and allocate roles with clear lines of responsibility and accountability.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–V
BVSD-352: Software Re-engineering

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objectives:

The main motive of reengineering is to ameliorate the maintainability of software. Therefore, this course emphasizes on the elaboration of the principles, techniques, and tools mostly helpful in re-engineering the software.

UNIT-I

Introduction to Software Re-engineering: Software Reengineering and its importance, goals ofreengineering, Software reengineering process model, software reengineering tools and Businessprocess reengineering: Business processes, A BPR Model.

Legacy Software Structure: Legacy software structure and distribution: Layered distributionmodel, Legacy software distribution, Architectural problems.

UNIT-I

Reverse Engineering: Need of reverse engineering, Reverse engineering process, Reverse engineering to understand data, Reverse engineering user interfaces, Tools for reverse engineering.

Restructuring: Code restructuring: Characteristics of unstructured code, Characteristics of structured code, restructuring problems, Data restructuring (Data reengineering): Data reengineering process, Data problems, Approaches: Data cleanup, Data extension, Data

migration, Need for Data migration, data migration process, Tools for restructuring.

UNIT-III

Refactoring: Introduction to refactoring, Principles of refactoring, Need for refactoring, Problems with refactoring, Refactoring and design, Refactoring and performance. Different refactoring techniques and their use, refactoring tools.

UNIT-IV

Forward Engineering: Introduction to forward engineering, Goals of forward engineering, Forward engineering for client/server applications, Tools for forward engineering, forward engineering v/s reverse engineering

Software Reuse: Software Reuse Success Factors, Reuse Driven Software Engineering in aBusiness, Use case Components, Object Components, Layered Architecture.

References:

1. Software Engineering, Ian Sommerville, Addison-Wesley, 6th Edition.
2. Software Engineering, A Practitioner's Approach, Roger S. Pressman, 6th Edition.
3. Software Reuse: Architecture, Process and Organization for Business Success, IvarJacobson, Martin Griss, Patrik Jonsson, Pearson Education, 2000

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	To identify the different software reengineering models and tools.
CO-2.	To understand the importance of reengineering in case of legacy systems.
CO-3.	To understand the importance of Reverse Engineering methods and the utilization of these methods in understanding data and user interfaces.
CO-4.	To explain the activities involved in software re-engineering, such as, restructuring, refactoring, and Forward engineering.
CO-5.	Understand the concepts and theory related to Software Reuse.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–V

BVSD-353: Software Testing & Quality Assurance

Time: 3 Hrs. **Total Marks: 100**

Credits		
L	**T**	**P**
3	**1**	**0**

Theory Marks: 75

Theory Internal Assessment Marks:25

Note for paper setter and students:

1. **Medium of Examination is English Language.**
2. **There will be five sections.**
3. **Section A is compulsory and will be of 15 marks consisting of 8 short answer type questions carrying 2.5 mark each covering the whole syllabus. The answer should not exceed 50 words. The students will have to attempt any 6 questions in this section.**
4. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 15 marks each from the respective unit. The students are required to attempt one question from each of these sections.**

Course Objective:

1.	To learn metrics for managing quality assurance and understand capabilities of test tools.
2.	To explore the effective testing techniques (both black-box and white box) for ensuring high quality software.
3.	To learn how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.

UNIT-I

Introduction: Overview of Software Engineering, Software Process, Process Models, Overviewof Project Management Process and its Phases.

Software Quality Assurance Concepts and Standards: Quality Concepts, Quality Control, Quality Assurance, SQA Activities, Software Reviews, Formal Technical Reviews, Review Guidelines, Software Reliability, Software Safety, Quality Assurance Standards, ISO 9000, ISO 9001:2000, ISO 9126 Quality Factors, CMM, TQM, Six Sigma, SPICE,
Software Quality Assurance Metrics.

UNIT-II

Software Testing and Techniques: Introduction and Testing Types, Verification and Validation, Test Strategies for Conventional and Object Oriented Software, Metrics for Testing, Debugging Process, Debugging Strategies, Different Testing Techniques: Black Box and White Box Testing, Basis Path Testing, Graph Matrices, Graph Based Testing Methods.

UNIT-III

Object Oriented Testing Methods: Applicability of Conventional Test Case Design Methods, Issues in Object Oriented Testing, Fault-Based Testing, Scenario-Based Testing, Random Testing and Partition Testing for Classes, Interclass Test Case Design.

UNIT-IV

Testing Process and Specialized Systems Testing: Test Plan Development, Requirement Phase, Design Phase and Program Phase Testing, Testing Client/Server Systems, Testing Web based Systems, Testing Off the-Shelf Software, Testing in Multiplatform Environment, Testing for Real Time Systems, Testing Security.

References:

1.Ian Sommerville, Software Engineering, Seventh Edition, Pearson Education.
2.R.S. Pressman, Software Engineering: A Practitioner's Approach, Sixth Edition, Tata McGraw-Hill.
3.William E. Perry, Effective Methods for Software Testing, Second Edition, John Wiley & Sons. 4.Paul C.Jorgensen, Software Testing:A Craftsman's Approach, Third Edition, AuerbachPublications, Taylor and Francis Group, 2010.
5. Yogesh Singh, Software Testing, Cambridge University Press.

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Apply software testing knowledge and engineering methods.
CO-2.	Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
CO-3.	Analyze and understand the use of software testing methods and modern software testing tools for their testing projects.
CO-4.	Learn to design SQA activities, SQA strategy, formal technical review report for software quality control and assurance.
CO-5.	Follow the process related activity and testing techniques to work as team members.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER–V

BVSD-354P: Lab I: Soft Skills in IT

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Internal Assessment Marks:13

Course Objectives:

At the end of the course, the students will be able to:
1. Develop effective communication skills (spoken and written).
2. Develop effective presentation skills.
3. Become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills.
4. Develop all-round personalities with a mature outlook to function effectively in different circumstances.
5. Develop broad career plans, evaluate the employment market, identify the organizations to get good placement, match the job requirements and skill sets.

Verbal Communication: Public speaking, group discussion, presentation skills, interview skills,listening and observation skills.

Written communication: project proposals, Technical reports, grammar and vocabulary for effective technical writing, Technical resume

Personality Development: Personal grooming, Dressing for interviews, dressing for office, leadership, group dynamics and team building, conflict management, Critical Thinking, Reflective Thinking and Decision making, problem Solving Skills and Time management

Technical etiquettes: Etiquettes in office as well as social settings, email etiquettes, telephone etiquettes.

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Effectively communicate through verbal/oral communication and improve the listening skills.
CO-2.	Demonstrating clear briefing and listening skills, not being afraid to ask for help and support when necessary.
CO-3.	Write precise briefs or reports and technical documents.
CO-4.	Actively participate in group discussion / meetings / interviews and prepare & deliver presentations.
CO-5.	Become more effective in team building, conflict management, Critical Thinking, Reflective Thinking and Decision-making, problem Solving Skills and Time management.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER–V

BVSD 355P: Lab II: System and Network Administration

Time: 3 Hrs. **Total Marks: 50**

Credits		
L	**T**	**P**
0	**0**	**2**

Practical Marks: 37

Internal Assessment Marks:13

Course Objectives:

1	The main objective of this course is to explore the existing operating systems and their administration and maintenance within the network setting.
2	This course will assist the learner to install, maintain, and extend multi-user computer systems.
3	Also, this course helps the learner to understand how to apply troubleshooting to resolve the problem.

Lab based on System and Network Administration

Course Outcomes (COs):

On Completing the course, the students will be able to:

CO-1.	To execute and evaluate network administration commands and demonstrate their use.
CO-2.	To install the network cable.
CO-3.	To perform the system maintenance.
CO-4.	To evaluate and implement security solutions.
CO-5.	To upgrade the hardware and software of system.

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)

SEMESTER–V

BVSD 356P : Lab III: Software Testing (Case Tools)

Time: 3 Hrs. **Total Marks: 50**

Practical Marks: 37

Internal Assessment Marks:13

Credits		
L	**T**	**P**
0	**0**	**2**

Course Objectives:

1.	The main objective of this practical lab is to impart knowledge on the commonly used CASE tools helpful in testing process.
2.	This course will provide a scope to hands-on on different small and real-life problems

Practical Based on Software Testing (Case Tools)

Course Outcomes:

On Completing the course, the students will be able to:

CO-1.	Deploy the advanced technologies in software testing
CO-2.	Get hands-on practice on the CASE tools for testing purposes.
CO-3.	This course will help the students to enhance skills in software test automation and management.
CO-4.	Describe and compute the mutation score.
CO-5.	This course will help the students to calculate the coverage analysis of programs.

Semester – VI

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credits L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BVSD 361 (Major)	Software Project Management and Business Solution	-	**100**	**300**	**400**	**0**	**0**	**48**	**0**	**0**	**16**	**16**	**74**

BACHELOR OF VOCATION (B.VOC.) (SOFTWARE DEVELOPMENT)
SEMESTER–VI

BVSD-361: - Project Dissertation

Time: 3 Hrs. **Total Marks: 400**

Credits		
L	**T**	**P**
0	**0**	**16**

Practical Marks: 300

Internal Assessment Marks:100

Course Objectives:

At the end of the course, the students will be able to:

1.	Test their interest in a particular career before permanent commitments are made.
2.	Provide comprehensive learning platform to students where they can enhance their employ ability skills and become job ready along with real corporate exposure.
3.	Enhance students' knowledge in one particular technology.
4.	Increase self-confidence of students and helps in finding their own proficiency
5.	Build the strength, teamwork spirit and self-confidence in their life.
6.	To provide learners hands on practice within a real job situation.

General Instructions:

Report based on Industrial Training and project shall be submitted to the College/Institute tillApril 30.

The evaluation of the work shall be done by the following panel of examiners prior to the theoryexamination:

(a). Internal Examiner

(b). Head/ Head Nominee of coordinating department of the college for this UGC scheme(c). External Examiner (to be appointed by the University)

Course Outcomes:

On Completing the course, the students will be able to:,

CO-1.	Become master in one's specialized technology.
CO-2.	Become a multi-skilled person with good technical knowledge, management, leadership and entrepreneurship skills.
CO-3.	Communicate efficiently.
CO-4.	Identify, formulate and model problems and find different solutions for these problems.
CO-5.	Update with all the latest changes in technological world.