

SYLLABUS FOR THE BATCH FROM THE YEAR 2024 TO YEAR 2028

Programme Code: BDA

Programme Name: B.Sc. (Data Analytics)

(Semester I-II)

Examinations: 2024-2028



P.G. Department of Computer Science & Applications

Khalsa College, Amritsar

B.Sc. (Data Analytics)

Semester-I

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credit L+T+P	Page No.		
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P				
Discipline Specific Course(DSC)																
1	BDA-111	Quantitative Statistics	75	25	-	100	5	1	0	3	1	0	4	3-4		
2	BDA-112	Fundamentals of Computers	75	25	-	100	5	1	0	3	1	0	4	5-6		
3	BDA-113	Data Analysis with Excel	75	25	-	100	5	1	0	3	1	0	4	7		
4	BDA-114	Fundamentals of Management	75	25	-	100	5	1	0	3	1	0	4	8		
5	BDA-115P	Lab I (Fundamentals of Computers)	-	06	19	25	0	0	3	0	0	1	1	9		
6	BDA-116P	Lab II (Data Analysis With Excel)	-	06	19	25	0	0	3	0	0	1	1	10		
Ability Enhancement Course (AEC)																
7	BCSE-1122	Communication Skills in English	60	25	15	100	4	0	2	3	0	1	4	11-12		
8	BHPB-1101/ BPBI-1102 /BPHC-1104	Punjabi/ Basic Punjabi (Mudhli Punjabi) (Compulsory)/ Punjab History & Culture	75	25	-	100	6	0	0	4	0	0	4	13-16		
Skill Enhancement Course(SEC)																
9	SEC-114	Creative Writing in Punjabi	37	13	-	50	0	0	3	0	0	2	2	17		
Value Added Course(VAC)																
10	ZDA111	*Drug Abuse: Problem, Management and Prevention(Compulsory paper)	-	-	-	25	2	0	0	1	0	0	1	18-19		
												Total Credits=29				

Note: * This paper marks will not be included in the total marks.

B. Sc. (Data Analytics)

Semester – I

Course Name	Quantitative Statistics
Course Code	BDA-111
Credits(L-T-P)	4(3-1-0)
Total Marks	100
Theory Marks	75
Internal Assessment	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.

UNIT-I	
1	Introduction to Statistical Data and Graphical presentation of data Statistical Methods: Definition and scope of statistics, concepts of statistical population and sample. Data: Quantitative and qualitative, attributes, variables, scale of measurements- nominal, ordinal, interval and ratio. Population and Samples. Finite and infinite population, homogeneous population and heterogeneous population, random and non-random sample. Table presentation of data and different classification of tables Graphical Representation of Data Bar-charts, Pie-diagrams classification of data, frequency histogram, polygon, Ogives.
UNIT-II	
2	Measures of Central Tendency Mathematical Measures: Arithmetical Mean, Geometrical Mean, Harmonic Mean, weighted Mean. Positional Measures: Median, Mode; Empirical relations between mean, median and mode. Uses and Numerical Problems.
UNIT-III	
3	Measures of Dispersion Absolute Measures of Dispersion: Range, Coefficient of Range. Quartile deviation, Mean Deviation and standard deviation. Skewness of frequency distribution, Types of Skewness, Measures of Skewness, Types of Kurtosis, Measures of Kurtosis. Numerical problems.
UNIT-IV	
4	Correlation analysis Definition and concept of correlation meanings and correlation-scatter diagram and its uses for correlation analysis; Covariance between two variables: Definition, Meaning, computations and Effect of change of origin and scale; Karl Pearson's coefficient of Correlation and Rank Correlation, Computations for grouped and ungrouped data. Uses and Numerical Problems.

Course Outcomes:	
1	Students will be able to analyze: organize, tabulate, manipulate and normalized the data and Data sets.
2	Students will be able to create, discuss and share solutions to the problems. Students will be able to apply the fundamental knowledge of statistics for further higher thinking and Development of statistics.

Suggested/Reference Books:	
1	Gupta, S .Cand Kapoor V.K.(2014):Fundamentals of Mathematical Statistics, Sultan Chand and sons.
2	Hardle Wolfgang;Okhrin,Ostap:Okhrin, Yarema(2017),Basics Elements of Computational Statistics, Springer.
3	Hogg,R.V.,McKeanJWandCraig,A.T.(2005):Introduction to Mathematical Statistics,6/e Pearson Edition.

B. Sc. (Data Analytics)

SEMESTER-I

Course Name	Fundamentals of Computers
Course Code	BDA-112
Credits(L-T-P)	4(3-0-1)
Total Marks	100
Theory Marks	75
Internal Assessment	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.

UNIT-I	
1	Computer Basics: Introduction, Evolution of Computers, Computer Generations, Classification of Computers, Computer Applications. Operating System Concepts: Role of an Operating System, Types of operating systems, Booting procedure and its types, Fundamentals of Windows & Non-Windows based Operating Systems.
UNIT-II	
2	Input Devices: Keyboard, mouse, pens, touch screens, Barcode reader, joystick, source data automation, (MICR, OMR, OCR), screen assisted data entry: portable / handheld terminals for data collection, vision input systems. Output Devices: Monitor, Serial line page printers, plotters, voice response units. Memory and Storage: RAM, ROM, Storage devices, Organization of Secondary Storage Media.
UNIT-III	
3	Development Tools: Editors, Translators-Compilers, Interpreters, Linkers, Loaders, Debuggers. Programming Tools: Problem Analysis, Program Constructs (Sequential, Decision, Loop), Algorithms, Flowcharts, Pseudo code, Decision table, Modular Programming.
UNIT-IV	
4	Productivity Tools: Word processing using MS Word – Editing, Formatting, Spell Checking, Table handling, Spreadsheet - Excel – Editing, Formatting, Creating formulas. Presentation Tool: MS PowerPoint – Templates, Views, Formatting text, Slides with graphs.

B. Sc. (Data Analytics)
SEMESTER-I

Course Outcomes:	
1	It will enable the students to understand the core concepts of the computer technology. Students Will also be aware of the latest technology.
2	It gives idea about information technology and its various tools.
3	Students will get hands-on experience with basic productivity tools.
Suggested/Reference Books:	
1	P.K. Sinha, Computer Fundamentals, BPB Publications, 2011
2	Peter Norton, Introduction to Computers, Tata Mcgraw Hill(2005)
3	PC Software by Rachpal Singh & Gurwinder Singh.
4	Balagurusamy E, Fundamentals of Computers, McGraw Hill Education;

B. Sc. (Data Analytics)
SEMESTER-I

Course Name	Data Analysis with Excel
Course Code	BDA-113
Credits(L-T-P)	4(3-0-1)
Total Marks	100
Theory Marks	75
Internal Assessment	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.**

UNIT-I	
1	MS Excel: Overview, creating, saving, opening, Excel Rows and Columns, Enter Text and numbers in a cell, edit text in a cell, center text and numbers, Font Formatting excel, change the color of a cell, save your work in excel, Currency symbols in excel, Merge cells, Using Auto fill, Adding Simple Addition formula, The Sum Function, Copy and Paste, Using Paste Special, Multiply in excel, adding comment to a cell.
UNIT-II	
2	MS Excel Charts: Sorting Data, Create an excel chart, Move and Resize your chart, Charts Styles and Layouts, Chart Titles and Series Titles, Chart Layout Panel in Excel, Format chart Panel, Creating Pie chart, Add Labels to a Pie Chart, Format Pie chart segments, Create a 2D line Chart in Excel, Format your Axis titles, Predict the future with a Trend line chart.
UNIT-III	
3	Analysis of Time Series Data: Forecasting/Data Relationship Tools -Graphical Analysis, Linear Regression. Analysis of Cross-Sectional Data, Inferential Statistical Analysis of Data
UNIT-IV	
4	Conditional Logic: IF Function, Conditional Formatting in excel, Count IF, Count IFS, SUMIF, and SUMIFS. MS Excel Advance Feature: Pivot Tables, LOOKUP Function, VLOOKUP Function, Searching with MATCH and INDEX, Drop Down Lists in Excel, Add your own Error Messages.

Course Outcomes:	
1	Students will get hands-on experience with MS Excel.
2	Understand the scope of data analysis with Excel.
3	To enable students to create applications and tools to deal with complex problems.

Suggested/Reference Books:	
1	Hector Guerrero, Excel Data Analysis Modeling and Simulation, Second Edition.

**B. Sc. (Data Analytics)
SEMESTER-I**

Course Name	Fundamentals of Management
Course Code	BDA-114
Credits(L-T-P)	4(4-0-0)
Total Marks	100
Theory Marks	75
Internal Assessment	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.

UNIT-I	
1	Basic forms of Business Ownership; Special forms of ownership: Franchising, Licensing, Leasing; Choosing a form of Business ownership; Corporate Expansion: mergers and acquisitions, diversification, forward and backward integration, joint ventures, Strategic alliance.
UNIT-II	
2	Evolution of Management, Classical and modern Theories of management, Management Vs. Administration, Managerial functions and Roles. Insights from Indian practices and ethos.
UNIT-III	
3	Overview of Planning: Types of Plans & The planning process; Principles of organizing: Common organizational structures; Authority, Delegation & Decentralization: Factors affecting the extent of decentralization, Process and Principles of delegation.
UNIT-IV	
4	Decision making: Process, Types and Techniques. Managerial Control: Function, Process and techniques of Control. Cooperation and Co-ordination-Need, Approaches to Coordination and Difficulties.

Suggested/Reference Books :	
1	PC Tripathi and P.N Reddy, Principles of Management. Tata McGraw Hill
2	Stephen P.Robbins & Mary Coulter: Management, Pearson.
3	Stoner & Wankel: Management, Prentice Hall of India.
4	Richard L. Daft: Principles of Management, Cengage Learning India.
5	Koontz & Heinz Weihrich: Essential of Management, McGraw Hill.

B. Sc. (Data Analytics)
Syllabus for the batch from year 2024 to year 2028
SEMESTER-I

Course Name	Lab I: (Fundamentals of Computers)
Course Code	BDA-115P
Credits(L-T-P)	1 (0-0-1)
Total Marks	25
Practical Marks	19
Internal Assessment	06

Practical based Fundamental of computers

Course Outcomes:	
1	It will enable the students to understand the core concepts of the computer technology. Students will also be aware of the latest technology.
2	It gives idea about information technology and its various tools.
3	Students will get hands-on experience with basic productivity tools.

B. Sc. (Data Analytics)
SEMESTER-I

Course Name	Lab II: (Data Analysis with Excel)
Course Code	BDA-116P
Credits(L-T-P)	1(0-0-1)
Total Marks	25
Practical Marks	19
Internal Assessment	06

Practical Based on Data Analysis with excel.

Course Outcomes:	
1	Students will get hands-on experience with MS Excel.
2	Understand the scope of data analysis with Excel.
3	To enable students to create applications and tools to deal with complex problems.

B. Sc. (Data Analytics)
SEMESTER-I
COMMUNICATION SKILLS IN ENGLISH
Code: BCSE-1122

L	T	P	Credits
3	0	1	4

Time: 3 Hours
Max. Marks: 100

Theory: 60

Practical: 15

Internal Assessment: 25

Suggested Pattern of Question Paper:

The question paper will be divided into two sections. Section A will consist of Twelve (12) questions of One(1) mark each. Section B will consist of Six questions of Eight (8) marks each. There will be internal choice wherever possible.

Section A

1. Do as directed
Articles, Conjunctions and Prepositions

(12X1=12

Marks)

Section B

1. Reading Skills: Reading Tactics and strategies; Reading purposes–kinds of purposes; Reading for direct meanings.
2. Comprehension questions of an unseen passage
3. Personal letter and Official/Business letters
4. Writing notices/agenda/minutes for public circulation on topics of professional interest.
5. Writing resume or converting a biographical note into resume

6. Translation from English to Vernacular (Punjabi/ Hindi) (Isolated Sentences)

(6X8=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 knowledge of the latest technology related to communication skills.
- V: To provide knowledge of multifarious opportunities in the field of this programme.

Course Contents:

1. Reading Skills: Reading tactics and strategies; Reading purposes–kinds of purposes and associated comprehension; Reading for direct meanings; Reading for understanding concepts, details, coherence, logical progression and meanings of phrases/ expressions.

Activities:

- a. Active reading of passages on general topics

- b. Reading newspaper, articles, editorials etc.
- c. Short questions based on content and development of ideas of a given paragraph.

2. Writing Skills: Guidelines for effective writing; writing styles for application, resume, personal letter, official/ business letter, memo, notices etc.

Activities:

- a) Personal and business letters.
- b) Converting a biographical note into a sequenced resume.
- c) Writing notices for circulation/ boards.
- d) Making notes of given passage with headings and sub-headings
- e) Writing newspaper reports based on given heading.

Recommended Books:

- 1. *Oxford Guide to Effective Writing and Speaking* by John Seely.
- 2. *The Written Word* by Vandana R Singh, Oxford University Press.
- 3. *Murphy's English Grammar* (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. Reading dialogues (5 Marks)
- 2. Rapid reading (5 Marks)
- 3. Project File (5 Marks)

B. Sc. (Data Analytics)
SEMESTER-I
Punjabi (Compulsory)-1
ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)-1

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

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			L	T	P	Theory	IA			
ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)-1 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)
<ul style="list-style-type: none"> ▪ ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪੈਦਾ ਕਰਨਾ। ▪ ਆਲੋਚਨਾਤਮਕ ਰੁਚੀਆਂ ਵਿਕਸਤ ਕਰਨਾ। ▪ ਮਾਤ ਭਾਸ਼ਾ ਦੀ ਸਮਝ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ। 	<ul style="list-style-type: none"> ▪ ਉਸ ਵਿਚ ਸਾਹਿਤ ਰੁਚੀਆਂ ਵਿਕਸਤ ਹੋਣਗੀਆਂ। ▪ ਉਸ ਵਿਚ ਸਾਹਿਤ ਸਿਰਜਣਾ ਦੀ ਸੰਭਾਵਨਾ ਵਧੇਗੀ। ▪ ਉਸ ਵਿਚ ਕਿਸੇ ਵੀ ਵਿਸ਼ੇ ਦਾ ਗਹਿਣ 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 ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜ਼ਮੀ 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 ਸੈਂਟਰ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਕਾਵਿ ਕਥਾ, (ਕਵਿਤਾ ਅਤੇ ਕਹਾਣੀ) ਡਾ. ਮਹਿਲ ਸਿੰਘ (ਮੁੱਖ ਸੰਪਾਦਕ) ਅਤੇ ਡਾ. ਆਤਮ ਸਿੰਘ ਰੰਧਾਵਾ (ਸੰਪਾਦਕ), ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ।

(ਕਵਿਤਾ ਭਾਗ ਵਿਚੋਂ ਪ੍ਰਸ਼ੰਗ ਸਹਿਤ ਵਿਆਖਿਆ/ਕਵਿਤਾ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ। ਕਹਾਣੀ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਵਿਸ਼ਾ-ਵਸਤੂ)

ਭਾਗ-ਦੂਜਾ

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

ਭਾਗ-ਤੀਜਾ

(ੳ) ਪੈਰੂਾ ਰਚਨਾ (ਤਿੰਨਾਂ ਵਿਚੋਂ ਇਕ)
(ਅ) ਪੈਰੂਾ 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।

B. Sc. (Data Analytics)
SEMESTER-I
 Basic Punjabi -1
ਮੁਢਲੀ ਪੰਜਾਬੀ-1
 (In Lieu of Compulsory Punjabi)

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

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam	Eligibility criteria	Pre-requisite of the course (if any)
			L	T	P	Theory	IA			
ਮੁਢਲੀ ਪੰਜਾਬੀ-1 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)
<ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀ ਨੂੰ ਗੁਰਮੁਖੀ ਲਿਪੀ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਪੜ੍ਹਨਾ-ਲਿਖਣਾ ਸਿਖਾਉਣਾ। ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀਆਂ ਵਿਆਕਰਨਕ ਬਾਰੀਕੀਆਂ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ। ਵਿਦਿਆਰਥੀ ਅੰਦਰ ਸ਼ੁੱਧ ਸੰਚਾਰ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ। 	<ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀ ਸਿਖਲਾਈ ਵਿਚ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ। ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿਚ ਮੁਹਾਰਨੀ, ਲਗਾਂ-ਮਾਤਰਾਂ, ਸਵਰ ਅਤੇ ਵਿਅੰਜਨ ਅੱਖਰਾਂ ਦੀ ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ ਸਬੰਧੀ ਸਮਝ ਵਿਕਸਿਤ ਹੋਵੇਗੀ। ਵਿਦਿਆਰਥੀ ਸ਼ੁੱਧ ਪੰਜਾਬੀ ਲਿਖਣ-ਪੜ੍ਹਨ ਦੇ ਸਮਰੱਥ ਹੋਣਗੇ। ਵਿਦਿਆਰਥੀ 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 ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੂਸਰੇ ਅਤੇ ਤੀਸਰੇ ਭਾਗ ਵਿਚ, ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਅਤੇ ਦੂਸਰੇ ਭਾਗ ਵਿਚੋਂ 8-8 ਅੰਕਾਂ ਦੇ 3-3 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ 2-2 ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਇਸੇ ਤਰ੍ਹਾਂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚੌਥੇ ਭਾਗ ਵਿਚ 4-4 ਅੰਕਾਂ ਦੇ 5 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 4 ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਭਾਗ ਪੰਜਵੇਂ ਵਿਚ 2-2 ਅੰਕਾਂ ਦੇ 10 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 8 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ:

ਨਾਮਕਰਣ ਤੇ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ: ਗੁਰਮੁਖੀ ਵਰਣਮਾਲਾ, ਅੱਖਰ ਕ੍ਰਮ, ਸਵਰ ਵਾਹਕ (ੳ, ਅ, ਏ), 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

B. Sc. (Data Analytics)
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

Credit Hours(per week):04

L- T- P

04-0-0

Time:3 Hours

Total Marks: 100

Theory: 75

Internal Assessment: 25

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 50percent 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:-

1. L. Joshi(ed), *History and Culture of the Punjab*, Art-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 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 Punjab.

B. Sc. (Data Analytics)
Semester-I

Skill Enhancement Course

ਪੰਜਾਬੀ ਵਿਚ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ
Creative Writing in Punjabi
SEC-114

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

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 50		Duration of Course	Time Allowed in Exam
			L	T	P	Theory	I A		
ਪੰਜਾਬੀ ਵਿਚ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ SEC-114	30	2	2	0	0	37	13	30 Hours	3 Hours

<p>ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objectives (Cos)</p> <ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ ਦਾ ਅਰਥ ਤੇ ਮਹੱਤਵ ਦੱਸਦੇ ਹੋਏ ਕਵਿਤਾ, ਗਲਪ, ਵਾਰਤਕ ਤੇ ਨਾਟਕ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਵਿਤਾ ਦਾ ਸਿਰਜਨਾਤਮਕ ਹੁਨਰ ਪੈਦਾ ਕਰਨਾ। 	<p>ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)</p> <ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ ਦਾ ਅਰਥ ਤੇ ਮਹੱਤਵ ਬਾਰੇ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਦੇ ਹੋਏ ਕਵਿਤਾ, ਗਲਪ, ਵਾਰਤਕ ਤੇ ਨਾਟਕ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਵਿਤਾ ਦਾ ਸਿਰਜਨਾਤਮਕ ਹੁਨਰ ਪੈਦਾ ਹੋਵੇਗਾ।
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ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਦੇ ਆਧਾਰ 'ਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਦੋ ਭਾਗ ਬਣਾਏ ਜਾਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿੱਚ 01-01 ਅੰਕ ਦੇ 07 ਬਹੁ-ਵਿਕਲਪੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਦੂਸਰੇ ਭਾਗ ਵਿਚ 5-5 ਅੰਕਾਂ ਦੇ ਅੱਠ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਕੋਈ 06 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ

- (ੳ) ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ : ਅਰਥ ਅਤੇ ਮਹੱਤਤਾ
- (ਅ) ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ ਦੇ ਵਰਗ: ਕਵਿਤਾ, ਗਲਪ, ਵਾਰਤਕ ਤੇ ਨਾਟਕ
- (ੲ) ਆਮ ਭਾਸ਼ਾ ਅਤੇ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ ਦੀ ਭਾਸ਼ਾ

ਭਾਗ-ਦੂਜਾ

ਕਵਿਤਾ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਪ੍ਰਕਿਰਤੀ

- (ੳ) ਕਵਿਤਾ ਦੇ ਰੂਪ : ਛੰਦ ਬੱਧ ਕਵਿਤਾ, ਖੁਲ੍ਹੀ ਕਵਿਤਾ, ਗੀਤ ਅਤੇ ਗਜ਼ਲ।
- (ਅ) ਕਵਿਤਾ ਕਿਵੇਂ ਸਮਝੀਏ ਤੇ ਲਿਖੀਏ ?

B. Sc. (Data Analytics) Semester-I
Course Code: ZDA111

Course Title-DRUGABUSE: PROBLEM, MANAGEMENT AND PREVENTION-I

Credit hrs./wk.:1

Time: 3 Hours Max. Marks: 25

Instructions for the Paper Setters:

- 1) There will be two sections A and B.
- 2) Section A is compulsory and will be of 5 marks consisting of 8 short answer type questions carrying 1marks each covering the whole syllabus. The candidates are required to attempt 5 questions out of 8 short answer type questions. The answer should not exceed 50 words.
- 3) Candidates shall be required to attempt 4 questions from Section B, selecting one question from each unit and each question carries 5 marks. 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 psycho active substances.
CO-4.	Provide culturally relevant formal and informal education programs that raise awareness and support for substance abuse prevention and there cover process.
CO-5.	Describe factors that increase likelihood for an individual, community or group to beat risk of substance used is orders.

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:

Ahuja, Ram(2003),Social Problems in India, Rawat Publication, Jaipur.

1. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
2. Inciardi, J.A. 1981. The Drug Crime Connection. Beverly Hills: Sage Publications. 23
3. Jasjit Kaur Randhawa & Samreet Randhawa, "Drug Abuse Problem, Management & Prevention", KLS, ISBN No. 978-81-936570-8-9, (2019).
4. Kapoor.T.(1985)Drug epidemic among Indian Youth, New Delhi: Mittal Pub.
5. Modi, Ishwarand Modi, Shalini(1997)Drugs:AddictionandPrevention,Jaipur:RawatPublication.
6. Sain,Bhim1991,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.Alcoholand Dependence among Industrial Workers: Delhi: Shipra.
9. Sussman,SandAmes,S.L.(2008).DrugAbuse:Concepts,PreventionandCessation, Cambridge University Press.
10. WorldDrugReport2011, 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 used is orders.
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.

B.Sc. (Data Analytics) Semester–II

SN	Course Code	Course Name	Distribution of The Marks				Lectures Per week			Credit Distribution			Total Credit L+T+P	Page No.
			Theory	Internal Assessment	Practical	Total	L	T	P	L	T	P		
Discipline Specific Course(DSC)														
1	BDA-121	Fundamentals of Mathematics	75	25	0	100	5	1	0	3	1	0	4	21-22
2	BDA-122	Data Structures	75	25	0	100	5	1	0	3	1	0	4	23-34
3	BDA-123	Data Collection & Research Methodology Approaches	75	25	0	100	5	1	0	3	1	0	4	25-26
4	BDA-124	Programming using Python	75	25	0	100	5	1	0	3	1	0	4	27-28
5	BDA-125P	Lab I (Data Structures)	-	06	19	25	0	0	3	0	0	1	1	29
6	BDA-126P	Lab II (Programming using Python)	-	06	19	25	0	0	3	0	0	1	1	30
Ability Enhancement Course (AEC)														
7	BCSE-1222	Communication Skills in English	60	25	15	100	4	0	2	3	0	1	4	31-32
8	BHPB-1201/ BPBI-1202/ BPHC-1204	Punjabi/ Basic Punjabi (Mudhli Punjabi) (Compulsory)/ Punjab History & Culture	75	25	0	100	6	0	0	4	0	0	4	33-36
Skill Enhancement Course(SEC)														
9	SEC-124	Creative Writing in Punjabi	19	06	-	25	2	0	0	1	0	0	1	37
Value Added Course(VAC)														
10	ZDA121	*Drug Abuse: Problem, Management and Prevention(Compulsory paper)	-	-	-	25	2	0	0	1	0	0	1	38-39
Total												Credit=28		

B. Sc. (Data Analytics)

SEMESTER-II

Course Name	Fundamentals of Mathematics
Course Code	BDA-121
Credits(L-T-P)	(3-1-0)
Total Marks	100
Theory Marks	75
Internal Assessment	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.

UNIT-I	
1	Matrices Matrices, Types of matrices, operations on matrices, determinants, adjoint matrix, inverse of matrix, solution of a system of linear equations by inversion method, elementary transformations, the rank of a matrix, consistency and inconsistency of the system of equations.
UNIT-II	
2	Limits and Continuity Limit of a function, Algebra of limits, continuity of a function, Types of discontinuities, elementary properties of continuous functions.
UNIT-III	
3	Differential Calculus Differentiation of function of a single variable, differentiation techniques, differentiation of implicit functions, higher-order derivatives, Taylor's and Maclaurin's series (without proof's), maxima and minima of a single variable.
UNIT-IV	
4	Integral Calculus Integration, Integration techniques, integration by parts, definite integrals properties, evaluation of area and volume by integration.

Course Outcomes:	
1	Solve a system of linear equations by matrix method.
2	Apply the techniques of differentiation to find maxima and minima, and techniques of integration to evaluate areas and volumes of revolution.

Suggested/Reference Books:

1	Shanti Narayan, A Course of Mathematical Analysis, S. Chand & Co.,1995.
2	Rudin W.,Principles of Mathematical Analysis,3 rd Edition, McGraw Hill Education (India), 2013.
3	Robert G. Bartle and Donald R. Sherbert Introduction to Real Analysis,4 th Edition, Robert, Wiley-2014.

**B. Sc. (Data Analytics)
SEMESTER-II**

Course Name	Data Structures
Course Code	BDA-122
Credits(L-T-P)	4(3-0-1)
Total Marks	100
Theory Marks	75
Internal Assessment	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.**

Unit-I	
1	Introduction: About data structure, Data structure operations, Algorithm: Def., Complexity, Time-space tradeoff, Algorithmic notations, Big O notation. Arrays: Linear array, Representation of Linear array in memory, Traversing linear array, Inserting, Deleting, Sorting(Bubble sort), Searching (Linear search, Binary search).
Unit -II	
2	Stacks: Introduction, operations, Arithmetic expression, Polish notations, Transforming infix to postfix, Quicksort, Recursion concept, Tower of Hanoi. Queues: Define Queues, Operations, Dequeues, Priority Queues.
Unit -III	
3	String Processing: Introduction ,Basic terminology, Storing strings, String operations, Word processing. Linked List: Representation in memory, Traversing, Searching, Insertion, deletion, Header Linked List, Two ways List: operations.
Unit -IV	
4	Trees: Binary trees, Representation in memory, Traversing, Traversal algorithms using stacks, Binary Search trees: Searching, Inserting and Deleting. Heap and Heap sort. Graphs: Graph Theory Terminology, Sequential Representation, Warshall's Algorithm, Linked Representation, Traversing a graph, Hashing.

Course Outcomes:	
1	Comprehend concepts related to write algorithms/pseudo code.
2	Design programs involving decision control statements, loop control statements, case control structures, arrays, strings, stacks, queues using array and linked list, Tree structure implementation.
3	Comprehend the concepts of linear and Non-Linear data structures.

Suggested/Reference Books:	
1	Seymour Lipschutz: Theory and Problems of Data Structures, Schaum's Outline Series
2	Aho A.V.J. E. Hopcroft, J.D. Ullman; Data Structures and Algorithms, Addison-Wesley, 1983.
3	Baase, S Computer Algorithms; Introduction to Design and Analysis, Addison-Wesley, 1978.
4	Berziss, A.T.: Data Structures, Theory and practice: 2nd ed., Academic Press, 1977
5	Collins, W.J. Data Structures, An Object-Oriented Approach, Addison-Wesley, 1992

B. Sc. (Data Analytics)
SEMESTER–II

Course Name	Data Collection & Research Methodology Approaches
Course Code	BDA-123
Credits(L-T-P)	(4-0-0)
Total Marks	100
Theory Marks	75
Internal Assessment	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.

UNIT-I	
1	<p>Introduction to Research: What is Research, Inductive and Deductive research, Commercial versus academic research, Theory, Knowledge and research, Hallmarks of scientific research. Defining the broad problem area and problem statement.</p> <p>Literature Review: Its role within research, types of reviews, searching for literature, defining the scope, planning and writing a literature review.</p>
UNIT-II	
2	<p>Preparing and developing hypotheses.</p> <p>Measurement of variables: Operational definition—How variables are measured, Operationalization of variables, Operationalization — Dimensions and Elements. Measurement: Nominal, Ordinal, Interval and Ratio scales.</p> <p>Data Collection Methods: Sources of data, Methods of data collection. Scaling, Reliability and Validity.</p>
UNIT-III	
3	<p>Sampling: Concept, Sampling process, Probability and Non-Probability Sampling.</p> <p>Research design: Exploratory, descriptive, case study analysis, cross-sectional studies, and longitudinal studies.</p>
UNIT-IV	
4	<p>The research report: Characteristics of a well-written report, Contents of a research report.</p> <p>Ethics in Research: Ethical treatment of participants, Sponsor and Team members.</p>
Course Outcomes:	
1	To explain key research concepts and issues.

2	To read, comprehend, and explain research articles in their academic discipline.
Suggested/Reference Books:	
1	Uma Sekaran and Rouger Bougie, <i>“Research Methods for Business. A Skill Building Approach”</i> , John Wiley and Sons.
2	Andrew Booth, Diana Papaioannou and Anthea Sutton, “Systematic Approaches to Successful Literature Review” , Sage Publications.
3	Cooper, D.R. and Schindler, P.S., “Business Research Methods” , Tata McGraw Hill.
4	Nick Lee, “Doing Business Research A Guide to Theory and Practice” , Sage Publications.

**B. Sc. (Data Analytics)
SEMESTER-II**

Course Name	Programming using Python
Course Code	BDA-124
Credits(L-T-P)	4(3-0-1)
Total Marks	100
Theory Marks	75
Internal Assessment	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.**

UNIT-I	
1	Algorithm and Flowchart -Introduction and components. Introduction to Python and Installation on various Operating Systems. Overview - IDEs (Jupyter, PyCharm, Visual Studio, Colab, etc.), PEP style guide Python Basics -keywords, Importance of indentation, scripting, comments, DocString, Data-types in Python. Variables in Python -Rules of declaration and usage, Typecasting Operators in Python -Assignment, Logical, Arithmetic etc., Taking User Input
UNIT-II	
2	Conditional Statements -If else and Nested If else and elif. Collections -List, Tuple, Sets and Dictionary(within-built methods) Loops -For, While and Nested loops, loops with else, break and continue String Manipulation -Indexing, Slicing,etc.,Functions and Methods, F-string.
UNIT-III	
3	User Defined Functions -Defining, Calling, Types of Functions & Arguments, pass. Importing Modules -Math Module, Random module etc., Aliasing module names. Additional -Taking help in Python, List in gall methods, magic commands etc.
UNIT-IV	
4	File Management -open, close, read, write, append (on text files). Text files: reading/writing text and numbers from/to a file; creating and reading a formatted file (csv or tab-separated).
Course Outcomes:	
1	Implement a given algorithm as a computer program in python language with the understanding Of hardware components and memory utilization.

2	Able to use standard programming constructs: repetition, selection, functions, composition, Modules and different data types.
3	Adapt and combine standard algorithms to solve a given problem (includes numerical as well As non-numerical algorithms) and to debug the program written in python language.

Suggested/Reference Books:	
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1	Learning Python by MarkLutz,5 th edition
2	Python cook book, by David Beazley,3 rd Edition
3	Python Essential Reference, by David Beazley,4 th edition

B. Sc. (Data Analytics)
SEMESTER-II

Course Name	Lab I: (Data Structures)
Course Code	BDA-125P
Credits(L-T-P)	1(0-0-1)
Total Marks	25
Practical Marks	19
Internal Assessment	06

Practical Based on Data Structures.

Course Outcomes:	
1	Comprehend concepts related to write algorithms/pseudo code.
2	Design programs involving decision control statements, loop control statements, case control structures, arrays, strings, stacks, queues using array and linked list, Tree structure implementation.
3	Comprehend the concepts of linear and Non-Linear data structures.

B. Sc. (Data Analytics)

SEMESTER-II

Course Name	Lab II (Programming using Python)
Course Code	BDA-126P
Credits(L-T-P)	1 (0-0-1)
Total Marks	25
Practical Marks	19
Internal Assessment	06

Practical based on Python

Course Outcomes:	
1	Implement a given algorithm as a computer program in python language with the understanding of hardware components and memory utilization.
2	Able to use standard programming constructs: repetition, selection, functions, composition, Modules and different data types.
3	Adapt and combine standard algorithms to solve a given problem (includes numerical as well As non-numerical algorithms) and to debug the program written in python language.

B. Sc. (Data Analytics)
Syllabus for the batch from year 2024 to year 2028

SEMESTER-II
COMMUNICATION SKILLS IN ENGLISH
Code: BCSE-1222

L	T	P	Credits
3	0	1	4

Time: 3 Hours
Max. Marks: 100

Theory: 60
Practical: 15
Internal Assessment: 25

Suggested Pattern of Question Paper:

The question paper will be divided into two sections. Section A will consist of Twelve(12) questions of One(1) mark each. Section B will consist of Six questions of Eight(8) marks each. There will be internal choice wherever possible.

Section A

1. Do as directed
Tenses and Change of voice

(12X1=12Marks)

Section B

1. **Listening Skills:** Barriers to listening; effective listening skills; feedback skills.
2. **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.
3. Drafting of a short speech on a given topic.
4. Transcoding (given dialogue to prose or given prose to dialogue).
5. Taking notes on a speech/lecture/telephonic conversations .
6. Translation from Vernacular (Punjabi/ Hindi) to English (Paragraph)

(6X8=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 knowledge of the latest technology related to communication skills.
- V: To provide knowledge of multifarious opportunities in the field of this programme.

Course Contents:

1. **Listening Skills:** Barriers to listening; effective listening skills; feedback skills, attending telephone calls; note taking.

Activities:

a) Listening exercises – Listening to conversation, speech/ lecture and taking notes.

2. 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, situation based Conversation in English; essentials of Spoken English

Activities:

a) Conversation; dialogue and speech

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

c) Interviews and group discussion

Recommended Books:

1. *Oxford Guide to Effective Writing and Speaking* by John Seely.

2. *The Written Word* by Vandana R Singh, Oxford University Press

3. *Murphy's English Grammar* (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 Oral 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. (5 Marks)

2. Group Discussion. (5 Marks)

3. Mock Interview (5 Marks)

B. Sc. (Data Analytics)
Syllabus for the batch from year 2024 to year 2028

SEMESTER-II

Punjabi (Compulsory)-2

ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)-2

Credit & Marks Distribution and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam
			L	T	P	Theory	IA	
ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ)-2 BHPB-1201	60	4	4	0	0	75	25	3 Hours

<p>ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective</p> <ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪੈਦਾ ਕਰਨਾ। ਆਲੋਚਨਾਤਮਕ ਰੁਚੀਆਂ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਦਫਤਰੀ ਅਤੇ ਘਰੇਲੂ ਚਿੱਠੀ ਪੱਤਰ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ। ਭਾਸ਼ਾਈ ਗਿਆਨ ਵਿਚ ਵਾਧਾ ਕਰਨਾ। 	<p>ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)</p> <ul style="list-style-type: none"> ਉਸ ਅੰਦਰ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪ੍ਰਫੁੱਲਿਤ ਹੋਣਗੀਆਂ। ਉਸ ਅੰਦਰ ਸਾਹਿਤ ਸਿਰਜਣਾ ਦੀ ਸੰਭਾਵਨਾ ਵਧੇਗੀ। ਵਿਦਿਆਰਥੀ ਚਿੱਠੀ-ਪੱਤਰ ਦੀ ਲਿਖਣ ਸ਼ੈਲੀ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ। ਉਹ ਭਾਸ਼ਾਈ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ।
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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 ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜ਼ਮੀ 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।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਵਾਰਤਕ ਦੇ ਰੰਗ, (ਨਿਬੰਧ ਅਤੇ ਰੇਖਾ-ਚਿਤਰ) (ਸੰਪਾਦਕ) ਡਾ. ਮਹਿਲ ਸਿੰਘ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸਨਜ਼, ਅੰਮ੍ਰਿਤਸਰ।

(ਨਿਬੰਧ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਵਿਸ਼ਾ-ਵਸਤੂ। ਰੇਖਾ-ਚਿਤਰ ਭਾਗ ਵਿਚੋਂ ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

ਭਾਗ-ਦੂਜਾ

ਪੰਜਾਬ ਦੇ ਮਹਾਨ ਕਲਾਕਾਰ (ਬਲਵੰਤ ਗਾਰਗੀ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

(ਸਤੀਸ਼ ਗੁਜਰਾਲ ਤੋਂ ਸੁਰਿੰਦਰ ਕੌਰ ਤਕ)

(ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ/ਨਾਇਕ ਬਿੰਬ)

ਭਾਗ-ਤੀਜਾ

(ੳ) ਦਫਤਰੀ ਚਿੱਠੀ ਪੱਤਰ

(ਅ) ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ

ਭਾਗ-ਚੌਥਾ

(ੳ) ਸ਼ਬਦ-ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ-ਰਚਨਾ - ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਮੁਢਲੇ ਸੰਕਲਪ

(ਅ) ਸ਼ਬਦ-ਸ਼੍ਰੇਣੀਆਂ

B. Sc. (Data Analytics)
Syllabusforthebatchfromyear2024toyear2028

SEMESTER-II

Basic Punjabi -2

ਮੁਢਲੀ ਪੰਜਾਬੀ-2

(In Lieu of Compulsory Punjabi)

Credit & Marks Distribution and Pre-Requisites of the Course

Course title & Code	Total Teaching Hours	Total Credits/Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam
			L	T	P	Theory	IA	
ਮੁਢਲੀ ਪੰਜਾਬੀ-2 BPBI-1202	60	4	4	0	0	75	25	3 Hours

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)
<ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀ ਅੰਦਰ ਸ਼ਬਦ ਬਣਤਰ ਦੀ ਸਮਝ ਵਿਕਸਤ ਕਰਨਾ। ਵਿਦਿਆਰਥੀ ਨੂੰ ਸ਼ਬਦ ਪ੍ਰਕਾਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਦਾਨ ਕਰਨਾ। ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਕ ਪ੍ਰਬੰਧ ਸਬੰਧੀ ਗਿਆਨ ਕਰਾਉਣਾ। ਸਿਖਲਾਈ ਤੇ ਅਭਿਆਸ ਦੁਆਰਾ ਪੰਜਾਬੀ ਸ਼ਬਦ ਭੰਡਾਰ ਵਧਾਉਣਾ। 	<ul style="list-style-type: none"> ਉਹ ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਕੇ ਭਾਸ਼ਾਈ ਗਿਆਨ ਨੂੰ ਵਿਕਸਿਤ ਕਰਨਗੇ। ਪੰਜਾਬੀ ਸ਼ਬਦ-ਰਚਨਾ ਸਬੰਧੀ 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 ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੂਸਰੇ ਅਤੇ ਤੀਸਰੇ ਭਾਗ ਵਿਚ, ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਅਤੇ ਦੂਸਰੇ ਭਾਗ ਵਿਚੋਂ 8-8 ਅੰਕਾਂ ਦੇ 3-3 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ 2-2 ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਇਸੇ ਤਰ੍ਹਾਂ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚੌਥੇ ਭਾਗ ਵਿਚ 4-4 ਅੰਕਾਂ ਦੇ 5 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 4 ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਭਾਗ ਪੰਜਵੇਂ ਵਿਚ 8-8 ਅੰਕਾਂ ਦੇ 3 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨ੍ਹਾਂ ਵਿਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ 2 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

**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

B. Sc. (Data Analytics)
Syllabus for the batch from year 2024 to year 2028

SEMESTER-II

PUNJAB HISTORY & CULTURE(C321TO1000A.D.)

(Special Paper in lieu of Punjabi compulsory)

(For those students who are not domicile of Punjab)

Course Code: BPHC-1204

Credit Hours (per week):04

L- T- P

4-0-0

Time: 3Hours

Theory: 75

Total Marks: 100

Internal Assessment: 25

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 atleast 50 percent 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 8questions, two from each Unit. The candidate will attempt 4 questions selecting one from each Unit in about 1000 words. Each question will carry15 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 understudy.

Unit-I

1. The Punjab under Chandra gupta 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 7th century to 1000 AD.
- CO-4 Understand socio-cultural history of the Punjab from 7th century to 1000 AD.
- CO-5 Analyse language, literature, art and architecture of Ancient Punjab.

B. Sc. (Data Analytics)

SEMESTER-II

Skill Enhancement Course

ਪੰਜਾਬੀ ਵਿਚ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ

Creative Writing in Punjabi

SEC-124

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

Course title & Code	Total Teaching Hours	Total Credits/ Hours per week	Credit distribution			Total Marks 25		Duration of Course	Time Allowed in Exam
			L	T	P	Th	IA		
ਪੰਜਾਬੀ ਵਿਚ ਸਿਰਜਨਾਤਮਕ ਲੇਖਣ SEC-124	30	1	2	0	0	19	06	30 Hours	3 Hours

<p>ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objectives (Cos)</p> <ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਹਾਣੀ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਵਿਤਾ ਅਤੇ ਕਹਾਣੀ ਦਾ ਸਿਰਜਨਾਤਮਕ ਹੁਨਰ ਪੈਦਾ ਕਰਨਾ। 	<p>ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)</p> <ul style="list-style-type: none"> ਵਿਦਿਆਰਥੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਹਾਣੀ ਬਾਰੇ ਜਾਣੂ ਹੋਣਗੇ। ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ ਕਹਾਣੀ ਦਾ ਸਿਰਜਨਾਤਮਕ ਹੁਨਰ ਪੈਦਾ ਹੋਵੇਗਾ।
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ਅੰਕ-ਵੰਡ ਅਤੇ ਪ੍ਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਭਾਗ ਆਧਾਰ 'ਤੇ ਪ੍ਰਸ਼ਨ-ਪੱਤਰ ਦੇ ਦੋ ਭਾਗ ਬਣਾਏ ਜਾਣਗੇ। ਪਹਿਲੇ ਭਾਗ ਵਿੱਚ 01-01 ਅੰਕ ਦੇ 04 ਬਹੁ-ਵਿਕਲਪੀ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਦੂਸਰੇ ਭਾਗ ਵਿਚ 5-5 ਅੰਕਾਂ ਦੇ 5 ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ, ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਕੋਈ 03 ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ।

ਨੋਟ: 06 ਅੰਕਾਂ ਦੀ ਇੰਟਰਨਲ ਅਸੈਸਮੈਂਟ ਅਸਾਈਨਮੈਂਟ ਦੇ ਅਧਾਰ 'ਤੇ ਹੋਵੇਗੀ।

ਪਾਠ-ਕ੍ਰਮ

ਭਾਗ-ਪਹਿਲਾ

ਨਿੱਕੀ ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਪ੍ਰਕਿਰਤੀ

(ੳ) ਨਾਵਲ, ਕਹਾਣੀ ਅਤੇ ਨਿੱਕੀ ਕਹਾਣੀ: ਅੰਤਰ ਨਿਖੇੜ

(ਅ) ਨਿੱਕੀ ਕਹਾਣੀ ਦੇ ਤੱਤ : ਗੋਚ, ਚਰਿਤ੍ਰ-ਚਿਤ੍ਰਣ, ਵਾਰਤਾਲਤਪ, ਵਾਤਾਵਰਣ, ਭਾਸ਼ਾ-ਸ਼ੈਲੀ ਅਤੇ ਉਦੇਸ਼।

(ੲ) ਕਹਾਣੀ ਕਿਵੇਂ ਸਮਝੀਏ ਤੇ ਲਿਖੀਏ?

ਭਾਗ-ਦੂਜਾ

ਅਭਿਆਸ/ਅਸਾਈਨਮੈਂਟ

(ੳ) ਕਵਿਤਾ

(ਅ) ਨਿੱਕੀ ਕਹਾਣੀ

B. Sc. (Data Analytics)
Syllabus for the batch from year 2024 to year 2028

SEMESTER-II

Course Code: ZDA121

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

Credithrs/wk.:1

Time: 3 Hours

Max.Marks:25

Instructions for the Paper Setters:

- 1) There will be two sections A and B.
- 2) Section A is compulsory and will be of 5 marks consisting of 8 short answer type questions carrying 1mark each covering the whole syllabus. The candidates are required to attempt 5 questions out of 8 short answer type questions. The answer should not exceed 50 words.
- 3) Candidates shall be required to attempt 4 questions from Section B, selecting one question from each unit and each question carries 5 marks. 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 know how about various legislation and Acts against drug abuse.

UNIT-I

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

UNIT-II

School: Counselling, 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. 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.
4. Jasjit Kaur Randhawa & Samreet Randhawa, "Drug Abuse Problem, Management & Prevention", KLS, ISBN No. 978-81-936570-8-9, (2019).
5. Kapoor. T. (1985) Drug epidemic among Indian Youth, New Delhi: Mittal Pub.
6. Modi, Ishwar and Modi, Shalini (1997) Drugs: Addiction and Prevention, Jaipur: Rawat Publication.

7. Sain, Bhim 1991, Drug Addiction Alcoholism, Smoking obscenity New Delhi: Mittal Publications.
8. Sandhu, Ranvinder Singh, 2009, Drug Addiction in Punjab: A Sociological Study. Amritsar. Guru Nanak Dev University.
9. Singh, C.P. 2000. Alcohol and Dependence among Industrial Workers: Delhi: Shipra.
10. Sussman, Sand Ames, S.L. (2008). Drug Abuse: Concepts, Prevention and Cessation, Cambridge University Press.
11. World Drug Report 2011, 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 systems 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.