FACULTY OF SCIENCES

SYLLABUS FOR THE BATCH FROM THE YEAR 2023 TO YEAR 2026

Programme Code: BSCS

Programme Name: B.Sc. Computer Science (Semester I-II)

(SYLLABUS)

Examinations: 2023-24

Khalsa College, Amritsar

(An Autonomous College)

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S.No.	PROGRAMME OBJECTIVES
PROGRAMME: B.Sc. COMPUTER SCIENCE PROGRAMME Code: BSCS	

PROGRAMME OBJECTIVE: The objectives of the programme are:
1. To teach fundamental concepts of sciences and its societal applications through a 3-year program.
2. To provide the key knowledge and laboratory resources to prepare students for careers as professionals in the field of science.
3. To equip students with advanced knowledge, research training and experience in specific areas of science. These skills will prepare the successful graduate for careers in government, academia, or industry.

PROGRAMME SPECIFIC OUTCOMES (PSOS):

PSO-1	Understand the fundamental concepts in physics, Computer Science & mathematics and develop ideas based on them.
PSO-2	Possess knowledge on topics in pure physics, computer science & mathematics, empowering her/him to pursue higher degrees at reputed academic institutions.
PSO-3	Demonstrate problem-solving skills, innovative thinking & creativity.
PSO-4	Be motivated towards research in physics, computer science & mathematics and related fields.
PSO-5	Students become eligible to serve in DRDO, defence, public sector and private Sector.

ELIGIBILITY: A candidate who has passed 10+2 Non medical examination from recognized board or any other examination considered equivalent there to be by the GNDU with 40% marks is eligible to apply (subject to change).
COURSE DURATION: 3 Years

COURSE SCHEME											
SEMESTER – I											
Course Code	**Course Name**	**Hours /Week**	**Credits**			**Total Credits**	**Max. Marks**				**Page No.**
			L	**T**	**P**		**Th**	**Pr**	**IA**	**Total**	
PHY111A	MECHANICS	3	2	1	0	3	56	-			5-6
PHY111B	ELECTRICITY AND MAGNETISM	3	2	1	0	3	56	-	50	200	7-8
PHY111P	PRACTICAL	4	0	0	2	2	-	38			9-10
MAT-111A	Algebra	4	3	1	-	4	75	-			11-12
MAT-111B	Calculus and Trigonometry	4	3	1	-	4	75	-	50	200	13-14
CSC-111A	Computer Fundamental & Information Technology	3	2	1	0	3	56			200	15-16
CSC-111B	Programming Using C	3	2	1	0	3	56		50		17-18
CSC-111C	Practical Paper A+B	4	0	0	2	2		38			19-20
BHPB-1101	ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ –I	4	4	0	0	4	75		25	100	21-22
BPBI-1102 BPHC-1104	ਮੁੱਢਲੀ ਪੰਜਾਬੀ–I (In Lieu of Compulsory Punjabi) or PUNJAB HISTORY & CULTURE**(For those students who are not domicile of Punjab)**	4	4	0	0	4	75		25	100	23-24 25-26
BENC-1105	English (Compulsory)	4	4	0	0	4	75		25	100	27-28
ZDA-111	DRUG ABUSE	2	2	0	0	2	50		-	50	29-30
						34				900	

COURSE SCHEME											
SEMESTER – II											
Course Code	Course Name	Hours /Week	Credits			Total Credits	Max. Marks				Page No.
			L	T	P		Th	Pr	IA	Total	
PHY121A	RELATIVITY AND ELECTROMAGNETISM	3	2	1	0	3	56	-	50	200	31-32
PHY121B	VIBRATION AND WAVES	3	2	1	0	3	56	-			33-34
PHY121P	PRACTICAL	4	0	0	2	2	-	38			35-36
MAT-121A	Calculus and Differential equations	4	3	1	-	4	75	-	50	200	37-38
MAT-121B	Calculus	4	3	1	-	4	75	-			39-40
CSC-121A	**Computer Science- A** (Computer Oriented Numerical and Statistical Methods using C++)	3	2	1	0	3	56	-	50	200	41-42
CSC-121B	**Computer Science- B** (Programming in C++)	3	2	1	0	3	56	-			43-44
CSC-121P	**Practical Paper A+B**	4	0	0	2	2	-	38			45-46
BHPB-1201	ਪੰਜਾਬੀ ਲਾਜ਼ਮੀ –II	4	4	0	0	4	75	-	25	100	47-48
BPBI-1202 BPHC-1210	ਮੁੱਢਲੀ ਪੰਜਾਬੀ–II (In Lieu of Compulsory Punjabi)or PUNJAB HISTORY & CULTURE.(**For those students who are not domicile of Punjab**)	4	4	0	0	4	75	-	25	100	49-50 51-52
BENC-1205	English (Compulsory)	4	4	0	0	4	75	-	25	100	53-54
ZDA-121	DRUG ABUSE	2	2	0	0	2	50		-	50	55-56
						34				900	

PHY111A
MECHANICS
(THEORY)

Teaching Hours (per week): 3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3.   **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Non-programmable Scientific calculator is allowed.**

Course Objectives: The purpose of the course is to provide the basic information about co-ordinate system and motion of particles in it, to understand the conservation laws and also to determine the difference between elastic and inelastic collisions. It includes applications of central force to the stability of circular orbits, Kepler's laws of planetary motion, orbital precession and Rutherford scattering, dynamics of rotating objects i.e. rigid bodies, angular velocity, the moment of inertia, the motion of rigid bodies and Euler equations. It also helps to understand the differences between types of forces and the inverse square force field.

Course Contents:
UNIT–I
Cartesian, **Plane polar** and spherical polar co–ordinate systems, **Position vector,** area, volume, velocity and Acceleration in these systems. **unit vectors in plane polar and spherical polar coordinates**, Solid angle, Properties of space and time, conservative force, **Homogeneity of space and time, isotropy of space and related** conservation laws.

UNIT-II
Various forces in Nature (Brief introduction), Centre of mass, **internal forces, central forces**, equation of motion under central force, reduction of two body problem to an equivalent one body problem, **Areal velocity, equation of motion of reduced mass in Plane polar coordinates, conservation of energy of particle in central force**, differential equation of t h e orbit and turning points.Kepler Laws of planetary motion.

UNIT–III
Inertial and Non-Inertial frame of reference. Non Inertial frames, rate of change of position vector in moving and rotating co-ordinate system, Coriolis force, **Horizontal and Vertical components of Coriolis force on the surface of earth, Effect of Coriolis force on a freely falling body**, geographical consequences of coriolis force qualitative analysis of Foucault pendulum.

UNIT–IV

Elastic collision in Lab and C.M. system, velocities, angles and energies, **concept of scattering, differential** cross section of elastic scattering, Rutherford scattering. Rigid Body, **centre of mass of continuous bodies, qualitative analysis of translational and rotational motion of rigid body with fixed axis; principal axis of a rigid body**, equation of motion for rotating rigid body, elementary gyroscope.

Books Prescribed:

1. Mechanics, Berkeley Vol.–I by C. Kittle.
2. Mechanics, H.S. Hans & S.P. Puri.

Sr. No.	On completing the course, the students will be able to:
CO1	Learn the laws of motion reference frames, and its applications
CO2	Understand the application of central force to the stability of circular orbits, Kepler's laws of planetary motion, Orbital Precession and Rutherford scattering.
CO3	Understand the dynamics of rotating objects i.e. rigid bodies, angular velocity, the moment of inertia, parallel axis theorem, the inertia tensor, the motion of rigid bodies. non-inertial frames: pseudo forces, examples involving the centrifugal force and coriolis force
CO4	Develop understanding of special theory of relativity and its applications to understand length contraction, time dilation, and relativistic addition of velocities, conservation of momentum and variation of mass, relativistic momentum, relativistic energy, and mass energy relation.
CO5	Get information about the basics of material properties like, elasticity, elastic constants and their relation, torsion of a cylinder, bending of a beam, cantilever, beam supported at its ends and loaded in the middle.

B.Sc. Computer Science SEMESTER–I
PHY111B
ELECTRICITY AND MAGNETISM
(THEORY)

Teaching Hours (per week): 3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3.   **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Non-programmable Scientific calculator is allowed.**

Course Objectives: The objective of this course is to apply knowledge of electricity and magnetism to explain natural physical processes and related technological advances and use of calculus along with physical principles to effectively solve problems encountered in everyday life.

Course Contents:

UNIT–I
Basic ideas of Vector Calculus Gradient, Divergence, curl and their physical significance. Laplacian and Poisson's Equations (Qualitative idea). Coulomb's Law for point charges and continuous distribution of charges. Electric field due to dipole and sheet of charge. Electric flux, Gauss's Law and its applications. Gauss's divergence theorem and differential form of Gauss's Law.

UNIT–II
Work and potential difference. Potential difference as line integral of field. Electric potential due to a point charge, a group of point charges, dipole, long uniformly charged wire and charged disc. Stoke's theorem, curl E=0, Electric fields as gradient of scalar potential. Calculation of E due to a point charge and dipole from potential. Concept of electrical images (Qualitative idea), Current and current density, equation of continuity. Microscopic form of Ohm's Law ($J=\sigma E$) and conductivity, Failure of Ohm's Law.

UNIT–III
Dielectrics, Polar and non-polar molecules, Polarization of Dielectric, Polarization vector, Atomic Polarizability, Dielectric Constant, Capacity of a capacitor with dielectric, Electric Susceptibility, Relation between Dielectric constant and Electric susceptibility, Gauss law in Dielectric, Displacement Vector, Relation between E, P and D. Energy stored in Capacitor having Dielectric Medium, Energy Density of a Dielectric Medium.

UNIT–IV

Field of a point charge moving with constant velocity. Interaction between moving charges and force between parallel currents. Behaviour of various substances in magnetic field. Definition of M and H and their relation to free and bound currents. Permeability and susceptibility and their interrelationship. Qualitative idea of diamagnetism, paramagnetism and ferromagnetism.

Books Prescribed:

1. Fundamentals of Electricity and Magnetism by Arthur F. Kipp.
2. Electricity and Magnetism, Berkeley Physics Course, Vol. II by E.M. Purcell.
3. Introduction to Classical Electrodynamics by David Griffith.
4. Electricity & Magnetism-T.S. Bhatia and Gurpreet Singh, Vishal Publications

Sr. No.	On completing the course, the students will be able to:
CO1	Apply knowledge on electricity and magnetism to explain natural physical processes and related technological advances.
CO2	Understand the use of the Stoke's and Gauss Divergence theorems for solution of different physics problems.
CO3	Explain the concept of electric current and related concepts.
CO4	Understand about electric current and related concepts.
CO5	Explain the phenomenon of magnetism, types of magnetic materials and their properties.

PHY111P
(PRACTICAL)

Teaching Hours (per week):4
Total Credit:2
Credits:LTP:002
Time: 3 Hours   **Maximum Marks: 38**
Pass Marks: 35%

General Guidelines for Practical Examination:
I. The distribution of marks is as follows: **38 Marks**
i) One experiment: **15 Marks**
ii) Brief Theory : 8 **Marks**
iii) Viva–Voce: **10 Marks**
iv) Record (Practical file): **5Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session.
Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment be allotted to more than three examinee in any group.
Course Objectives: Course objective of this subject is to follow the pragmatic way of learning and describe the basic experimental skills in the students. They will be able to demonstrate and able to evaluate the resistance, modulus of rigidity, torque and moment of inertia of body experimentally. They will also learn about the energy consumption by demonstrating the energy meter experiment.
Course Contents:
1.   To determine low resistance with Carey Fosters Bridge.
2.   To determine the resistance and specific resistance of copper with the help of Kelvin's double bridge.
3.   To study the variation of resistance of a filament of a bulb with its temperature.
4.   Capacitance by flashing and quenching of a neon lamp.
5.   Measurement of Capacitance, determination of permittivity of a medium air and relative permitivity by de–Sauty's bridge.
6.   To determined I using Anderson Bridge.
7.   Exercise on fitting of given data to straight line and calculation of probable error.
8.   To study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass).
9.   To establish relationship between torque and angular acceleration using fly wheel.
10.   To find the moment of inertia of a flywheel.
11.   Study of bending of beams and determination of young's Modulus.
12.   Determination of Poissons or rubber plastic.
13.   To find young's modulus, modulus of rigidity & Poisson ratio by Searle's method.
14.   To study flow of water through capillary tubes of different length and area of cross section of (at least two each) and calculate coefficient of viscosity.
15.   To determine energy transfer, coefficient of restitution and verify laws of conservation of linear momentum and kinetic energy in elastic collisions using one dimensional collisions of hanging spheres.
16.   **To study the RL and RC circuits.**
17.   Energy meter.

18. **To study the charging and discharging of capacitor.**

Books Prescribed:

1. Practical Physics Vol. I, T.S. Bhatia, Gursharan Kaur, Iqbal Singh, Vishal Publications.
2. Practical Physics, C.L. Arora, S. Chand & Co.

Sr. No.	On completing the course, the students will be able to:
CO1	Determine low resistance with Carey Fosters Bridge.
CO2	Study the dependence of moment of inertia on distribution of mass (by noting time periods of oscillations using objects of various geometrical shapes but of same mass).
CO3	Find Moment of Inertia and establish relationship between torque and angular acceleration using fly wheel.
CO4	Determine the resistance and specific resistance of copper with the help of Kelvin's double bridge.
CO5	Understand the measure of Capacitance, determination of permittivity of a medium air and relative permitivity by de–Sauty's bridge.

B.Sc. Computer Science SEMESTER–I
MATHEMATICS
COURSE CODE: MAT-111A
COURSE TITLE: Algebra

Teaching Hours (per week): 4
Total Credit: 4
Credits:LTP:310
Time: 3 Hours   **Total Hours: 60**
Maximum Marks: 75
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **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 candidate will have to attempt any 6 questions in this section.**
3.   **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 candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Teaching time for this paper would be six periods per week.**

COURSE OBJECTIVES:
Students will be able to solve problems based on matrix algebra, vector spaces, eigen values and eigen vectors, Cardon's and Descarte's methods of solving a system of equations and inequalities.

COURSE CONTENT:
Unit-I
Linear independence of row and column vectors. Row rank, Column rank of a matrix, Equivalence of column and row ranks, Nullity of a matrix, Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations. Theorems on consistency of a system of linear equations.
Unit-II
Eigen values, Eigen vectors, minimal and the characteristic equation of a matrix. Cayley Hamilton theorem and its use in finding inverse of a matrix. Quadratic Forms, quadratic form as a product of matrices. The set of quadratic forms over a field.
Unit-III
Congruence of quadratic forms and matrices. Congruent transformations of matrices. Elementary congruent transformations. Congruent reduction of a symmetric matrix. Matrix Congruence of skew–symmetric matrices. Reduction in the real field. Classification of real quadratic forms in variables. Definite, semi–definite and indefinite real quadratic forms. Characteristic properties of definite, semi–definite and indefinite forms.
Unit-IV
Relations between the roots and coefficients of general polynomial equation in one variable. Transformation of equations and symmetric function of roots, Descarte's rule of signs, Newton's Method of divisors, Solution of cubic equations by Cardan method, Solution of biquadratic equations by Descarte's and Ferrari's Methods.

BOOKS PRESCRIBED:
1. K.B. Dutta: Matrix and Linear Algebra, Prentice Hall of India Pvt. Ltd., New Delhi (2002).
2. H.S. Hall and S.R. Knight: Higher Algebra, H.M. Publications, 1994.
3. Chandrika Parsad: Text book on Algebra and Theory of Equations, Pothishala Pvt. Ltd., Allahabad.

COURSE OUTCOMES: On completing the course, the students will be able to:
- solve problems based on matrices, vector spaces, eigen values and eigen vectors,
- recognize consistency and inconsistency of linear equations.
- Understand the relation between roots and coefficients.

B.Sc. Computer Science SEMESTER–I
MATHEMATICS
COURSE CODE:MAT-111B
COURSE TITLE: Calculus and trigonometry
Teaching Hours (per week): 4
Total Credit: 4
Credits:LTP:310
Time: 3 Hours   **Total Hours: 60**
Maximum Marks: 75
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **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 candidate will have to attempt any 6 questions in this section.**
3.   **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 candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Teaching time for this paper would be six periods per week.**
COURSE OBJECTIVES:
•Calculus has widespread applications in science, economics, and engineering and can solve many problems for which algebra alone is insufficient.
•Trigonometry is a branch of mathematics that studies relationships between side lengths and angles of triangles.
•Students will apply calculus and Trigonometry in areas such as geodesy, surveying, celestial mechanics, and navigation.
•Students will learn relationships to other branches of mathematics, in particular complex numbers, infinite series, logarithms and calculus.

COURSE CONTENT:
Unit-I
Real number system and its properties, lub, glb of sets of real numbers, limit of a function, Basic properties of limits, Continuous functions and classification of discontinuities, Uniform continuity.
Unit-II
Differentiation of hyperbolic functions, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's theorem with various forms of remainders, Indeterminate forms.

Unit-III
De–Moivre's Theorem and its applications, circular and hyperbolic functions and their inverses.

Unit-IV
Exponential and Logarithmic function of complex numbers, Expansion of trigonometric functions, Gregory's series, Summation of series.

BOOKS PRESCRIBED:

1. N. Piskunov: Differential and Integral Calculus, Peace Publishers, Moscow.
2. Gorakh Prasad: Differential Calculus, Pothishala Pvt. Ltd., Allahabad.
3. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999.
4. Shanti Narayan and P.K. Mittal: Differential Calculus, S Chand & Company.
5. Shanti Narayan and P.K. Mittal: Real Analysis, S Chand & Company.
6. Rajinder Pal Kaur:Calculus, First world Publication, Ludhiana.

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

- understand the relationships between side lengths and angles of triangles.
- understand Calculus as a major part of contemporary mathematics education.
- Have knowledge in applications in science, economics, and engineering and students can solve many problems for which algebra alone is insufficient.
- Calculate the limit and examine the continuity of a function at a point.
- Develop intricate relationships to other branches of mathematics, in particular complex numbers, infinite series, logarithms and calculus.

B.Sc. Computer Science SEMESTER–I
CSC-111A
Computer Fundamental & Information Technology
(THEORY)

Teaching Hours (per week):3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1.   There will be five sections.
2.   Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.
3.   Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.
4.   Medium of Examination is English Language.

Course Objectives:

1.	This course will familiarize students with basics of computer, its components.
2.	Students will learn various peripheral devices.
3.	Student will understand different kind of operating systems, networks and role of information systems.

UNIT–I
Introduction: Data, information, data v/s information, definition of computer, Characteristics, uses, block diagram of computer, hardware and software.
Input devices: keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera

UNIT–II
Output devices: monitor, printer, plotter.
Memory: Primary, Secondary memory, RAM, ROM, hard disks, optical disks.

UNIT-II
Data & Network Communication
Communication media: Twisted pair, Coaxial, Fibre optics, Wireless,Types & Topologies, Modems, Operating Systems, Functions and its types (Multiuser, Multitasking & Multiprogramming and their examples). Internet, uses and Applications

UNIT-IV
Information System: Introduction to IT & its components, Definition of Information systems, Computer based information systems, Management Information System and its types
References:

1.   Peter Norton, Introduction to Computers,. McGraw Hill.(2017) 7th edition.
2.   Ramesh Bangia,Computer Fundamental & information Technology,Firewall Media(2016),2nd Edition.
3   Deepak Bharihoke,Computer Fundamental & information Technology,Excel Books(2009),3rd Edition.
4.Anita Goel, Computer Fundamentals ,Pearson(2010)1st edition.
5.Effy Oz,Management Information System,Galgotia publisher(2008) 6th Edition

Course Outcomes:

Upon completion of the course, the students will be able to:

CO-1.	Bridge the fundamental concepts of computers with the present knowledge of the students.
CO-2.	Familiarize operating systems, peripheral devices, networking and internet.
CO-3.	Student will be able to identify the hardware and software concepts, input and output Units components of a computer system
CO-4.	Demonstrate different communication medias

B.Sc. Computer Science Semester – I
CSC-111B
Programming Using C
(THEORY)

Teaching Hours (per week): 3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3.   **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Medium of Examination is English Language.**

Course Objectives:

1.	The course is designed to provide complete knowledge of C language.
2.	To become familiar with the grammar and semantics of the C programming language.
3.	Students will be able to develop logics which will help them to create programs, applicationsin C.
4.	Also, by learning the basic programming constructs they can easily switch over to any otherlanguage in future.

UNIT–I
Programming Language C

Basics of C: Introduction to C, Applications and Advantages of C, Tokens, Types of Error

Data Types: Basic Data Types, User Defined Data Types, Operators and its types , Hierarchy of Operators.

UNIT–II
Data I/O Functions: Formatted & Unformatted I/O Functions.
Control Statements: Decision and Looping Statements

UNIT–III

Arrays: Definition, types, One Dimensional and Two-Dimensional Arrays, Strings and String functions.

Functions: User Defined & Library Function, methods of passing arguments

UNIT–IV

Storage Classes: auto, register, static, extern

Structure and Union: Introduction, defining a structure, declaring structure variables, accessing structure members.Difference between structure and union

References:
1.Byron Gottfried: *Programming with C*, Schaum's Outline (2018),4th edition.
2.Yashwant Kanetkar,*Let Us C*, BPB Publication(2017),14th Edition
3.Herbert Schildt,*The Complete Reference*,McGraw-Hill(2017)4th edition

Course Outcomes:

Upon completion of this course, the students will be able to:

CO-1.	Use the fundamentals of C programming in trivial problem solving
CO-2.	Identify solution to a problem and apply control structures and user defined functionsfor solving the problem
CO-3.	Demonstrate the use of Strings and string handling functions
CO-4.	Ability to work with arrays of complex objects.
CO-5.	Apply skill of identifying appropriate programming constructs for problem solving

CSC111P: Practical Paper A+B

Teaching Hours (per week): 4
Total Credit: 2
Credits:LTP:002
Time: 3 Hours   **Maximum Marks: 38**
Pass Marks: 35%

Course Objectives:

1.	Teach the fundamentals so students can efficiently use MS Word
2.	Provide a knowledge base for Computer Fundamentals & MS Word upon which you can build.
3.	Use real-world examples and procedures that will prepare you to be a skilled user of Computer & MS Word, MS Power Point & MS Excel.
4.	Provide hands-on use of Microsoft Office applications Word, Excel and Power Point. Completion of the assignments will result in MS Office applications knowledge and skills.
5.	To practice the fundamental programming methodologies in the C programming language via laboratory experiences. Microsoft Visual Studio is the programming environment that will used.
6.	To code, document, test and implement a well-structured, robust computer program using the C programming language.

Topics for Practical: MS–Word 2010 , MS Power Point 2010

Operational Knowledge and Implementation of programmes in C programming

Course Outcomes:

Upon completion of this course, the students will be able to:

CO-1.	Identify the applications of computer in daily life.
CO-2.	Understand the practical concepts of MSWord, MS Excel and MS PowerPoint.
CO-3.	Knowledge and understanding on successful completion of this subject the students have the ability to perform tools of MS Office.
CO-4.	Develop skills of working with MS Word, MS Powerpoint, MS excel.

CO-5.	Use the fundamentals of C programming in trivial problem solving.
CO-6.	Apply skill of identifying appropriate programming constructs for problem solving.
CO-7.	Apply skill of identifying appropriate programming constructs for problem Solving

B. A., B. A. Social Science, B. Sc. Medical, B. Sc. Non-Medical,
B. Com. (Hons.), B. Com. (R), BBA, B. Sc. Economics, B. Sc. Computer Science
Semester-I
Compulsory Course
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ

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			
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ BPBI-1101	60	4	4	0	0	75	25	3 Hours	Class 12th pass in any stream	Studied Punjabi up to 10th Standard or working knowledge of Punjabi Language

ਕੋਰਸ ਦਾ ਉਦੇਸ਼ Course Objective	ਪਾਠ-ਕ੍ਰਮ ਨਤੀਜੇ Course Outcomes (COs)
- ਵਿਦਿਆਰਥੀਆਂ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪੈਦਾ ਕਰਨ। - ਆਲੋਚਨਾਤਮਕ ਰੁਚੀਆਂ ਵਿਕਸਤ ਕਰਨਾ। - ਵਿਦਿਆਰਥੀ ਦਾ ਹੋਰ ਵਿਸ਼ਿਆਂ ਸੰਬੰਧੀ ਬੋਧ ਵਿਕਸਿਤ ਕਰਨਾ। - ਭਾਸ਼ਾਈ ਨੇਮਾਂ ਦੀ ਸਮਝ ਨੂੰ ਵਿਕਸਤ ਕਰਨਾ।	- ਵਿਦਿਆਰਥੀ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਵਿਕਸਤ ਹੋਣਗੀਆਂ। - ਵਿਦਿਆਰਥੀ ਦੀ ਸਾਹਿਤ ਸਿਰਜਨਾ ਦੀ ਸੰਭਾਵਨਾ ਵਧੇਗੀ। - ਵਿਦਿਆਰਥੀ ਹੋਰ ਵਿਸ਼ਿਆਂ ਦਾ ਗਹਿਨ ਅਧਿਐਨ ਕਰਨ ਦੇ ਕਾਬਲ ਹੋਵੇਗਾ। - ਵਿਦਿਆਰਥੀ ਭਾਸ਼ਾ ਦੇ ਵਿਆਕਰਨਿਕ ਪ੍ਰਬੰਧ 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 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।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ। 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/ਕਵਿਤਾ ਦਾ 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) ਪੈਰਾ ਰਚਨਾ
(ਅ) ਪੈਰਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ।

ਭਾਗ–ਚੌਥਾ

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

B. A., B. A. Social Science, B. Sc. Medical, B. Sc. Non-Medical,
B. Com. (Hons.), B. Com. (R), BBA, B. Sc. Economics, B. Sc. Computer Science
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	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 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 ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜਮੀ 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। ਇਸ ਪੇਪਰ ਦੇ ਕੁੱਲ ਅੰਕ 75+25=100 ਹਨ।

ਪਾਠ-ਕ੍ਰਮ
ਭਾਗ-ਪਹਿਲਾ

(ੳ) ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ:
   ਨਾਮਕਰਨ 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

B.Sc. Computer Science SEMESTER–I
BPHC-1104
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)
B. A.; B.A. (SS); B. A. (Hons. – English); B. Com. (Hons., R, Ac. & Finance); B. Sc. /Bio-Tech./Comp. Sc./Eco./FD/Food Sc./IT/Med./N.Med.; B.Sc. (Hons. –Botany, Chemistry, Mathematics, Physics, Zoology); B. of Mult.; B. in Int. & Mob. Tech.; BBA;BCA;BJMC; B. Voc. (Software Development, Theatre and Stage Craft, Food Processing, Textile Design & Apparel Technology)
SEMESTER–I
PUNJAB HISTORY & CULTURE (From Earliest Times to C 320 BC)(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)

Teaching Hours (per week):4
Total Credit: 4
Credits:LTP:400
Total Hours: 60
Time: 3 Hours
Maximum Marks: 100
(Theory Marks: 75+Internal Assessment: 25)
Pass Marks: 35%

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 andreligious 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:-
 L. Joshi (ed), *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3rd edition)
 L.M. Joshi and Fauja Singh (ed*), History of Punjab*, Vol. I, Patiala 1977.
 Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
 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. Computer Science SEMESTER–I
ENGLISH (COMPULSORY)
B.A./B.Com/B.Sc (Med/N. Med/C. Sc./Eco)/ BBA/BA (Social Science) B.Com (Hons.)
Code: BENC-1105

L	T	P	Credits
4	0	0	4

Teaching Hours (per week):4
Total Credit:4
Time: 3 Hours   **Max. Marks: 100**
Theory: 75
Internal Assessment: 25

Instructions for the Paper Setter and Distribution of Marks:
The question paper will consist of four sections and the distribution of marks will be as under:
Section A: 15 Marks
Section B: 20 Marks
Section C: 20Marks
Section D: 20 Marks

<div align="center">

Section–A

</div>

1. **Twenty (20)** Questions on the usage of grammar related to the prescribed units of *Murphy's English Grammar* will be set. The students will be required to attempt any **Fifteen (15)**

                                                                     (15X1= 15 Marks)

<div align="center">

Section–B

</div>

2. **EIGHT (8)** questions (four from each literary text) on theme, characterization, tone and style etc. will be set. The students will be required to attempt **any Five (5)** questions, choosing at least TWO from each prescribed text. The fifth question may be attempted from any prescribed text. The answer to each question should not exceed 15-20 sentences.

                                                                     (5X4=20 Marks)

<div align="center">

Section–C

</div>

3. **One** question with internal choice, from *Tales of Life,* will be set.

                                                                     (1X8 =8 Marks)

4. **One** question with internal choice, from *Prose for Young Learners,* will be set.

                                                                     (1X8 =8 Marks)

5. **Six(6)** words on vocabulary will be set from the prescribed texts. The students will be required to answer any **Four(4)**.   (4X1= 4 Marks)

<div align="center">

Section-D

</div>

6. A question requiring the students to write **a Paragraph** on **ONE** of the **TWO** given topics.

<div style="text-align: right">(1X6 = 6 marks)</div>

7. A question requiring the students to write an **APPLICATION** to the Head of an educational institution on **ONE** of the **TWO** given Topics.

<div style="text-align: right">(1X8=8 Marks)</div>

8. **Eight(8)** Isolated Sentences on Translation from English to Vernacular (Punjabi/ Hindi) will be set. The Students will be required to attempt any **Six(6).**

<div style="text-align: right">(6X1= 6</div>

Marks)

Course Objectives:
1. To read, interpret and write about a diverse range of texts in English.
2. To understand the prescribed texts analytically and critically.
3. To familiarise the students with the social, political, moral and cultural background of the prescribed texts.
4. To participate in the critical and cultural discourses of English.
5. To teach language and literature effectively with the support of ICT tools.
6. To become competent, committed, conscious, creative, and compassionate human beings.

Course Contents:
1) Stories at Sr. No. 1,2,3,5,6 from *Tales of Life*.
2) Essays at Sr. No. 1,2,3,5,6 from *Prose for Young Learners.*
3) Unit 1-25 from *Murphy's English Grammar.*

Texts Prescribed:
1. *Tales of Life* (Guru Nanak Dev University, Amritsar)
2. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)
3. *Murphy's English Grammar 4ᵗʰ Edition(by Raymond Murphy) CUP*

Course Outcomes:
The completion of this course enables students to:

1. appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu.

2. comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them.

3. understand fundamental grammatical rules governing tenses and make correct usage in their language.

4. write paragraphs on any given topic.

B.Sc. Computer Science SEMESTER–I
Course Code: ZDA111
Course Title- Drug Abuse: Problem, Management and Prevention
PROBLEM OF DRUG ABUSE
(Compulsory for all Under Graduate Classes)

Teaching Hours (per week):2
Total Credit: 2
Time: 3 Hours   **Maximum Marks: 50**
Pass Marks: 35%

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:

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

B.Sc. Computer Science SEMESTER–II
PHY121A
RELATIVITY AND ELECTROMAGNETISM
(THEORY)

Teaching Hours (per week):3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1. **There will be five sections.**
2. **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4. **Non-programmable Scientific calculator is allowed.**

Course Objectives: The aim of course is to understand the key observations and events that led to the development of Einstein's theory of special theory of relativity, Minkowski space; to understand the basics and applications of electromagnetism, LCR Circuits, Maxwell's equations, E.M. Waves; to understand the fundamental principles of special theory relativity, applications and possibilities; to understand the experimental basis of these fundamental principles and how this contributed to the subsequent development of fundamental physics.
Course Contents:

UNIT–I
Galilean transformations; Applications of Galilean transformations to mechanics and electromagnetism; Postulates of special theory of relatively; Lorentz transformations; observer and viewer in relativity; Relativity of simultaneity; Length **Contraction**; Time **dilation**; **Experimental evidence of time dilation; Velocity addition theorem**; Relativistic Doppler effect; Variation of mass with velocity; Mass–energy equivalence; Relativistic momentum & energy, their transformations; E in different frames of reference; Transformation equation of E and B from one frame to another.

UNIT–II
Space-time continuum; Concepts of Minkowski space; **Events, Interval between events: Space-like interval, Time-like interval, Light-like interval; Light cone; Concept of world line;** Four vector formulation; **Some important four vectors: Position four-vector, velocity four-vector, Four force (Minkowski force) etc.**
UNIT–III
Lorentz's force; Definition of Bio-Savart's Law and its application to long straight wire, circular current loop and solenoid; Ampere's Circuital law and its applications; Divergence and curl of

B; Vector potential–definition; current density–definition; Faraday's Law of EM induction; Displacement current; Mutual inductance; Reciprocity theorem; Self-inductance; L for solenoid; Coupling of Electrical circuits; LCR series and parallel circuit; Q–factor, Power consumed; Power factor.

UNIT–IV

Maxwell's equations their derivation and characterizations; E.M. waves; Wave equation in a medium having finite permeability and permittivity but with conductivity σ=0; Poynting vector; Impedance of a dielectric to EM waves; EM waves in a conducting medium and Skin depth; EM wave velocity in a conductor and anomalous dispersion; Response of a conducting medium to EM waves; Reflection and transmission of EM waves at a boundary of two dielectric media for normal and oblique incidence.

Books Prescribed:

1. A Primer of Special Theory of Relativity by P. L. Sardesai; New Age International Publisher.
2. EM Waves and Radiating Systems by Edward C. Jordan and K.G. Balmain.
3. Fields and Waves Electromagnetic by David K. Cheng.
4. Electricity & Magnetism-T.S. Bhatia and Gurpreet Singh, Vishal Publishing Co.
5. Relativity and Electromagnetism, T.S. Bhatia, Vishal Publishing Co.

Sr. No.	On completing the course, the students will be able to:
CO1	Discuss the key observations and events that led to the development of Einstein's theory of special relativity.
CO2	Explain the fundamental principles of special relativity and electromagnetism and the far-reaching connections between them.
CO3	Describe Maxwell equations and its physical consequences.
CO4	Describe the nature of electromagnetic wave and its propagation through different media and interfaces.
CO5	Discuss the experimental basis of these fundamental principles and how this contributed to the subsequent development of fundamental physics.

B.Sc. Computer Science SEMESTER–II
PHY121B
VIBRATION AND WAVES
(THEORY)

Teaching Hours (per week):3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   Total Hours: 45
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1. **There will be five sections.**
2. **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4. **Non-programmable Scientific calculator is allowed.**
   Course Objectives: The purpose of the course is to understand the physical characteristics of SHM and obtaining solution of the oscillator using differential equations, to calculate logarithmic decrement relaxation time and quality factor of a harmonic oscillator. This course provides information to understand the difference between simple harmonic vibrations of same frequencies and different frequencies, wave equation and to understand the significance of transverse waves and longitudinal waves, coupled mechanical as well as electrical oscillators.

Course Contents:
UNIT–I
Simply harmonic motion, energy of a SHO, **Variation of Kinetic energy and potential energy**, Compound pendulum. Torsional pendulum Electrical Oscillations, Vibrations of a mass on string, superposition of two perpendicular SHM of same period and of period in ratio 1:2 **(Graphical and Analytical Method)**.

UNIT–II
Damped and undamped oscillations, Decay of free Vibrations due to damping. Differential equation of motion, types of motion, types of damping. Determination of damping co–efficient– Logarithmic decrement, relaxation time and Q-Factor. Electromagnetic damping (Electrical oscillator).

UNIT–III
Differential equation for forced mechanical and electrical oscillators. Transient and steady state behavior, Displacement and velocity variation with driving force frequency, variation of phase with frequency, resonance. Power supplied to an oscillator and its variation with frequency,Q-value and band width, **Q-value as an amplification factor**. Stiffness coupled oscillators, Normal co–ordinates and normal modes of vibration. Inductance coupling of electrical oscillators.

UNIT–IV

Types of waves, wave equation (transverse) and its solution characteristic impedance of a string. Impedance matching. Reflection and Transmission of waves at boundary. Reflection and transmission of energy. Reflected and transmitted energy coefficients. Standing waves on a string of fixed length, **Progressive and Stationary waves**, Energy of vibration string, Wave and group velocity.

Books Prescribed:

1. Fundamentals of Vibrations and Waves by S.P. Puri.
2. Physics of Vibrations and Waves by H.J. Pain.
3. EM Waves and Radiating Systems by Edward C. Jordan and K.G. Balmain.
4. Fields and Waves Electromagnetic by David K. Cheng.
5. Waves and Vibrations, T.S. Bhatia, Vishal Publishing Co.
6. Vibrations and Waves, Modern Publishers, Jalandhar.

Sr. No.	On completing the course, the students will be able to:
CO1	Understand simple harmonic motion and will be able to solve the equations of motions for physical systems that undergo simple harmonic motion.
CO2	Understand the damped oscillator in the over damped, critically damped and under damped regimes.
CO3	Understand, derive and solve the equations for a forced oscillator, the concept of resonance and variation of displacement and velocity with driving force frequency.
CO4	Understand the concept of coupled oscillators will be able to derive and solve the equation of motion for simple systems and describe the motion of coupled oscillators in terms of normal mode solutions.
CO5	Understand about wave, differences between longitudinal and transverse waves, the concepts of phase and group velocities and be able to calculate these quantities.

B.Sc. Computer Science SEMESTER–II
PHY121P
(PRACTICAL)

Teaching Hours (per week):4
Total Credit: 2
Credits:LTP:002
Time: 3 Hours **Maximum Marks: 38**
Pass Marks: 35%

General Guidelines for Practical Examination:
I. The distribution of marks is as follows: **38 Marks**
i) One experiment: **15 Marks**
ii) Brief Theory : 8 **Marks**
iii) Viva–Voce: **10 Marks**
iv) Record (Practical file): **5Marks**
II. There will be one sessions of 3 hours duration. The paper will have one session. Paper will consist of 8 experiments out of which an examinee will mark 6 experiments and one of these is to be allotted by the external examiner.
III. Number of candidates in a group for practical examination should not exceed 12.
IV. In a single group no experiment be allotted to more than three examinee in any group.
Course Objectives: The Course objective of this subject is to follow the pragmatic way of learning and describe the basic experimental skills in the students. They will be able to demonstrate and able to evaluate the value of acceleration due to gravity g by using Cater's pendulum, Bar pendulum, experimentally and theoretically compare the results of Resonance in a series and parallel LCR circuit. They will also learn about the induced e.m.f. as function of the velocity of the magnet by demonstrating the Faraday's experiment.
Course Contents:
1. To study the magnetic field produced by a current carrying solenoid using a search coil and calculate permeability of air.
2. To study the induced e.m.f. as function of the velocity of the magnet.
3. Study of phase relationships using impedance triangle for LCR circuit and calculate Impedance.
4. Resonance in a series and parallel LCR circuits for different R–value and calculate Q–value.
5. To find the coefficient of self-inductance by Ray Leigh's Method.
6. To measure the charge sensitivity of a moving coil Ballistic galvanometer using a known capacitor.
7. To find the angle of dip in the lab using an earth inductor.
8. To find the value of B_H the horizontal component of earth's magnetic field in the lab using a deflection & vibration magnetometer.
9. To study the variation of magnetic field with distance along the axis of coil carrying current by plotting a graph.
10. Measure time period as a function of distance of centre of suspension (oscillation) from centre of mass, plot relevant graphs, determine radius of gyration and acceleration due togravity.
11. Melde's experiment.
12. Find the value of g by Caterer's pendulum.

13. To compare the M.I. of solid & hollow sphere of same mass using tensional pendulum.
14. Measure time period of oscillation of a Maxwell needle and determine modulus of rigidity of the material of a given wire.
15. To measure obtain logarithmic decrement, coefficient of damping, relaxation time, and quality factor of a damped simple pendulum.
16. **Computer based simulations of the formation of standing waves.**
17. **Computer based simulations of the formation of concept of phase.**

Books Prescribed:

1. Practical Physics Vol. I, T.S. Bhatia, Gursharan Kaur, Iqbal Singh, Vishal Publications.
2. Practical Physics, C.L. Arora, S. Chand & Co.

Sr. No.	On completing the course, the students will be able to:
CO1	Study the induced e.m.f. as function of the velocity of the magnet.
CO2	Compare the results of Resonance in a series and parallel LCR circuits for different R–value and calculate Q–value experimentally as well as theoretically.
CO3	Plot the graph of variation of magnetic field with distance along the axis of current carrying coil carrying.
CO4	Verify the laws of vibrating strings and compare the mass per unit length of string using Melde's experiment.
CO5	Find the value of acceleration due to gravity (g) by Kater's pendulum.

B.Sc. Computer Science SEMESTER–II
COURSE CODE: MAT-121A
COURSE TITLE: Calculus and differential equations

Teaching Hours (per week):4
Total Credit:4
Credits:LTP:310
Time: 3 Hours   **Total Hours: 60**
Maximum Marks: 75
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **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 candidate will have to attempt any 6 questions in this section.**
3.   **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 candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Teaching time for this paper would be six periods per week.**
        COURSE OBJECTIVES:
•   Calculus is a branch of mathematics focused on limits, functions, derivatives, integrals, and infinite series.
•   This subject constitutes a major part of contemporary mathematics education. Calculus has widespread applications in science, economics, and engineering and can solve many problems for which algebra alone is insufficient.
•   A differential equation is a mathematical equation that relates some function with its derivatives.
•   In applications, the functions generally represent physical quantities, the derivatives represent their rates of change, and the differential equation defines a relationship between the two Differential equations have applications in fields of engineering, physics, economics, and biology.
COURSE CONTENT:

Unit-I
Asymptotes, Tests for concavity and convexity, Points of inflexion, Multiple Points, Curvature, Tracing of Curves (Cartesian and Parametric coordinates only).

Unit-II
 Integration of hyperbolic functions. Reduction formulae. Definite integrals. Fundamental theorem of integral calculus. Quadrature, rectification.

Unit-III
Exact differential equations. First order and higher degree equations solvable for x,y,p. Clairaut's Form and singular solutions. Geometrical meaning of a differential equation. Orthogonal Trajectories.
Unit-IV
Linear differential equations with constant and variable coefficients. Variation of Parameters

method, reduction method, series solutions of differential equations. Power series Method, Bessel and Legendre equations (only series solution).

BOOKS PRESCRIBED:
1. D.A. Murray: Introductory Course in Differential Equations. Orient Longman   (India), 1967.
2. G.F. Simmons: Differential Equations, Tata McGraw Hill, 1972.
3. E.A. Codington: An Introduction to Ordinary Differential Equations, Prentice Hall of India, 1961.
4. Gorakh Prasad: Integral Calculus, Pothishala Pvt. Ltd., Allahabad.
5. Erwin Kreyszig: Advanced Engineering Mathematics, John Wiley and Sons, 1999.
6. Shanti Narayan and P.K. Mittal: Integral Calculus, S Chand & Company

COURSE OUTCOMES: On completing the course, the students will be able to:
• acquaint with the limits, functions, derivatives, integrals, and infinite series.
• associate Differential equations with the Mathematical modeling.
• solve multifarious differential equation that relates functions with its derivatives.
• know about concavity and convexity of the functions, Asymptotes and multiple points of a curve.
• Have knowledge about applications in fields of engineering, physics, economics, and biology.

COURSE CODE: MAT-121B
COURSE TITLE: Calculus

Teaching Hours (per week):4
Total Credit: 4
Credits:LTP:310
Time: 3 Hours   **Total Hours: 60**
Maximum Marks: 75
Pass Marks: 35%

Note for paper setter and students:
1.   There will be five sections.
2.   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 candidate will have to attempt any 6 questions in this section.
3.   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 candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.
4.   Teaching time for this paper would be six periods per week.

COURSE OBJECTIVES:
•   This course introduces the concept of partial derivatives which are used in fields such as computer graphics, physical sciences, vector calculus and engineering.
•   Evaluate double and triple integrals of functions of several variables. Apply them in evaluating area and volume of solids.
•   This course covers the concepts of jacobians, maxima and minima of functions of two variables, envelopes and evolutes.

COURSE CONTENT:

Unit-I
Limit and Continuity of functions of two variables, Partial differentiation, Change of variables, Partial derivatives and differentiability of real–valued functions of two variables, Schwartz's and Young's Theorem, Statements of Inverse and implicit function theorems and applications.

Unit-II
Euler's theorem on homogeneous functions, Taylor's theorem for functions of two variables, Jacobians, Envelopes. Evolutes, Maxima, Minima and saddle points of functions of two Variables.

Unit-III
Lagrange's undetermined multiplier method. Double and Triple Integrals, Change of variables, Change of order of integration in double integrals.

Unit-IV
Applications to evaluation of Areas, Volumes, Surfaces of solid of revolution.

BOOKS PRESCRIBED:
1. Narayan, S. & **Mittal**, P.K. : Integral Calculus, S. Chand & Co.
2. Kreyszig, E.: Advanced Engineering Mathematics.
3. Narayan S. & Mittal, P.K. : Differential Calculus, S. Chand & Co.

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

- apply Calculus in various fields such as computer graphics, physical sciences, economics and engineering.
- use Calculus in oceanography to calculate the height of tides in oceans.
- understand concept of partial derivatives which are used in fields such as computer graphics, physical sciences, vector calculus and engineering.
- learn about evaluating double and triple integrals of functions of several variables and apply them in evaluating area and volume of solids.
- Understand the concepts of jacobians, maxima and minima of functions of two variables, envelopes and evolutes.

CSC-121A
Computer Oriented Numerical and Statistical Methods using C++
(THEORY)

Teaching Hours (per week):3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours　　　　　　　　　　　　　　　　　　　　　　　　　**Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1. **There will be five sections.**
2. **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3. **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4. **Medium of Examination is English Language.**

　　Course Objectives:

	At the end of the course, the students will be able to:
1.	To understand and implement various concepts of numerical and statistical methods to solve real life problems.
2.	To develop the mathematical skills of the students in the areas of numerical methods.
3.	To provide conceptual understanding of various numerical methods like solution of non-linear equations, system of linear equations, interpolation, numerical integration with an aim of helping the students to understand the fundamentals, concepts and practical use of these methods in the field of computer sciences and applications.
4.	To provide understanding of statistical problems like testing of assumptions using various techniques.

Note: All Numerical Methods must be coded in C++
UNIT-I
1. **Introduction:** Importance of Numerical methods and Numerical Analysis, Errors (measures, **sources and types**)
2. **Non-linear Equations:** Bisection, False position and Newton Raphson-method.

3.Linear Systems: Direct Methods (Gauss Elimination Method, Gauss Jordan Method), ill
  and well-conditioned systems, iterative methods(Gauss Siedel), Direct v/s iterative methods

UNIT-II

4.Interpolation: Finite differences, Newton's interpolation (Forward, Backward, divided),Lagrange Interpolation.
5.Numerical Integration: Trapezoidal, Simpson's 1/3, 3/8 rule

UNIT III

Statistical Techniques
1.Introduction:Classes of error in statistics, Estimation of statistical errors
2.**Measure of Central Tendency**: Arithmetic ,Geometric, Harmonic mean, median, Mode,
3.**Measure of Dispersion:** Relationship between central tendency and dispersion, Mean
deviation, Standard deviation, Co-efficient of variation

UNIT-IV

4. **Correlation:** Karl Pearson's correlation, Spearman's rank correlation.
5. **Least square method**: Linear(y=a+bx) and non-linear trends

  $Y=ax^b$

  $Y=ab^x$

  $Y=ae^{bx}$

Polynomial fit: $Y= a+bx+cx^2$

References:

1 R.S Salaria:Computed Oriented Numerical Method, Khanna Book publishing
CO.(P)Ltd(2016) 5th edition.
2 V. Rajaraman: *Computer Oriented Numerical Methods,* Prentice Hall of India Private
  Ltd(2019), 4th edition.
3. S.P Gupta, *Statistical Methods*, Sultan Chand & Sons Publications(2021), 43rd edition.
4. M. K. Jain, S .R. K. Iyengar and R. K. Jain, *Numerical Methods for Scientific and
Engineering Computation*, New Age International Publishers (2012), 6th edition.
5. E. Balagurusamy, "*Numerical Methods*", Tata McGraw-Hill Publishing Company Ltd., New
Delhi, (2008) 24th edition.

Course Outcomes:

On completion of this course students will able to:	
CO-1.	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions
CO-2.	Apply various numerical methods to find our solution of algebraic and transcendental non-linear equations and also solve system of linear equations numerically using direct and iterative methods.
CO-3.	Understand the methods to construct interpolating polynomials and finite difference concepts (forward, backward, divided) for prediction and also find integration to find area under curve.
CO-4.	Learn fundamentals concepts of statistical and optimization methods.
CO-5.	With reference to frequency distribution and measures of central tendency(like mean, median and mode), measures of dispersion(range, mean deviation ,standard deviation), correlation, and curve fit.

B.Sc. Computer Science Semester – II
CSC-121B
Programming in C++
(THEORY)

Teaching Hours (per week):3
Total Credit: 3
Credits:LTP:210
Time: 3 Hours   **Total Hours: 45**
Maximum Marks: 56
Pass Marks: 35%

Note for paper setter and students:
1.   **There will be five sections.**
2.   **Section A is compulsory and will be of 12 marks consisting of 8 short answer type questions carrying 2 mark each covering the whole syllabus. The answer should not exceed 50 words. The candidate will have to attempt any 6 questions in this section.**
3.   **Sections B, C, D and E will be set from units I, II, III & IV respectively and will consist of two questions of 11 marks each from the respective unit. The candidates are required to attempt one question from each of these sections. Each question in these sections should not have more than two subparts.**
4.   **Medium of Examination is English Language.**

The learning objectives of this course are:

1.	To understand how C++ improves C with object-oriented features.
2.	To learn how to design C++ classes for code reuse.
3.	To understand the concept of data abstraction and encapsulation.
4.	To learn how inheritance and virtual functions implement dynamic binding with polymorphism.

UNIT-I

Programming Paradigms: Introduction to the object-oriented approach towards programming by discussing Traditional, Structured Programming methodology.
Object Oriented Programming using C++: Elements of Oops, Characteristics of OOP, Overview of C++, I/O using cout and cin..

UNIT-II
Object and Classes: Class Specfication, class objects, Accessing class member.
Constructor & Destructor: Constructor, Definition , Overloading, Types of Constructors. Destructor.

UNIT-III
Inheritance: Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.

UNIT-IV

Operator Overloading: Overloading unary and binary operators, Type Conversion using Operator Overloading.

Virtual Functions and Polymorphism: Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples.

References:
1. The Complete Reference By Herbert Schildt ,Fourth Edition,2002
2. Teach yourself C++, Herbert Schildth, Tata McGraw Hill.
3. Designing Object Oriented Software RebaccaWirfs - Brock Brian Wilerson, PHI.
4. Object Oriented Programming in Turbo C++, Robert Lafore, Galgotia Publication.

Course Outcomes:

Upon completion of this course, the students will be able to:

CO-1.	Understand the difference between the top-down and bottom-up approach.
CO-2.	Apply the concepts of object-oriented programming.
CO-3.	design and implement C++ classes for code reuse.
CO-4.	Apply virtual and pure virtual function & complex programming situations.

CSC121P: Practical Paper A+B

Teaching Hours (per week):4
Total Credit: 2
Credits:LTP:002
Time: 3 Hours   **Maximum Marks: 38**
Pass Marks: 35%

Course Objectives:

1.	To enhance the problem solving skills of engineering students using an extremely powerful problem solving tool namely numerical methods.
2.	This will help students choose, develop and apply the appropriate numerical techniques for your problem, interpret the results, and assess accuracy.

3.	The problems cover
	
	    I. Systems of linear equations; linear least squares problems
	    II. Interpolation and approximation.

4.	To understand how C++ improves C with object-oriented features.
5.	To learn how to write inline functions for efficiency and performance.
6.	To know the syntax and semantics of the C++ programming language.

Operational Knowledge and Implementation of Numerical Methods & Statistical techniques in C++.

Course Outcomes:

On completion of this course students will able to:

CO-1.	Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions.
CO-2.	Apply various numerical methods to find solution of algebraic and transcendental non-linear equations and also solve system of linear equations numerically using direct and iterative methods.
CO-3.	Understand the methods to construct interpolating polynomials and finite difference concepts (forward, backward, and divided) for prediction and also find integration to find area under curve.

CO-4.	Impart knowledge in such a way that students should be able to use of concept of Object-Oriented Programming approach in their programming skills.
CO-5.	Provide the knowledge of implementation of various features of C++ i.e. concept of Object, Object communication, Encapsulation, Data hiding, overloading, etc.
CO-6.	Acquire in depth knowledge and develop software in C++.
CO-7.	Understand how to do programming in C++environment.

B.Sc. Computer Science SEMESTER–II

B. A., B. A. Social Science, B. Sc. Medical, B. Sc. Non-Medical, B. Com. (Hons.), B. Com. (R), BBA, B. Sc. Economics, B. Sc. Computer Science
Semester-II
Compulsory Course
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ

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
			L	T	P	Theory	IA	
ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ BPBI-1201	60	4	4	0	0	75	25	3 Hours

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।	▪ ਵਿਦਿਆਰਥੀ ਦਾ ਸਾਹਿਤਕ ਬੋਧ ਵਿਕਸਤ ਹੋਵੇਗਾ। ▪ ਵਿਦਿਆਰਥੀ ਵਿਚ ਸਾਹਿਤਕ ਰੁਚੀਆਂ ਪ੍ਰਫੁਲਿੱਤ ਹੋਣਗੀਆਂ। ▪ ਵਿਦਿਆਰਥੀ ਚਿੱਠੀ-ਪੱਤਰ ਦੀ ਲਿਖਣ ਸ਼ੈਲੀ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ। ▪ ਵਿਦਿਆਰਥੀ ਸ਼ਬਦ 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 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।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ। 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 ਛਿੱਲੋਂ (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) ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

ਭਾਗ–ਚੌਥਾ

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

(ਅ) ਸ਼ਬਦ-ਸ਼੍ਰੇਣੀਆਂ

B.Sc. Computer Science SEMESTER–II

B. A., B. A. Social Science, B. Sc. Medical, B. Sc. Non-Medical, B. Com. (Hons.), B. Com. (R), BBA, B. Sc. Economics, B. Sc. Computer Science
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	Total Credits/ Hours per week	Credit distribution			Total Marks 100		Time Allowed in Exam
			L	T	P	Theory	IA	
ਮੁਢਲੀ ਪੰਜਾਬੀ BPBI-1202	60	4	4	0	0	75	25	3 Hours

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 ਜਾਣਕਾਰੀ ਉਨਾਂ ਦੇ ਗਿਆਨ ਵਿਚ ਵਾਧਾ ਕਰੇਗੀ। ▪ ਵਿਦਿਆਰਥੀ ਸ਼ਬਦਾਂ ਦੀਆਂ ਭਿੰਨ-ਭਿੰਨ ਕਿਸਮਾਂ ਤੋਂ ਜਾਣੂ ਹੋਵੇਗਾ। ▪ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ ਸਮਝ ਹੋਰ ਵਿਕਸਿਤ ਹੋਵੇਗੀ।

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 ਵਿੱਚੋਂ ਹੋਣਗੇ ਅਤੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਦੂਸਰੇ ਭਾਗ ਵਿਚ, ਸਿਲੇਬਸ ਦੇ ਪਹਿਲੇ ਭਾਗ ਵਿੱਚੋਂ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿੱਚੋਂ 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 ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਚੌਥੇ ਵਿਚ ਪੰਜ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿੱਚੋਂ ਚਾਰ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨੇ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 4-4 ਅੰਕ ਹੋਣਗੇ। ਭਾਗ ਪੰਜਵੇਂ ਵਿਚ ਤਿੰਨ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿੰਨਾਂ ਵਿੱਚੋਂ ਦੋ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹੋਣਗੇ। ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ 8-8 ਅੰਕ ਹੋਣਗੇ।

ਨੋਟ: ਇੰਟਰਨਲ ਅਸੈੱਸਮੈਂਟ 25 ਅੰਕਾਂ ਦੀ ਹੈ। 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

B.Sc. Computer Science SEMESTER–II

BPHC-1204
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)
B. A.; B.A. (SS); B. A. (Hons. – English); B. Com. (Hons., R, Ac. & Finance); B. Sc. Bio-Tech./Comp. Sc./Eco./FD/Food Sc./IT/Med./N.Med.; B.Sc. (Hons. –Botany, Chemistry, Mathematics, Physics, Zoology); B. of Mult.; B. in Int. & Mob. Tech.; BBA; BCA;BJMC; B. Voc. (Software Development, Theatre and Stage Craft, Food Processing, Textile Design & Apparel Technology)
SEMESTER–II
PUNJAB HISTORY & CULTURE (C 321 BC TO 1000 A.D.)
(Special Paper in lieu of Punjabi compulsory)
(For those students who are not domicile of Punjab)

Credit: 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 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 peopleof 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.

3.   The Punjab under the Gupta Emperors.

4.   The Punjab under the Vardhana Emperors

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

7.   Development of languages and Literature.
8.   Development of art & Architecture.

Suggested Readings:-
L. Joshi (ed.*), History and Culture of the Punjab*, Part-I, Patiala, 1989 (3rdedition).
L.M. Joshi and Fauja Singh (ed), *History of Punjab*, Vol.I, Patiala 1977.
Budha Parkash, *Glimpses of Ancient Punjab*, Patiala, 1983.
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 1000AD.
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. Computer Science SEMESTER–II
ENGLISH (COMPULSORY)
B.A./B.Com/B.Sc (Med/N. Med/C. Sc./Eco)/ BBA/BA (Social Science) B.Com (Hons.)
Code: BENC-1205

L	T	P	Credits
4	0	0	4

Teaching Hours (per week):4
Total Credit:4
Time: 3 Hours   **Max. Marks: 100**
Theory: 75
Internal Assessment: 25

Instructions for the Paper Setter and Distribution of Marks:
The question paper will consist of four sections and the distribution of marks will be as under:
Section A: 15 Marks
Section B: 20 Marks
Section C: 20 Marks
Section D: 20 Marks

Section–A

1. Twenty (20) Questions on the usage of grammar related to the prescribed units of
Murphy's English Grammar will be set. The students will be required to attempt any
Fifteen(15).

(15X1= 15 Marks)

Section–B

2. EIGHT (8) questions (four from each literary text) on theme, characterization, tone and
style etc. will be set. The students will be required to attempt **any Five** questions, choosing
at least TWO from each prescribed text. The fifth question may be attempted from any
prescribed text. The answer to each question should not exceed 15-20 sentences.

(5X4=20 Marks)
Section–C
3. One question with internal choice, from *Tales of Life,* will be set.

(1X8 =8
Marks)

4. One question with internal choice, from *Prose for Young Learners,* will be set.

(1X8 =8
Marks)

5. Six(6) words on vocabulary will be set from the prescribed texts. The students will be required to answer any **Four(4)**. (4X1= 4 Marks)

Section-D

6. The students will be required to answer **Six** questions from the **Comprehension Passage** set from the book ***Prose for Young Learners***.

(6X1=6 Marks)

7. The students will be required to write an **Official Letter** on any ONE of the TWO given topics.

(1X8= 8 Marks)

8. The students will be required to write an **e-mail** on any **ONE** out of the **TWO** Topics.

(1X6= 6 Marks)

Course Objectives:

1. To read, interpret and write about a diverse range of texts in English.
2. To understand the prescribed texts analytically and critically.
3. To familiarise the students with the social, political, moral and cultural background of the prescribed texts.
4. To participate in the critical and cultural discourses of English.
5. To teach language and literature effectively with the support of ICT tools.
6. To become competent, committed, conscious, creative, and compassionate human beings.

Course Contents

1) Stories at Sr.No.7, 9,10,11,12 from *Tales of Life*.
2) Essays at Sr.No.7, 8, 9, 10,11 from *Prose for Young Learners.*
3) Unit 26-48 from *Murphy's English Grammar*.

Texts Prescribed:

1. *Tales of Life* (Guru Nanak Dev University, Amritsar)
2. *Prose for Young Learners* (Guru Nanak Dev University, Amritsar)
3. *Murphy's English Grammar 4th Edition (by Raymond Murphy) CUP*

Course Outcomes:

The completion of this course enables students to:

1. appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu.

2. comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them.

3. make correct usage of tenses, articles and nouns.

4. enrich their vocabulary and use new words in their spoken and written language.

5. write personal letters to their family and friends on various issues.

B.Sc. Computer Science SEMESTER–II

Course Code: ZDA121
Course Title-DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
DRUG ABUSE: MANAGEMENT AND PREVENTION
(Compulsory for all Under Graduate Classes)

Teaching Hours (per week):2
Total Credit: 2
Total Hours: 40

Time: 3 Hours   **Maximum 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.