FACULTY OF SCIENCES

SCHEME

of

B.Sc. Computer Science

(Semester I-VI)

(Under Continuous Evaluation System)

Session: 2022-23

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR (Autonomous)

Programme Specific Outcomes – B. Sc. C.Sc. (Phy. C.Sc. Maths.)

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

PSO 1. Demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics and computers.

PSO 2. Solve mathematical problems by critical understanding, analysis and synthesis.

PSO 3. Demonstrate knowledge of mechanics, electromagnetism, quantum mechanics, optics & lasers, waves & vibrations, statistical physics, condensed matter physics, electronics, nuclear & particle physics and be able to apply this knowledge to analyse a variety of physical phenomena.

PSO 4. Demonstrate knowledge of various languages of Computer programming and apply this knowledge to interpret and analyse quantitative data.

PSO 5. Show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyse the measurements to draw valid conclusions.

PSO 6. Capable of oral and written scientific communication i.e. able to communicate effectively by oral, written, computing and graphical means.

Session (2022-23)

BASIC PUNJABI

In lieu of Punjabi (Compulsory)

COURSE CODE - BCSL -1031

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦਾ ਮੌਕਾ ਪ੍ਰਦਾਨ ਕਰਨਾ ਹੈ।

CO2: ਇਸ ਵਿਚ ਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀ ਨਾਲ ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO3: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ ਤੋਂ ਜਾਣੂ ਕਰਵਾਇਆ ਜਾਵੇਗਾ।

CO4: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ ਦੱਸਣਾ ਹੈ।

CO5: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲ ਕਰਨਾ ਹੈ।

CO6: ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿਚ ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰ੍ਹਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇਕ ਤੋਂ ਸੌ ਤੱਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ ਸਿਖਾਉਣਾ ਹੈ।

(Semester-I)
Session (2022-23)

Course Title: Punjab History and 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: BCSL-1431

COURSE OUTCOMES

After completing Semester I and course on Punjab History and Culture students of History will be able to identify and have a complete grasp on the sources & writings of Ancient Indian History of Punjab.

CO1: Identify and describe the emergence of earliest civilizations in: Indus Valley Civilization and Aryan Societies.

CO2: Identify and analyses the Buddhist, Jain and Hindu faith in the Punjab

CO3: Analyses the emergence of Early Aryans and Later Vedic Period, their Society, Culture, Polity and Economy

CO4: To make students understand the concepts of two faiths Jainism and Buddhism, its principles and their application and relevance in present times

Session (2022-23)

ENGLISH (COMPULSORY)

Course Code: BCSL -1212

COURSE OUTCOMES

COURSE OUTCOMES

After passing this course, the students will be able to:

CO1: appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu

CO2: comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them

CO3: understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language

CO4: develop an understanding of translation of written text from Hindi/Punjabi to English

CO5: independently write paragraphs on any given topic

Bachelor of Science (Computer Science) Semester–I

Session 2022-23

Course Title: Mathematics (Algebra)

Course Code: BCSM -1333(I)

Course Outcomes

After passing this course, the students will be able to:

After passing this course, the students will be able to:

CO 1: Understand the concept of matrix congruence of skew symmetric matrices and its reduction in real field. Solve system of linear equations.

CO 2: Obtain Eigen values, Eigen vectors, minimal and characteristic equation of a matrix and to apply it in advanced dynamics and electric current.

CO 3: Classify real quadratic form in variables, definite, semi- definite and indefinite real quadratic form.

CO 4: To find the relations between the roots and coefficients of general polynomial equation in one variable, distinguish between solution of cubic equations and Bi-quadratic equations.

Bachelor of Science (Computer Science) Semester–I

Session 2022-23

Course Title: Mathematics (Calculus and Trigonometry)

Course Code: BCSM -1333(II)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Understand real number system, lub & glb of set of real numbers, limit of a function, basic properties of limit & to apply it in real world problem. Analyse continuous and discontinuous function, Apply concept of continuity in uniform continuity.

CO 2: Manage to solve problems related to successive differentiation, Leibnitz theorem, Taylor's & Maclaurin's theorem with various forms of remainders and to use these expansion to compute values of Sine, Cosine, tangent or log function.

CO 3: Understand the concept of De Moivre's theorem & its applications. Identify circular, hyperbolic function and their inverses.

CO 4: Demonstrate exponential and logarithmic function of complex numbers, and to solve Gregory's series and summation of series.

Bachelor of Science (Computer Science)

Session 2022-23

Course Code: BCSM-1134

COMPUTER SCIENCE

(COMPUTER FUNDAMENTALS AND PC SOFTWARE)

Course Outcomes: After passing this course the student will be able to:

CO1: comprehend about computer hardware, operating system concepts and various system software.

CO2: Identify various input, output and memory devices.

CO3: Apply office automation software to create professional and academic documents.

CO4: Apply skills to make effective presentations using associated application software.

SEMESTER–I

(Session-2022-23)

PHYSICS
ELECTRICITY AND MAGNETISM
(THEORY)

Course code: BSNM-1395 (II) for B.Sc. (Non Medical)
BCSM-1395 (II) for B.Sc. (Computer Science)

Course Outcomes: Electricity and magnetism

After passing this course the students will be able to:

CO1: understand the vector calculus and vector algebra and its applications in electricity and magnetism. The students will be able to solve the electrostatic problems with the help of Gauss law and Coulomb's law.

CO2: understand the applications of scalar potential for the calculation of electric field and electric potential due to an arbitrary charge distribution.

CO3: They will be able to find the electric potential and electric field of various charge distributions with the help of method of images. Students will understand the conduction of electric current in conductors by studying Ohm's law and equation of continuity.

CO4: They will be able to find the relationship between electric field from two different inertial frames of reference. They will be learn the origin of magnetism and properties of various kinds of magnetic materials.

SEMESTER – I
DRUG ABUSE
Session 2022-23

Course Code: AECD-1161
(Theory)

Course Outcomes:

CO 1. This information can include factual data about what substance abuse is; warning signs of addiction; information about how alcohol and specific drugs affect the mind and body;
CO 2. How to be supportive during the detoxification and rehabilitation process.
CO 3. Main focus of substance abuse education is teaching individuals about drug and alcohol abuse and how to avoid, stop, or get help for substance use disorders.
CO 4. Substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana.

Module 12 Final Assessment, Feedback & Closure

- Final multiple choice quiz
- Assessment through the same questions asked in the beginning
- Feedback about the programme from the students
- Closure of the programme

PRESCRIBED READING

- ***The Human Story*** published by Dawn Publications

SEMESTER II

Session 2022-23

BACHELOR OF SCIENCE (COMPUTER SCIENCE)
(Semester II)
PUNJABI (COMPULSORY)

COURSE CODE- BCSL -2421

COURSE OUTCOMES

CO1:ਦੋ ਰੰਗ(ਕਹਾਣੀਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਤਾਂਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO2:ਇਸ ਦਾ ਹੋਰਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆਤੋਂਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜਦੀਆਂ ਸਮੱਸਿਆਵਾਂਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕਦ੍ਰਿਸ਼ਟੀਬਣਾ ਸਕਣ।

CO3:ਸੰਸਾਰਦੀਆਂਪ੍ਰਸਿਧਹਸਤੀਆਂਜੀਵਨੀ ਦੀ ਵਿਧਾਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਜੀਵਨੀਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀਜਗਤਨਾਲਜੋੜਣਾ ਹੈ ।

CO4:ਸ਼ਬਦਬਣਤਰ ਅਤੇ ਸ਼ਬਦਰਚਨਾਪੜ੍ਹਣਨਾਲਵਿਦਿਆਰਥੀਇਸਦੇ ਮੁੱਢਲੇ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰਬਣਾ ਕੇ ਇਹਨਾਂ ਸੰਕਲਪਾਂਤੋਂਜਾਣੂ ਹੋਣਗੇ ।

CO5:ਸ਼ਬਦਸ਼੍ਰੇਣੀਆਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਪੰਜਾਬੀਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO6:ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂਨਾਲਗੱਲਬਾਤਵਿਚਪਰਪੱਕਤਾਆਉਂਦੀ ਹੈ।ਇਹਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤਵਿਚਨਿਖਾਰਲਿਆਉਣ ਦਾ ਕੰਮਕਰਨਗੇ।

BACHELOR OF SCIENCE (COMPUTER SCIENCE)
Session 2022-23

BASIC PUNJABI
In lieu of Punjabi (Compulsory)
COURSE CODE - BCSL-2031

Course outcomes

CO1: ਮੁੱਢਲੀਪੰਜਾਬੀਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆਵਿਚਪਾ ਕੇ ਇਕਹੋਰਭਾਸ਼ਾਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨਕਰਨਾ ਹੈ ।

CO2: ਇਸ ਵਿਚਵਿਦਿਆਰਥੀ ਨੂੰ ਬਾਰੀਕਬੀਨੀਨਾਲਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨਕਰਵਾਇਆਜਾਵੇਗਾ।

CO3:ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀਸ਼ਬਦਰਚਨਾਤੋਂਜਾਣੂ ਕਰਵਾਇਆਜਾਵੇਗਾ।

CO4: ਸ਼ਬਦਸ਼੍ਰੇਣੀਆਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਪੰਜਾਬੀਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO5: ਮੁੱਢਲੀਪੰਜਾਬੀਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦਾ ਸ਼ਬਦ ਘੇਰਾ ਵਿਸ਼ਾਲਕਰਨਾ ਹੈ।

CO6: ਵਿਦਿਆਰਥੀਵਾਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸਦੀਬਣਤਰਤੋਂਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਭਾਸ਼ਾ ਤੇ ਪਕੜਮਜਬੂਤ ਹੋਵੇਗੀ।

CO7: ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ ।

CO8: ਸੰਖੇਪ ਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO9: ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀਚਿੱਠੀਪੱਤਰਲਿਖਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾਵਿਚਨਿਪੁੰਨਕਰਨਾ ਹੈ ।

CO10:ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂਨਾਲਗੱਲਬਾਤਵਿਚਪਰਪੱਕਤਾਆਉਂਦੀ ਹੈ।ਇਹਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤਵਿਚਨਿਖਾਰਲਿਆਉਣ ਦਾ ਕੰਮਕਰਨਗੇ।

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

(Semester-II)

Session 2022-23

Course Title: Punjab History and Culture (C. 320 to 1000 B.C.) (Special paper in lieu of Punjabi Compulsory) (For those students who are not domicile of Punjab)

Course Code: BCSL-2431

COURSE OUTCOMES

After completing Semester II and course on Ancient History of Punjab, students of History will be able to identify and have a complete grasp on the sources & writings of Ancient History of Punjab

CO 1: Analyse the emergence of Mauryan, Gupta empires during the classical age in India

CO 2: To understand the various factors leading to rise and fall of empires and emergence of new dynasties and their Culture, society, administration , polity and religion specifically of Kushans and Vardhanas in the Punjab

CO 3: Students will be adept in constructing original historical argument based on primary source material research

CO 4: To have an insight on the existing Literature of this period and understand the past developments in the light of present scenario.

CO 5: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Muslim Art and Architecture in Punjab

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

Semester–II

Session 2022-23

Course Title: Mathematics (Calculus and Differential Equations)

Course Code: BCSM -2333(I)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Demonstrate Asymptotes, points of inflexion, multiple points, concavity and convexity of a curve and apply these concepts in curve tracing.

CO 2: Find arc length of a curve and able to establish reduction formulae for various functions.

CO 3: Understand concept of Exact Differential Equations and demonstrate the geometrical meaning of a differential equation & orthogonal trajectories

CO 4: Understand the concept of linear differential equation with constant and variable coefficients and to apply in a wide variety of disciplines like Bio, Eco, Physics and Engineering. Manage to solve the problem related to series solution of differential equations like Bessel and Legendre equation by Power series method.

BACHELOR OF SCIENCE (COMPUTER SCIENCE)
SESSION 2022-23

Course Title: MATHEMATICS(Calculus)
Course Code: BCSM-2333(II)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Differentiate between limit and continuity of function of two variables and apply this concept in partial derivatives & differentiability of real valued function of two variables. Application of inverse & implicit function theorems.

CO 2: Manage to solve problems related to Maxima, Minima & Saddle points of functions of two variables. Classify Envelopes & Evolutes.

CO 3: Understand the concept of Double and Triple integrals.

CO 4: Apply double and triple integral to evaluation of areas, volumes, surfaces of solid of revolution and to find out area and volume of plane and solid figure.

Bachelor of Science (Computer Science)

Semester- II

SESSION 2022-23

Course Code: BCSM-2134

COMPUTER SCIENCE

(PROGRAMMING IN C)

Course Outcomes:

After passing this course the student will be able to:

CO1: Design symbolic representation of a problem and its solution through tools like algorithms, flowcharts, etc.

CO2: Comprehend different programming constructs involved in C programming.

CO3: Apply programming concepts such as arrays, control structure and strings to provide solution in different problem domains.

CO4: Work with functions, storage classes, structures and union.

SEMESTER–II
PHYSICS
(Session-2022-23)

RELATIVITY AND ELECTROMAGNETISM
(THEORY)
Course code: BSNM-2395 (I) for B.Sc. (Non Medical)
BCSM-2395 (I) for B.Sc. (Computer Science)

Course Outcomes: Relativity & Electromagnetism -Paper (I)

After passing this course, students will be able to:

CO1: understand special theory of relativity and related basic concepts and applications.

CO2: derive Maxwell equations and their applications in propagation of e.m. waves in conductors and insulators.

CO3: apply the Biot Savart's Law and Ampere's circuital law in different situations and frames.

CO4: understand the Faraday's Law of electromagnetic induction and LCR circuits.

PHYSICS
VIBRATION AND WAVES
(THEORY)
(Session-2022-23)

Course code: BSNM-2395 (II) for B.Sc. (Non Medical)
BCSM-2395 (II) for B.Sc. (Computer Science)

After passing this course the student will be able to:

CO1: demonstrate Lissajous figures by mechanical and analytical method with different cases.

CO2: understand Free, damped and resonance oscillations, both mechanical and electric using differential equations.

CO3: solve differential equation of forced oscillations &to obtain related quantities.

CO4: understand concept of coupled oscillators and wave motion. Student will also be able to apply the concept of waves and oscillations to any type of waves like e. m. waves, mechanical waves.

SEMESTER–II
PHYSICS PRACTICAL
(Session-2022-23)

Course code: BSNM-2395 (P) for B.Sc. (Non Medical)
BCSM-2395 (P) for B.Sc. (Computer Science)

COURSE OUTCOMES

CO1: Students will be able to study resonance in series & parallel LCR circuit.
CO2: At the end of this course, students will be able to find the value of capacitor, coefficient of self inductance, permeability & permittivity of air.
CO3: Students will be able to study the variation of magnetic field on the axis of coil & can find the value of horizontal component of magnetic field.

SEMESTER III

Bachelor of Science (Computer Science)

SESSION 2022-23

Semester III

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -3421

COURSE OUTCOMES

CO1:ਚੌਣਵੇ ਪੰਜਾਬੀਨਿਬੰਧਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰ**ਵਾਰਤਕ**ਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2:'ਸਮਾਂਮੰਗਕਰਦਾ ਹੈ' ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਇਕਾਂਗੀਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲਨਾਲਜੋੜਣਾ ਹੈ।

CO3:ਸੰਖੇਪ ਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO4: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO5:ਮੂਲ ਵਿਆਕਰਣਕਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Computer Science)

SESSION 2022-23

SEMESTER–III

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -3031

Course outcomes

CO1:ivAwkrxkiekweIAWਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਪੰਜਾਬੀਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾਅਤੇ ਪੰਜਾਬੀਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆਵਿਚਪਾ ਕੇ ਇਕਹੋਰਭਾਸ਼ਾਸਿੱਖਣ ਦੇ ਮੌਕੇ ਪ੍ਰਦਾਨਕਰਨਾ ਹੈ ।

CO2:ਪੈਰ੍ਹਾ ਰਚਨਾ ਦੇਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨ੍ਹਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ ।

CO3:ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀਚਿੱਠੀਪੱਤਰਲਿਖਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾਵਿਚਨਿਪੁੰਨਕਰਨਾ ਹੈ ।

CO4:ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂਨਾਲਗੱਲਬਾਤਵਿਚਪਰਪੱਕਤਾਆਉਂਦੀ ਹੈ।ਇਹਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤਵਿਚਨਿਖਾਰਲਿਆਉਣ ਦਾ ਕੰਮਕਰਨਗੇ।

CO5:ਪੈਰ੍ਹਾਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ ਦੇਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ ।

CO6:ਸੰਖੇਪ ਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

Bachelor of Science (Computer Science)

(Semester III)
SESSION 2022-23

COURSE TITLE: PUNJAB HISTORY AND CULTURE (FROM 1000-1605 A. D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

COURSE CODE: BCSL-3431

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab

CO 1: To able to construct original historical arguments using a blend of primary and secondary source material

CO 2: To be able to demonstrate the significance of historical topics with reference to broader historical context and their contemporary relevance

CO 3: Students will develop an ability to convey verbally their historical knowledge

CO 4: Students will develop skills in critical thinking and reading

CO 5: To discuss understand and evaluate causes and results of the conflict with Mughals

Bachelor of Science (Computer Science)
Semester III
SESSION 2022-23

ENGLISH (COMPULSORY)
Course Code: BCSL -3212

COURSE OUTCOMES

After passing this course, the students will be able to:

CO 1: develop an understanding of the poems taught, relate to the socio-cultural background of England and be able to answer questions regarding tone, style and central idea

CO 2: comprehend the basics of grammatical rules governing relative clauses, adjectives, adverbs, conjunctions and prepositions

CO 3: enhance their reading and analysing power of texts through guided reading

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

CO 5: develop skills to write an essay on a given topic

Bachelor of Science (Computer Science)

Semester–III

SESSION 2022-23

Course Title: Mathematics (Analysis)

Course Code: BCSM -3333(I)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Demonstrate an understanding of limits and how they are used in sequences.

CO 2: Understanding how limits are used in series and apply various test on series.

CO 3: To understand the concepts of Riemann sum, partitions, upper and lower sums, Riemann Integrability of continuous functions and of monotone functions. Distinguish between the absolute convergence and conditional convergence.

CO 4: To know and describe the converging behaviour of improper integrals and Beta , Gamma functions. To find the relation between Beta and Gamma functions.

Bachelor of Science (Computer Science) Semester–III

SESSION 2022-23

Course Title: Mathematics (Analytical Geometry)

Course Code: BCSM-3333(II)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Understand the concept of the geometry of lines, shifting of origin and rotation of axis in the Euclidian plane.

CO 2: Develop geometry with a degree of confidence and will gain fluency in the basics of parabola in Euclidian geometry.

CO 3: Demonstrate the concept of ellipse and hyperbola in general quadratic equation.

CO 4: Understand the concept of geometry and real time characteristics of plain and spheres.

Bachelor of Science (Computer Science)

Session 2022-23

Course Code: BCSM-3134

COMPUTER SCIENCE

(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)

Course Outcomes:

After passing this course the student will be able to:

CO1: Solve non-linear and linear equations using different methods.

CO2: comprehend interpolation and numerical integration.

CO3: Calculate different means and deviations using statistical techniques.

CO4: Comprehend correlation, curve fitting and regression for finding solutions to various statistical problems.

Bachelor of Science (Computer Science)
Semester–III

SESSION 2021-22

COURSE CODE:BCSM-3134

COMPUTER SCIENCE
(COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS)
(PRACTICAL)

Examination Time: (3+3) Hrs. **Max. Marks: 100**

Theory: 50

Practical: 30

CA: 20

Practical based on Computer Oriented Numerical and Statistical Methods.
(Session-2022-23)

Course Outcomes: PHY-Statistical Physics and Thermodynamics

Course code: BCSM-3395 (I)

After passing this programme the students will be able to:

CO1: Understand the basic ideas and scope of probability as well as distribution of n particles in different compartments.

CO2: Concept of different types of Statistics and the need for Quantum Statistics.

CO3: Understand the concept of entropy, Laws of Thermodynamics and applications to thermoelectric effect.

CO4: Understand the Maxwell Thermodynamics relations, Change of state and Claypron equation.

Course Outcomes: PHY- OPTICS AND LASER

(Session-2022-23)

Course code: BCSM-3395 (II)

After passing this programme the students will be able to:

CO1: understand the concept of interference of waves by division of wave front and by division of Amplitude, its different methods and interferometers.

CO2: understand the Huygen's Fresnel theory and diffraction, Fraunhoffer diffraction due to single slit, double slit and n slits, the concept of resolving power.

CO3: understand the concept the polarization of light and types of polarisers.

CO4: understand the fundamentals of lasers and its processes. The knowledge of different components and types of lasers and its applications

Course Outcomes:

SEMESTER–III PHYSICS (PRACTICAL)

(Session-2022-23)

Course code: BCSM-3395 (P)

After passing this programme the students will be able to:

CO1: use spectrometer to determine the refractive index of different transparent materials wills dispersive power and resolving power of different transparent prisms and liquids using spectrometer.

CO2: use diffraction grating and apply it to determine dispersive power, resolving power, the wavelengths of Hg source and the Cauchy's constants.

CO3: to measure an accessible (Horizontal and vertical) and inaccessible heights using sextant.

CO4: set up of Newton's rings to determine wavelength of sodium light.

CO5: demonstrate the verification of laws of probability distribution.

SEMESTER IV

SESSION 2022-23

BACHELOR OF SCIENCE (COMPUTER SCIENCE)
(Semester IV)

Punjabi (Compulsory)

COURSE CODE- BCSL -4421

COURSE OUTCOMES

CO1: 'ਪਗਡੰਡੀਆਂ' (**ਸਵੈਜੀਵਨੀ**) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰ**ਸਵੈਜੀਵਨੀ**ਇਸ ਸਾਹਿਤ ਰੂਪਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2: '**ਫ਼ਾਸਲੇ**' (**ਨਾਟਕ**) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰ**ਨਾਟਕ**ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ **ਨਾਟਕ**ਜਗਤਨਾਲਜੋੜਣਾ ਹੈ।

CO3: ਦਫ਼ਤਰੀਚਿੱਠੀਪੱਤਰਲਿਖਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਨੂੰ ਇਸ ਕਲਾਵਿਚਨਿਪੁੰਨਕਰਨਾ ਹੈ।

CO4: ਸ਼ਬਦਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰਨ ਦਾ ਮਕਸਦਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚਕੀਤੀਆਂਜਾਣਵਾਲੀਆਂਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ।

CO5: ਗੁਰਮੁਖੀਲਿਪੀਦੀਆਂਵਿਸ਼ੇਸ਼ਤਾਵਾਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਪੰਜਾਬੀਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

SESSION 2022-23

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SEMESTER–IV

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL-4031

Course outcomes

CO1:‘ਮੰਚ ਘਰ’ ਇਕਾਂਗੀਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਇਕਾਗੀਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਕਾਂਗੀਜਗਤਨਾਲਜੋੜਣਾ ਹੈ।

CO2:
nYiqkis`iKAwnwlsMbMDqkhwxIAW**pVHwauxdwmnorQ**ividAwrQIAWdIbu`DInU MqIKxkridAWaunHWiv`csmwjksmJaujwgrkrnwhY[

CO3: ieSiqhwrilKxdwmnorQividAwrQIAWnUMiesklwiv`cinpuMnkrnwhY[

CO4:
ivAwkrnpVHwauxdwmnorQividAwrQIAWAMdrpMjwbIBwSwdIAmIrIdwAqybwrI kIAWnUMsmJxleIv`Kry-v`KryisDwqWdwivkwskrnwAqypMjwbIBwSwnUMisKwauxdIpRikirAwiv`c pw kyie`khorBwSwis`KxdymOkypRdwnkrnwhY[

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SESSION 2022-23

SemesterIV

COURSE CODE: BCSL-4431

PUNJAB HISTORY & CULTURE (From 1605 to 1849 A.D.)

After completing the paper the students will have a thorough insight into the origin of Sikh faith and its major institutions in Punjab

CO 1: To able to construct original historical arguments using a blend of primary and secondary source material

CO 2: To be able to demonstrate the significance of historical topics with reference to broader historical context and their contemporary relevance

CO 3: Students will develop an ability to convey verbally their historical knowledge

CO 4: students will *develop skills in critical thinking and reading*

CO 5: *To discuss understand and evaluate causes and results of the conflict with Mughals*

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

Semester IV

SESSION 2022-23

Course Title: MATHEMATICS (Statics and Vector Calculus)
Course Code: BCSM-4333(I)

Course Outcomes

After passing this course, the students will be able to:

CO 1: To apply parallelogram law of forces, triangle law of forces, Lami's theorem to real life problems and also understand that how one can resolve number of coplanar forces, parallel forces and concurrent forces acting at a body.

CO 2: To find the applications of CG of a rod, triangular lamina, solid hemisphere, hollow hemisphere, solid cone and hollow cone.

CO 3: To find the values of gradient, divergence and curl operator of given vectors

CO 4: To find the application of Gauss theorem, Green's theorem and Stokes's theorem in real life problems.

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

Semester IV

SESSION 2022-23

Course Title: MATHEMATICS(Solid Geometry)
Course Code: BCSM-4333(II)

Course Outcomes

After passing this course, the students will be able to:

After passing this course, the students will be able to:

CO 1: Understand the concept of cylinder, enveloping cylinder and its limiting form.

CO 2: Demonstrate the concept of cone, classification of cone, intersection of line and cone, reciprocal cone.

CO 3: Describe the concept of conicoids or quadratic surface, its classification, trace different types of conicoids and hence find surface of revolution.

CO 4: Describe the concept of tangent and normal plane to the conicoid and Identify the conicoids, representing it in the form of hyperboloid, ellipsoid, paraboloid.

Bachelor of Arts / Bachelor of Science (Computer Science) /

Bachelor of Science (Economics) Semester- IV

(Session 2022-23)

Course Code: BCSM-4134

COMPUTER SCIENCE

(DATA STRUCTURES)

Course Outcomes:

After passing course the student will be able to:

CO1: Analyze complexity of algorithms to determine their efficiency.

CO2: Comprehend various hashing method, sorting and searching algorithms.

CO3: Comprehend various operations of stack and queue along with different scenarios.

CO4: Comprehend advanced data structures such as tree and graph.

Course Outcomes: Quantum Mechanics (Paper I)

(Session-2022-23)

Course code: BCSM-4395 (I)

After completing this course

CO1: Students will be familiar with the main aspects of the historical development of quantum mechanics

CO2: Students will understand the central concepts and principles in quantum mechanics

CO3: Students will be able to find the solution of Schrödinger wave equation for simple systems in one dimension and for Hydrogen atom.

CO4: Students will be able to find the solution of Schrödinger wave equation for simple systems in three dimensions and for Hydrogen atom in spherical coordinates.

Course Outcomes: PHY- ATOMIC AND MOLECULAR SPECTRA
(Session-2022-23)

Course Code: BCSM-4395 (II)

CO1: understand fine and hyperfine spectrum of hydrogen atom and the concept of spin and magnetic moment of an electron

CO2: understand spectra of alkali atoms and Zeeman effect

CO3: demonstrate understanding of exchange symmetry of wave function, different coupling schemes and spectra of atoms with more than one electron.

CO4: Students will understand concept of X rays spectra and molecular spectra including rotational, vibrational and Raman Spectra

SEMESTER–IV
(Session-2022-23)
PHYSICS
Course Outcomes: PHY Lab Sem IV

Course code: BCSM-4395 (P)

CO1: The exercises included in this laboratory course are aimed at training the students to handle different type of equipment for verification of some of the laws and concepts studied in theory like concepts of thermodynamics, photoelectric effect and for carrying out precise measurements so that they develop confidence to use later the sophisticated instruments in their respective fields.

CO2: After the completion of this course students will be able to use spectrometer and hence will be able to study absorption spectra of iodine.

CO3: At the end of this course students will be able to prepare cane sugar solution and hence will be able to find its specific rotation by using polarimeter.

SEMESTER V

Bachelor of Science (Computer Science)

SESSION 2022-23

Semester V

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -5421

COURSE OUTCOMES

CO1:ਚੋਣਵੀਆਂਪੰਜਾਬੀਕਹਾਣੀਆਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਹਾਣੀਆਂਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2:ਨਾਵਲ ਏਹੁਹਮਾਰਾਜੀਵਣਾ(ਦਲੀਪਕੌਰਟਿਵਾਣਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਨਾਵਲਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲਨਾਲਜੋੜਣਾ ਹੈ।

CO3:ਪੈਰ੍ਹਾਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO4:ਸਰਲਅੰਗਰੇਜ਼ੀਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀਵਿਚਅਨੁਵਾਦਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ।

CO5:ਪੰਜਾਬੀਧੁਨੀਵਿਉਂਤ, ਵਾਕਾਤਮਕਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ,ਕਾਰਕ ਤੇ ਕਾਰਕੀ ਸੰਬੰਧਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Computer Science)

(Semester-V)
SESSION 2022-23

Course Title: Punjab History and Culture (From 1849-1947 A.D)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

COURSE CODE: BCSL-5431

COURSE OUTCOMES:-

After completing the course student have understanding of Punjab in the pre-independence phase

CO 1:- Students will understand major changes in the Punjab during British Rule

CO 2:- They will also know about important agitations and their outcomes on the politics of the Punjab.

CO 3:- They will gain knowledge about the society and economy of Punjab

CO 4:-They will be able to evaluate the socio-religious reforms movements of Punjabi society

CO 5:- They will have insights into the details of the partition of Punjab

Bachelor of Science (Computer Science)

SESSION 2022-23

ENGLISH (COMPULSORY)
Course Code: BCSL -5212

COURSE OUTCOMES

After passing this course, the students will be able to:

CO 1: widen their knowledge about various literary devices used in poetry such as tone, style, imagery, figures of speech, symbolism etc.

CO 2: develop power of imagination and appreciate the beauty, rhyme, and style of a poem

CO 3: analyze and appreciate the dramatic technique, plot development and art of characterisation in the prescribed play

CO 4: develop an understanding of the insights, genres, conventions and experimentations associated with English Drama

CO 5: develop the knowledge, skills and capabilities for effective business writing such as letter writing and resume writing

Bachelor of Science (Computer Science) Semester–V

SESSION 2022-23

Course Title: Mathematics (Dynamics)

Course Code: BCSM-5333(I)

Course Outcomes

After passing this course, the students will be able to:

CO 1: Demonstrate the basic relations between distance, time, velocity and acceleration, manage to solve the problems of Newton's Laws of Motion and the motion of particles connected by a string.

CO 2: Illustrate motion along a smooth inclined plane. Solve different types of problems with Variable Acceleration. Discuss Simple Harmonic Motion .

CO 3: Understand the concept of projectile, oscillating system.

CO 4: Define Work, Power and Energy and explain their relationship. Use measurement tools to apply the concepts of Work and power to solve real life problems. Identify the different types of energy.

Bachelor of Science (Computer Science) Semester–V

SESSION 2022-23

Course Title: Mathematics (Number Theory)

Course Code: BCSM-5333(II)

Course Outcomes

Successful completion of this course will enable the students to:

CO 1: Prove results involving divisibility and greatest common divisors.

CO 2: Find solutions of specified linear Diophantine equation, basic properties of Congruences.

CO 3: Solve system of linear congruences. Apply Fermat's and Wilson's theorem to solve numerical problems.

CO 4: Apply Euler's theorem and apply properties of phi functions in real world problems. Understand application of important arithmetic functions.

Bachelor of Science (Computer Science)
Semester–V

SESSION 2021-22

COURSE CODE: BCSM-5134

COMPUTER SCIENCE
(DATA BASE MANAGEMENT SYSTEM)

Course Outcomes:

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Gain knowledge of normalization, security and recovery of database.

CO3: Create, manage and access database using SQL.

CO4: Comprehend the application of programming language constructs in database access.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V)
(Session-2022-23))
PHYSICS (CONDENSED MATTER PHYSICS)
(THEORY)
Course code: BSNM-5395 (I) for B.Sc. (Non Medical)
BCSM-5395 (I) for B.Sc. (Computer Science)

Course Outcomes

After passing this course, students will be able to:

CO 1. Understand basics about crystal structures in solids, various types of crystal structure, unit cells and symmetry operations.

CO 2. Understand the experimental methods to determine crystal structures, reciprocal lattice, Brillioun zones and form factor.

CO 3. Understand the concept of lattice vibrations and role of phonons in determining specific heat of solids at low temperatures and models of specific heat.

CO 4. Build concept from free electron model to Kronig Penny model and its application to band theory to differentiate insulators, semiconductors and conductors.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V)
(Session 2022-23)
PHYSICS (ELECTRONICS)
Course code:BSNM-5395 (II) for B.Sc. (Non Medical)
BCSM-5395 (II) for B.Sc. (Computer Science)

Course Outcomes-After completing this course a student will be able to

CO1: understand, concept of voltage and current sources, working of a p-n junction diode, zener diode, and their use in basic gates, photonic devices, rectification and voltage regulation.

CO2: understand the characteristics, biasing and working of BJT and FETs.

CO3: able to understand h-parameters, amplifiers using BJT & FETs and types of feedbacks and practical example of negative feedback (emitter follower).

CO4: understand LC and RC oscillators and their comparison.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–V)
(Session 2022-23)
PHYSICS PRACTICAL
Course code: BSNM-5395 (P) for B.Sc. (Non Medical)
BCSM-5395 (P) for B.Sc. (Computer Science)

Course Outcomes : Physics Lab Sem V

CO 1. Students will be able to characterize p-n junction, zener diode, and their use as rectifier, filters, clipping element and to find energy gap.
CO 2. Student will be able to use CRO for AC voltage and frequency.
CO 3. Students will be able to characterize Common base and common emitter transistors and their use as amplifier.
CO 4. Students will be able to use diodes as basic gates.

SEMESTER VI

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

Semester VI

SESSION : 2022-23

PUNJABI (COMPULSORY)

COURSE CODE- BCSL -6421

COURSE OUTCOMES

CO1:ਚੋਣਵੀਆਂਪੰਜਾਬੀਕਹਾਣੀਆਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਕਹਾਣੀਆਂਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ।

CO2:ਨਾਵਲ ਏਹੁਮਾਰਾਜੀਵਣਾ(ਦਲੀਪਕੌਰਟਿਵਾਣਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰਨਾਵਲਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲਨਾਲਜੋੜਣਾ ਹੈ ।

CO3:ਪੈਰ੍ਹਾਰਚਨਾਕਰਨਨਾਲਵਿਦਿਆਰਥੀਆਪਣੀਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚਸਿੱਖਣਗੇ ਅਤੇ ਇਹਦਿਮਾਗੀਕਸਰਤਵਿਚ ਸਹਾਈਹੋਵੇਗੀ।

CO4:ਸਰਲਅੰਗਰੇਜ਼ੀਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀਵਿਚਅਨੁਵਾਦਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰਕਰਨਾ ਹੈ ।

CO5:ਪੰਜਾਬੀਧੁਨੀਵਿਉਂਤ, ਵਾਕਾਤਮਕਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ,ਕਾਰਕ ਤੇ ਕਾਰਕੀ ਸੰਬੰਧਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂਨੂੰ ਸਮਝਣਲਈਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ ।

SESSION : 2022-23

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SEMESTER–VI

Basic Punjabi (In lieu of Punjabi Compulsory)

COURSE CODE- BCSL -6031

COURSE OUTCOMES

CO1:‘ਸਾਹਿਤ ਦੇ ਰੰਗ’ ਪੁਸਤਕ ਦੇ ਵਾਰਤਕਭਾਗਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਵਾਰਤਕਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

CO2:ਇਸ ਦਾ ਹੋਰਮਨੋਰਥਭਾਸ਼ਣਕਲਾ ਤੇ ਲਿਖਣਕਲਾ ਦੀ ਨਿਪੁੰਨਤਾਪੈਦਾਕਰਨਾ ਹੈ।

CO3:‘ਸਾਹਿਤ ਦੇ ਰੰਗ’ ਪੁਸਤਕ ਦੇ ਰੇਖਾਚਿੱਤਰਭਾਗ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚਸ਼ਾਮਿਲਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂਅੰਦਰ ਰੇਖਾਚਿੱਤਰਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ ਤੇ ਇਹਨਾਂਮਹਾਨ ਸ਼ਖ਼ਸੀਅਤਾਂ ਦੀ ਸਫ਼ਲਤਾਪਿੱਛੇ ਘਾਲੀਆਂਘਾਲਣਾਵਾਂ ਤੋਂ ਵਾਕਫ਼ ਕਰਵਾਉਂਦਿਆਂਜੀਵਨ ਸੇਧ ਪ੍ਰਦਾਨਕਰਨਾ ਹੈ।

CO4:ਅੰਗਰੇਜ਼ੀਤੋਂਪੰਜਾਬੀਵਿਚਅਨੁਵਾਦਮਨੋਰਥਲਿਖਣਕਲਾ ਦੀ ਨਿਪੁੰਨਤਾਪੈਦਾਕਰਨਾ ਹੈ।

CO5:ਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾ ਦੀ ਪਰਿਭਾਸ਼ਾ ਤੇ ਪੰਜਾਬੀਦੀਆਂ ਉਪਭਾਸ਼ਾਵਾਂਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥਵਿਦਿਆਰਥੀਆਂਅੰਦਰਭਾਸ਼ਾ ਅਤੇ ਉਪਭਾਸ਼ਾਪ੍ਰਤੀਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾਕਰਨਾ ਹੈ।

Punjab History & Culture (1947- 2000 A.D.)
(Special paper in lieu of Punjabi Compulsory)
(For those students who are not domicile of Punjab)

SESSION : 2022-23

SEMESTER-VI

COURSE OUTCOMES:-

After completing this paper the students will be able to

CO 1:-comprehend Punjab's contribution in the freedom struggle, the exodus and Rehabilitation

CO 2:-understand the history of Punjab from independence with special reference to partition and the formation of New Punjab in 1966

CO 3:- understand the objectives, planning and outcomes of Green Revolution in the Punjab

CO 4:-criticallyanalyze thegrowth of education, Punjabi literature and Drama in the Punjab after Independence

CO 5:-the drug abuse problem, management and prevention in the Punjab

Bachelor of Science (Computer Science)
Semester–VI
SESSION : 2022-23

Course Title: Mathematics (Linear Algebra)
Course Code:BCSM-6333(I)

Course Outcomes

After the completion of this course, students should be able to:

CO 1: Express the algebraic concepts such as binary operation, groups, rings and fields. Define a vector space and subspace of a vector space and check the linear dependence and linear independence of vectors.

CO 2: Describe the concepts of basis and dimension of vector spaces.

CO 3: Investigate properties of vector spaces and subspaces using linear transformation.

CO 4: Find the matrix representing a linear transformation.

Bachelor of Science (Computer Science)
Semester–VI
SESSION : 2022-23

Course Title: Mathematics (Numerical Analysis)
Course Code :BCSM-6333(II)

After passing this course, the students will be able to:

CO 1. Know how to find the roots of transcendental and polynomial equations.

CO 2. Perform computation for solving a system of equations.

CO 3. Learn how to interpolate the given set of values.

CO 4. Learn numerical solution of differential equations & compute numerical integration and differentiation, numerical solution of ordinary differential equations.

Bachelor of Science (Computer Science)

Semester–VI

SESSION : 2022-23

COURSE CODE: BCSM-6134

COMPUTER SCIENCE

(INFORMATION TECHNOLOGY)

Course Outcomes:

After passing course the student will be able to:

CO1: Identify usage of various communication media and internet.

CO2: Acquaint with the usage of various information systems.

CO3: Comprehend digital marketing concepts and content.

CO4: Create and manage YouTube channel and blog.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI)
(Session 2022-23)
PHYSICS (NUCLEAR PHYSICS)
(THEORY)
Course code: BSNM-6395 (I) for B.Sc. (Non Medical)
BCSM-6395 (I) for B.Sc. (Computer Science)

Course Outcomes

After passing this course, students will be able to:

CO 1. Understand basic properties of nucleus and nuclear forces.

CO 2. Understand about radioactivity, theories of alpha, beta and gamma decay, neutrino hypothesis.

CO 3. Understand concepts and types about nuclear reactions, reactions cross section and compound nucleus.

CO 4. Understand nuclear models (Liquid drop and Shell model) and their failures and successes.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI) (Session 2022-23)
PHYSICS (RADIATION AND PARTICLE PHYSICS)
Course code:BSNM-6395 (II) for B.Sc. (Non Medical)
BCSM-6395 (II) for B.Sc. (Computer Science)

Course Outcome:

After successfully completing this course a student will be able to:

CO1: understand interaction of radiation and charged particles with matter.

CO2: understand theory and working of various types of nuclear detectors like gas filled, semiconductor, solid state track detectors and nucleus emulsions.

CO3: understand theory and working of various particle accelerators, linear and cyclic and phase stability conditions.

CO4: understand about elementary particles, different types of interactions and quark model.

Bachelor of Science (Semester System) (12+3 System of Education)
(Semester–VI)
(Session 2022-23)
PHYSICS PRACTICAL
Course code: BSNM-6395 (P) for B.Sc. (Non Medical)
BCSM-6395 (P) for B.Sc. (Computer Science)

Course Outcome: After successfully completing this course a student will be able to:

CO1: understand magnetic parameters and phenomenon of hysteresis and tracing of B-H curve.

CO2: understand application of zener diode as voltage regulators.

CO3: understand the characteristics and working of FET& LDR and response of RC circuits.

CO4: use of GM counter to understand the concepts of dead time and absorption coefficient and statistical fluctuations.