B.SC. LIFE SCIENCE

PROGRAMME OUTCOMES

PO1: Detailed understanding of basic concepts in all discipline of Medical Science.

PO2: Solve practical problems with logical reasoning ans to draw a conclusion independently.

PO3: Create an awareness of the impact of studying Botany, Zoology and Chemistry on the environment, society and development outside scientific community.

PO4: To inculcate the scientific temperament in the students and outside the scientific community.

PO5: To enable the student to take part in various research programmes and scientific instrument handling in the future.

B.SC. LIFE SCIENCE

1st SEMESTER

MAJOR	Diversity of Microbes, Animal Diversity-I, Fundamental Chemistry-I
Skill Enhancement Course	Biofertilizer and Biopesticides, Apiculture, Role of Chemistry in society
Ability Enhancement Course	English-I
Value Added Course	Environmental Science
MINOR	Basics in Biotechnology, Fundamentals of computing and problem solving using C
Multi Disciplinary Course	Basic Statistics, Basics studies in Hindustani instrumental music, Basics of Home Science-I, Introductory Mathematics, Basic component of Hindustani Music Vocal

Name of the Course- Diversity of Microbes
Course Code- 24BOTM401DS01

Course Outcomes-

CO1: Ultrastructure, reproduction and economic importance of bacteria

CO2: Life-cycle of Nostoc, Chlamydomonas, Volvox, Oedogonium, Chara, Vaucheria, Ectocarpus,
Fucus, Polysiphonia

CO3: Identification, classification, reproduction and economic importance of various algae

CO4: Biological characteristics, classification, replication of Viruses

CO5: General concepts regarding microbial growth, metabolism and nutrition

Name of the Course- Animal Diversity-I
Course Code- 24ZOOM401DS01

Course Outcomes-

CO1: Student will be able to describe unique characters and recognize life forms of phylum Protozoa

CO2. Student will be able to describe unique characters and recognize life forms of phylum Porifera

CO3. Student will be able to describe unique characters and recognize life forms of phylum Coelenterata
CO4. Student will be able to describe unique characters and recognize life forms of phylum Helminthes

Name of the Course- Fundamental Chemistry-I
Course Code- 24CHEM401DS01

Course Outcomes-

CO1: Develop the ability to predict and explain the shapes of simple inorganic molecules and ions using the hybridization, VB and MO theories.
CO2: Demonstrate problem-solving skills related to ionic bonding, including the calculation of percentage ionic character from dipole moment and electronegativity difference.
CO3: Discuss the structure, bonding, and properties of important compounds and complexes of p-block elements.
CO4: Understand the concept of acid-base reactions in aqueous and non-aqueous solvents.
CO5: Derive mathematical expressions for different properties of real and ideal gases and also understand their physical significance.
CO6: Explain the behaviour of real gases and the concept of gas equations.
CO7: Understand and explain the different nature and behavior of organic compounds based on fundamental concepts learnt.
CO8: Understand the fundamental concepts of stereochemistry.

Name of the Course- Biofertilizers and Biopesticides
Skill Enhancement Course(SEC)
Course Code- 24BOT401SE01

Course Outcomes-

CO1: Identify different microbes used as biofertilizers and biopesticides and also to understand the advantages and disadvantages of biofertilizers and biopesticides.
CO2: Acquire skills on isolation, culture of microbial agents, process of production and application of biofertilizers and biopesticides.
CO3: Evaluate the economic and environmental impacts of using biofertilizers and biopesticides.

CO4: Gain knowledge about the regulations on the production and use of biofertilizers and biopesticides.

Name of the Course- Apiculture
Skill Enhancement Course(SEC)
Course Code- 24ZOO401SE01

Course Outcomes-

CO1: Students will be able to understand the significance of honey bees and Apiculture
CO2: Students will acquire knowledge about different species and castes of the honeybees
CO3: Students will learn to manage beehives for honey production and pollination, and Learn various product of honey bees and value addition in these products,
CO4: Students will be aware about economic importance of honey bees, and use of Apiculture for employment, self employment and conservation of nature
CO5: Students will gain practical knowledge about various methods of bee keeping and extraction of honey thus create scope for entrepreneurship.

Name of the Course- Environmental Science
Value Added Course(VAC)
Course Code- 23EVSX01VA01

Course Outcomes-

CO1: Gain in-depth knowledge on natural processes and resources that sustain life and govern economy.
CO2: Understand the consequences of human actions on the web of life, global economy, and quality of human life.
CO3: Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
CO4: Acquire values and attitudes towards understanding complex environmental economic- social challenges, and active participation in solving current environmental problems and preventing the future ones.
CO5: Adopt sustainability as a practice in life, society, and industry.

Name of the Course- English-I
Ability Enhancement Courses(AEC)
Course Code- 23ENGX01AE01

Course Outcomes-

CO1: To introduce basic concepts of phonetics and train them to transcribe speech sounds using the symbols given in OALD (Oxford Advanced Learner's Dictionary).

CO2: To enable students understand basic grammar and vocabulary so that they can use it for their everyday communication.

CO3: To build elementary level Reading skills of the students to enable them to read and speak sentences frequently .

MINOR SUBJECTS IN B.SC. LIFE SCIENCE

(1st Semester)

Name of the Course- Basics in Biotechnology
Course Code- 24CBT401MI01

Course Outcomes-

CO1: Provide students with a comprehensive understanding of the field of biotechnology, including its historical background, scope, and significance.

CO2: Students will understand the fundamental concepts in biology, chemistry, and related disciplines that form the foundation of biotechnology.

CO3: Students will understand necessary skills required in biotechnology research settings.

CO4: Explore real-world applications of biotechnology in various sectors, such as medicine, agriculture, industrial biotechnology, and environmental biotechnology.

Name of the Course- Fundamentals of Computing & Problem Solving using C
Course Code- 24CSC401MI01

Course Outcomes-

CO1: Gain knowledge of essential computing concepts and its applications in various fields.

CO2: Develop proficiency in writing, debugging, and executing C programs to efficiently solve computational problems.

CO3: Demonstrate an understanding of data types, control structures, functions, arrays, and pointers.
CO4: Cultivate problem-solving skills through algorithmic thinking and programming techniques in C.
CO5: Apply modular programming principles to effectively organize and structure code for improved maintainability, scalability, and code reuse in C programming projects.

MDC SUBJECTS IN B.SC. LIFE SCIENCE

1st Semester

Name of the Course- Basics of Home Science-I
Course Code- 24HSCX01MD01

Course Outcomes-
CO1: To Acquire Knowledge of Various Concepts of Foodand Nutrition.
CO2: To Impart Basic Knowledge ofTextiles Fibres, yarn and Various Stitches.
CO3: To observe the key concepts related to the development of human.
CO4: To gain knowledge of family resourcemanagement .
CO5: To explain the role of extension worker in extension education.

Name of the Course- Basic Components of Hindustani Music Vocal
Course Code- 24MUSVX01MD01

Course Outcomes-
CO1: They efficiently displayed their mastery over Swarmalika in one of the prescribed Ragas, which became the fulcrum to learning the intrinsic nature of the Raga.
CO2: They skilfully exhibited Drut Khayals in the two specified Ragas. This became a preamble to acquiring performance skills. Students achieved deciphering of the twelve musical notes by the ear, giving them a resilient hold on the Swaras.
CO3: They brilliantly recited the Thekas with their Dugun and Tali-Khali in the given Talas, achieving a stable foothold on rhythm. The student will now acknowledge the different aspects of Harmonium and will know its playing techniques. The students will be equipped with the knowledge of Shuddha

,Vikritswaras and Saptak. The students will attain the ability of playing Alankaars on Harmonium. They will skillfully play nationalsong/anthem on harmonium.

Name of the Course- Basic Studies in Hindustani Instrumental Music
Course Code- 24MUSIX01MD01

Course Outcomes-

CO1: They efficiently displayed their mastery over Swarmalika in one of the prescribed Ragas on Sitar Vadya, which became the fulcrum to learning the intrinsic nature of the Raga.

CO2: They skilfully exhibited Drut Gat in one specified Ragas. This became a preamble toacquiring performance skills. Students achieved deciphering of the twelve musical notes bythe ear, giving them a resilient hold on the Swaras.

CO3: They brilliantly recited the Thekas with their Dugun and Tali-Khali in the given Talas, achieving a stable foothold on rhythm.The student will now acknowledge the different techniques of Sitar.

Name of the Course- Introductory Mathematics
Course Code- 24MATX01MD01

Course Outcomes-

CO1: Apply methods to compute H.C.F. (Highest Common Factor) and L.C.M. (Least Common Multiple) of given numbers.

CO2: Calculate square roots, cube roots, and apply operations involving surds and indices.

CO3: Solve problems related to Profit, Loss and ages.

CO4: Solve problems on speed, time, and distance, including those related to trains.

CO5: Understand and solve calendar based and clock related problems.

Name of the Course- Basic Statistics
Course Code- 24STAX01MD01

Course Outcomes-

CO1: Students acquainted with Knowledge of Statistics and It’s Importance.

CO2: Students acquainted with Knowledge of Various Types of Data, Measures of Central Tendency and Dispersion

CO3: Students acquainted with Knowledge about the Graphical Presentation of Data.
CO4: Students acquainted with Knowledge about the Graphical Presentation of Data.
CO5: Students acquainted with Knowledge of the Concepts of Regression Analysis.

B.SC. LIFE SCIENCE

2nd SEMESTER

MAJOR	Diversity of Archigoniates, ANIMAL DIVERSITY-II, Fundamental Chemistry – II
Skill Enhancement Course	Floriculture, Pest management, Fuel Chemistry
Ability Enhancement Course	Hindi Bhasha Sanvardhan (One), Sanskrit and Modern Indian Languages
Value Added Course	Digital and Technological Solutions
Multi-disciplinary Course	Basics of Home Science-II, Applied Theory of Hindustani Music Vocal, Technical Components of Hindustani Music Instrumental, Mathematical Reasoning, Statistics in Everyday Life

Name of the Course- Diversity of Archigoniates
Course Code- 24BOTM401DS01

Course Outcomes-
CO1: Identification, classification, reproduction and economic importance of Bryophytes, Pteridophytes and Gymnosperms
CO2: Evolution of sporophytes, steles and seed-habit.
CO3: Geological time scale for understanding the evolution of plants (gymnosperms and angiosperms).
CO4: The process of fossilization and some early fossil plants.

Name of the Course- ANIMAL DIVERSITY-II
Course Code- 24ZOOM402DS01

Course Outcomes-

CO1: Student will be able to describe unique characters and recognize life forms of phylum **Annelida:**
CO2. Student will be able to describe unique characters and recognize life forms of phylum **Arthropoda:**
CO3. Student will be able to describe unique characters and recognize life forms of phylum **Mollusca:**
CO4. Student will be able to describe unique characters and recognize life forms of phylum **Echinodermata:**

Name of the Course- Fundamental Chemistry – II
Course Code- 24CHEM402DS01

Course Outcomes-
CO1: Understand the basic characteristics and reactions in non-aqueous solvents.
CO2: Learn about the structure of noble gases, their properties and discuss their use in daily life as well as industrial applications.
CO3: Derive the expressions of various thermodynamic potentials for ideal and real gases under different conditions.
CO4: Understand the concept of entropy and change in entropy by changing different thermodynamic variables.
CO5: Understand basic chemistry of alkanes and alkenes and alkynes.
CO6: Describe the structure of alkenes, including the concept of cis-trans isomerism and geometric isomerism.
CO7: Define and explain the concept of aromaticity and apply Huckel's rule to determine the aromatic character of various compounds.
CO6: Learn and identify many organic reaction mechanisms including free radical substitution, electrophilic addition and electrophilic aromatic substitution.

Name of the Course- Floriculture
SKILL ENHANCEMENT COURSE
Course Code- 24BOT402SE01

Course Outcomes-
CO1: Understand the importance and scope of floriculture, management of nursery and gardens methods of plant propagation.
CO2: Develop a conceptual understanding of different types of ornamental plants.

CO3: Gain knowledge about the various types of gardens and importance of landscaping.
CO4: Students will learn about commercial floriculture and cultivation of important cut flowers.

Name of the Course- Pest management
SKILL ENHANCEMENT COURSE
Course Code- 24ZOO402SE01

Course Outcomes-

CO1: Students will able to understand ecologically important and harmful insects.
CO2: Will be able to recognize life cycle of crop insects
CO3: It will make the students understand about the vegetable pest
CO4: Students will be able to explain about various pest control approaches
CO5: Students will be able to identify various insect and pest species

Name of the Course- Fuel Chemistry
SKILL ENHANCEMENT COURSE
Course Code- 24CHE402SE01

Course Outcomes-

CO1: Define what constitutes a fuel and differentiate between different types of fuels.
CO2: Understand the fundamental principles of fuel chemistry.
CO3: Familiar with the processes involved in the production and refining of various fuels, including extraction, distillation, cracking, and blending.
CO4: Apply thermodynamic principles to analyse combustion processes including calculating enthalpy changes, heat of combustion, and efficiency of combustion systems.
CO5: Learn about the chemical composition, physical properties and characteristics of various fuels.
CO6: Understand the importance of fuel quality standards and regulations.
CO7: Determine safety protocols for handling, storing and transporting fuels.
CO8: Analyse how fuel combustion activities affect ecosystems, human health, air quality and climate change.

Name of the Course- Hindi Bhasha Sanvardhan (One)
ABILITY ENHANCEMENT COURSE
Course Code- 23HNDX01AE01

Course Outcomes-

CO1: शुद्ध हिन्दी के प्रयोग में अभिवृद्धि होगी।' (There will be an increase in the use of pure Hindi.)

CO2: 'व्यवसाय एवं रोज़गार की उपलब्धता वाले सभी क्षेत्रों में हिन्दी भाषा में निष्णात युवाओं की सहभागिता में अभिवृद्धि होगी।' (The participation of young people proficient in Hindi language will increase in all fields where business and employment are available.)

CO3: 'अंतरराष्ट्रीय स्तर पर हिन्दी-भाषा के वर्चस्व की स्थापना होगी और हिन्दी-भाषी को देश और विदेश में समुचित सम्मान मिलेगा।' (The dominance of the Hindi language will be established at the international level, and Hindi speakers will receive due respect in the country and abroad.)

Name of the Course- Sanskrit and Modern Indian Languages
ABILITY ENHANCEMENT COURSE
Course Code- 23SKTX01AE01

Course Outcomes-

CO1: Origin, Development and Importance of a Language.
CO2: Indo European and Indo Iranian Language families.
CO3: Vedic Sanskrit and its Literature.
CO4: Classic Sanskrit and its Literature.
CO5: Contribution of Sanskrit to Ancient and Modern Indian Languages.

Name of the Course- Digital and Technological Solutions
Value Added Course(VAC)
Course Code- 23CSAX01VA01

Course Outcomes-

CO1: Knowledge about digital paradigm.

CO2: Realization of importance of digital technology, digital financial tools, e-commerce.

CO3: Know-how of communication and networks.

CO4: Familiarity with the e-governance and Digital India initiatives

CO5: An understanding of use & applications of digital technology.

CO6: Basic knowledge of all machine learning and big data

MDC SUBJECTS IN B.SC. LIFE SCIENCE

2nd SEMESTER

Name of the Course- Basics of Home Science-II
Course Code- 24HSCX02MD01

Course Outcomes-

CO1: To describe the role and functions of different nutrients in body

CO2: To acquire knowledge about clothing & fabricconstruction

CO3: To identify the developmental milestones of childhood and adolescence stage.

CO4: To comprehend the relationships that characterize art anddesign practice

CO5: To impart awareness skills of becoming a rationalized consumer

Name of the Course- Applied Theory of Hindustani Music Vocal
Course Code- 24MUSVX02MD01

Course Outcomes-

CO1: They efficiently displayed their mastery over Swarmalika in one of the prescribed Ragas, which became the fulcrum to learning the intrinsic nature of the Raga.

CO2: They skilfully exhibited Drut Khayals in the two specified Ragas. This became a preamble to acquiring performance skills. Students achieved deciphering of the twelve musical notes by the ear, giving them a resilient hold on the Swaras.

CO3: They brilliantly recited the Thekas with their Dugun and Tali-Khali in the given Talas, achieving a stable foothold on rhythm. This course focuses on the practical fundamentals of performing a Raag on stage withVilambit and Drut Khayal. Students will be able to perform other lighter compositional forms of Indian Music like, Bhajan, Geet and Ghazal. Students will understand the concept of Laya and Layakari with the Raga and its composition. Students will also learn the basic Vocal exercises like Alankar-Paltas, which are the foundational compositions to learn for beginner student.

Name of the Course- Technical Components of Hindustani Music Instrumental
Course Code- 24MUSIX02MD01

Course Outcomes-

CO1: They efficiently displayed their mastery over Swarmalika in one of the prescribed Ragas, which became the fulcrum to learning the intrinsic nature of the Raga.

CO2: They skilfully exhibited Drut Khayals in the two specified Ragas. This became a preamble to acquiring performance skills. Students achieved deciphering of the twelve musical notes by the ear, giving them a resilient hold on the Swaras.

CO3: They brilliantly recited the Thekas with their Dugun and Tali-Khali in the given Talas, achieving a stable foothold on rhythm. This course focuses on the practical fundamentals of performing a Raag on stage with Vilambit and Drut Khayal. Students will be able to perform other lighter compositional forms of Indian Music like, Bhajan, Geet and Ghazal. Students will understand the concept of Laya and Layakari with the Raga and its composition. Students will also learn the basic Vocal exercises like Alankar-Paltas, which are the foundational compositions to learn for beginner student.

Name of the Course- Mathematical Reasoning
Course Code- 24MATX02MD01

Course Outcomes-

CO1: Identify and solve analogy-based problems by establishing relationships between pairs of words or symbols.
CO2: Solve problems related to coding-decoding.
CO3: Solve problems based on number series, ranking, and time sequence.
CO4: Handle various mathematical and logical operations.
CO5: Read and use various graphs and diagrams.

Name of the Course- Statistics in Everyday Life
Course Code- 24STAX02MD01

Course Outcomes-

CO1:Students will achieve Knowledge of Various Types of Data.
CO2:Students will achieve Computational Skill for Identifying Random Variables and It's Applications
CO3:Students will achieve Knowledge about the Measures of Central Tendency and Dispersion.
CO4:Students will achieve The Skill to Use Probability Distributions in Everyday Life.
CO5:Students will achieve The Knowledge About the Techniques to Test the Hypothesis Based on Real Life Phenomena.