FACULTY OF SCIENCES

SYLLABUS

of

Bachelor of Science (Medical)

(Semester I –VI)

(Under Continuous Evaluation System)

Session: 2022-23

The Heritage Institution

KANYA MAHA VIDYALAYA JALANDHAR

(Autonomous)

Bachelor of Science Medical (Zoology, Botany, Chemistry)

Session 2022-23

Programme Specific Outcomes:

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

PSO1. Understand the nature and basic concepts of cell biology, Biochemistry, Taxonomy and ecology.

PSO2. Analyse the relationships among animals, plants and microbes

PSO3. Perform procedures as per laboratory standards in the areas of Biochemistry, Bioinformatics, Taxonomy, Economic Zoology and Ecology

PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine

PSO5. Understand the importance of plants, their diversity and its conservation.

PSO6. Understand contribution of botany in medicines, food, fibers and other plant products.

PSO7. Understand Health and Environmental Protection and to tackle pollution problems.

PSO8. Understand the importance of nature.

PSO9. Understand Experiments in Botany.

PSO10. Understand knowledge of Botany is an essential requirement for the pursuit of many applied sciences like Agriculture, Horticulture, Sericulture, Forestry, Biotechnology and many more.

PSO11. Demonstrate knowledge of organic, inorganic and physical chemistry and apply this knowledge to analyse a variety of chemical phenomena and will be able to interpret and analyse quantitative data.

PSO12. Understand theoretical concepts of instruments that are commonly used in most chemistry fields as well as interpret and use data generated in instrumental physical and chemical analyses.

They will also be able to employ critical thinking and scientific inquiry in the performance, design, interpretation and documentation of laboratory experiments, at a level suitable to succeed at an entry-level position in industry or a chemistry postgraduate program.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-1421

Course Outcomes:

CO1: ਦੋ ਰੰਗ (ਕਵਿਤਾ ਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO3: ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO4: ਪੈਰ੍ਹਾ ਰਚਨਾ ਅਤੇ ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਧੁਨੀ ਵਿਉਂਤ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਧੁਨੀਆਂ ਦੀ ਉਚਾਰਨ ਪ੍ਰਣਾਲੀ ਤੋਂ ਵਾਕਫ਼ ਹੋਣਗੇ।

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-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।

Bachelor of Science (Medical) 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- BSML-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 understand the sources and physical features of Punjab

CO 2: To study the earliest civilisation (Indus Valley Civilization) and original home of Aryans

CO 3: To examine the Social, Religious and Economic life during Early and Later Vedic Age

CO 4: To comprehend the Buddhist, Jain and Hindu faith and their relevance in the modern times

Bachelor of Science (Medical) Semester- I (Session 2022-23)

Course Title: English (Compulsory)
Course Code: BSML-1212

Course Outcomes

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

CO1: Understand fundamental grammatical rules governing tenses, the use of modal verbs and make correct usage in their language through the study of "English Grammar in Use" by Raymond Murphy

CO2: Write paragraphs on any given topic and translate any passage from Hindi/Punjabi to English

CO3: Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in text "Tales of Life".

CO4: Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in text "Prose for Young Learners"

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Cell Biology

Course Code: BSMM-1483 (I)

(THEORY)

Course Outcomes:

CO1. Perform a variety of molecular and cellular biology techniques

CO2. Describe cellular membrane structure and function, fine structure and function of cell organelles.

CO3. Knowledge about structure and function of cell organelles.

CO4. Learn elementary idea about Cancer and Immunity.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-I (Protozoa to Annelida)

Course Code: BSMM-1483 (II)

(THEORY)

Course Outcomes

- CO1: Knowledge about physiology of unicellular life and parasitic protozoan.
- CO2: Understanding of important marine water non chordates.
- CO3: Learn about parasitic Platyhelminthes
- CO4: Understand the economic importance and physiology of Ascaris and earthworm

Bachelor of Science (Medical) Semester- I (Session 2022-23)

ZOOLOGY

Course Title: Practical-I (Related to Cell Biology & Biodiversity-I)

Course Code: BSMM-1483 (P)

(PRACTICAL)

Course Outcomes

BSMM 1483 (P): Practical–I (Related to Cell Biology & Biodiversity-I)

- CO1. Familiar with Scientific method
- CO2.Recognise the importance of conservation
- CO3. Ability to observe chromosomal arrangements during cell division

Bachelor of Science (Medical) Semester- I (Session 2022-23)

MICROBIOLOGY

Course Title: Fundamentals of Microbiology

Course Code: BSMM-1343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about history of microbiology and characterization and identification of microorganisms.

CO2: Understand the principle and applications of different microscopes and methods of sterilization, pure culture concept and different staining methods of bacteria.

CO3: Understand the structure of bacterial cell and nutritional requirement of microorganisms, different types of media and control of microorganisms by physical and chemical agents.

CO4: Understand the reproduction and growth of microorganisms and common bacterial and viral diseases in human.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-1084 (I)

(THEORY)

Course outcomes:

Students will be able to

CO1: Predict electronic properties of atoms using current models and theories in chemistry, sketch the probability density curves, boundary surface diagrams and shapes of orbitals and write the electronic configuration of atoms.

CO2: Identify the periodic trends in physical and chemical properties of elements, describe the arrangement of the elements in the Periodic Table& change from metallic to nonmetallic character.

CO3: Describe VBT, VSEPR theory and predicts the geometry of simple molecules&molecular orbital theory of homonuclear diatomic molecules

CO4: Explain, predict & draw structures of simple ionic compounds.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Organic Chemistry

Course Code: BSMM-1084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: interpret the bonding, hybridization between different organic compounds, explain the various reaction mechanisms and different electron displacement effects

CO2: interpret the reactions and properties of alkanes, alkenes & alkynes, derive the electrophilic, nucleophilic addition reactions, free radical mechanisms of halogenation of alkanes.

CO3: compare the reactivities of various alkyl and aryl halide, stability of various cycloalkanes

CO4: differentiate between aromatic, anti-aromatic and non-aromatic compounds, explain the effect of various substituents on the reactivity of aromatic compounds

Bachelor of Science (Medical) Semester- I (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-1084 (P)

(PRACTICAL)

Course outcomes

Students will be able to

CO1: separate and identify the various ions present in the mixture

CO2: accurately note down the melting point of organic compounds

CO3: accurately note down theboiling point of organic compounds.

CO4: Differentiate between pure & impure compounds.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Microbes

Course Code: BSMM-1075 (I)

(THEORY)

Course outcome: -

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

CO1: Understand diversity in microscopic living organisms and their associations with other organisms.

CO2: Understand evolutionary history and time scale of non-vascular plants.

CO3: Develop basic knowledge about the variations in life cycle pattern of different organisms.

CO4: Interpret the structure and functional anatomy of plants belonging to the principal groups of living and fossil land plants.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Diversity of Cryptogams

Course Code: BSMM-1075 (II)

(THEORY)

Course Outcomes:

After passing this course student will be able to:

CO1: Demonstrate knowledge of similarities and differences between vascular and nonvascular plants.

CO2: Build up a sound foundation in the subject of Cryptogamic Botany in general and Bryophytes in particular so that the students may be able to apply the acquired knowledge while interacting into the other fields of Botany.

CO3: Acquaint the students about the classification, morphology, biology and economic importance of various pteridophytic plants.

CO4: Recognize different plants and flora that come under cryptogams.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

BOTANY

Course Title: Practical – Related to Diversity of Microbes & Diversity of Cryptogams

Course Code: BSMM-1075 (P)

(PRACTICAL)

Course Outcomes:

After passing this course student will be able to:

CO1: Ability to evaluate different sources of phylogenetic information (e.g. molecular sequence data, ultrastructure, morphology) for understanding algal, fungal.

CO2: Knowledge of the evolutionary history and time-scale of non-vascular plants, including the development of the first terrestrial plants from green algae.

CO3: Knowledge of the history and time-scale of land plant evolution, and evaluation of the principal types of evidence underlying.

CO4: Basic understanding of algal and fungal diversity (incl. morphology, cell structure and level of organization) to phylum level, and their association as lichens.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (Food Chemistry and Nutrition)

Course Code: BSMM-1255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand food, its functions, food groups, food metabolism, nutrition, malnutrition and nutrient requirement for adult men and women as per ICMR.

CO2: Understand the chemistry underlying the properties of various food components.

CO3: Understand the composition and nutritional significance of cereals, milk and milk products.

CO4: Understand the composition and nutritional significance of egg and poultry, meat and fish, fruits and vegetables.

Bachelor of Science (Medical) Semester- I (Session 2022-23)

DRUG ABUSE

Course Title: Drug Abuse: Problem, Management and Prevention

Course Code: AECD-1161

(THEORY)

Course Outcomes

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

CO1. Learn how to 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. Learn how to be supportive during the detoxification and rehabilitation process.

CO3. Focus on 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. Understand that substance abuse education is important for students alike; there are many misconceptions about commonly used legal and illegal substances, such as alcohol and marijuana

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjabi (Compulsory)

Course Code- BSML-2421

Course Outcomes

CO1: ਦੋ ਰੰਗ (ਕਹਾਣੀ ਭਾਗ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO2: ਇਸ ਦਾ ਹੋਰ ਮਨੋਰਥ ਕਵਿਤਾ ਦੀ ਵਿਆਖਿਆ, ਵਿਸ਼ਲੇਸ਼ਣ ਤੇ ਮੁਲੰਕਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਜਾਣੂ ਕਰਾਉਣਾ ਵੀ ਹੈ ਤਾਂ ਕਿ ਉਹ ਸਮਕਾਲੀ ਸਮਾਜ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝ ਸਕਣ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਦ੍ਰਿਸ਼ਟੀ ਬਣਾ ਸਕਣ।

CO3: ਸੰਸਾਰ ਦੀਆਂ ਪ੍ਰਸਿਧ ਹਸਤੀਆਂ ਜੀਵਨੀ ਦੀ ਵਿਧਾ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਜੀਵਨੀ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਜੀਵਨੀ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO4: ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਸ਼ਬਦ ਰਚਨਾ ਪੜ੍ਹਣ ਨਾਲ ਵਿਦਿਆਰਥੀ ਇਸਦੇ ਮੁੱਢਲੇ ਸੰਕਲਪਾਂ ਨੂੰ ਆਧਾਰ ਬਣਾ ਕੇ ਇਹਨਾਂ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ।

CO5: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

CO6: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code- BSML-2031

Course outcomes

CO1: ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿਖਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਵਿਚ ਪਾ ਕੇ ਇਕ ਹੋਰ ਭਾਸ਼ਾ ਸਿੱਖਣ ਦੇ ਮੌਕੇ 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: ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

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

CO6: ਵਿਦਿਆਰਥੀ ਵਾਕ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਇਸਦੀ ਬਣਤਰ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ ਅਤੇ ਭਾਸ਼ਾ ਤੇ ਪਕੜ ਮਜਬੂਤ ਹੋਵੇਗੀ।

CO7: ਪੈਰ੍ਹਾ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO8: ਘਰੇਲੂ ਅਤੇ ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO9: ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਨਾਲ ਗੱਲਬਾਤ ਵਿਚ ਪਰਪੱਕਤਾ ਆਉਂਦੀ ਹੈ।ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਗੱਲਬਾਤ ਵਿਚ ਨਿਖਾਰ ਲਿਆਉਣ ਦਾ ਕੰਮ ਕਰਨਗੇ।

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: Punjab History and Culture (C. 320 to 1000 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code- BSML-2431

Course Outcomes

After completing Semester II and course on Ancient History of Punjab students will be able to understand:

CO 1 (a): The reasons and impact of Alexander's invasions

CO 1 (b): To understand the various factors leading to rise and fall of empires and emergence of new dynasties and their administration specifically of Maurya rule in general and Ashok in particular

CO 2: art and architecture of Gupta period and the Indo-Greek style of architecture under Gandhara School

CO 3: To have an insight into the socio-cultural history under Harshvardhan and punjab under the stated period

CO 4: To enable students to have thorough insight into the various forms/styles of Architecture and synthesis of Indo - Greek Art and Architecture in Punjab

Bachelor of Science (Medical) Semester- II (Session 2022-23)

Course Title: English (Compulsory)

Course Code- BSML-2212

Course Outcomes

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

CO1: Change the narration and voice of sentences after understanding fundamental grammatical rules governing them through the study of "English Grammar in Use" by Raymond Murphy

CO2: Write personal letters and increase their knowledge of vocabulary by studying the synonyms and antonyms in the prescribed text *The Students' Companion* by Wilfred D. Best

CO3: Comprehend the meaning of texts and answer questions related to situations, episodes, themes and characters depicted in them through the study of the stories in text "Tales of Life".

CO4: Appreciate the writings of various Indian and foreign story and prose writers and relate them to their socio-cultural milieu through the study of the essays in text "Prose for Young Learners"

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY
Course Title: Ecology
Course Code: BSMM-2483 (I)
(THEORY)

Course Outcomes

After passing this course the student will be able to:

CO1. Describe the history, introduction and nature of ecosystem

CO2. Understand the biogeochemical cycles and ecological adaptations.

CO3. Know about the characteristics of population & biotic community.

CO4. Know about the conservation of resources.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-II (Arthropoda to Hemichordata)

Course Code: BSMM-2483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand physiology and economic importance of cockroach and social organization of insects.

CO2. Knowledge about the general pattern of life history of phylum mollusca

CO3. Learn about life history and larval forms of Echinodermata

CO4. Knowledge about affinities of Hemichordates with Non-Chordates and Chordates

Bachelor of Science (Medical) Semester- II (Session 2022-23)

ZOOLOGY

Course Title: Practical-II (Related to Ecology and Biodiversity-II)

Course Code: BSMM-2483 (P)

(PRACTICAL)

Course Outcomes:

After passing this course the student will be able to:

CO1. Know about the morphological, physiological & behavioural adaptations of different animals in different habitats.

CO2. Familiarise with the classification & ecology of invertebrates.

CO3. Identify different zoogeographical realms with fauna.

CO4. Know about the different nest of birds.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

MICROBIOLOGY

Course Title: Basic Food Microbiology

Course Code: BSMM-2343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about microorganisms important in food microbiology and the intrinsic and extrinsic factors affecting their growth.

CO2: Learn about the origin and preparation of fermented foods.

CO3: Understand the methods of food preservation and applications of prebiotics and probiotics.

CO4: Understand the spoilage in different food products.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Inorganic Chemistry

Course Code: BSMM-2084 (I)

(THEORY)

Course outcomes:

Students will be able to

CO1: Explains & compares the trends in atomic and physical properties of group 13, 14, 15, 16, 17 elements

CO2: Explain the atomic, physical and chemical properties of alkali metals and alkaline earth metals.

CO3: Interpret the properties of carbides, silicates, interhalogen compounds.

CO4: Exhaustive understanding of d–block elements belonging to 4th, 5th and 6th period.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Physical Chemistry

Course Code: BSMM-2084 (II)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Explain various gaseous laws and their applications.

CO2: Acquire the knowledge of structure and intermolecular forces present between solids, liquids and gases, Discuss liquid crystals& its types.

CO3: Understand& apply the basic concepts of colloidal state of matter and applications of colloids.

CO4: Demonstrate an understanding of basic principles of colligative properties of dilute solutions.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

CHEMISTRY

Course Title: Chemistry Practical

Course Code: BSMM-2084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Understand & apply the technique of crystallization.

CO2: Determine the rate of the reactions

CO3: Compare & analyze the viscosity and surface tension of different liquids and solutions

CO4: Application of calorimeter in various thermochemistry experiments.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Cell Biology

Course Code: BSMM-2075 (I)

(THEORY)

Course Outcome: -

After passing this course the course the student will be able to:-

CO1: Explain cellular processes and mechanisms that lead to physiological functions as well as examples of pathological state.

CO2: Describe the intricate relationship between various cellular structures and their corresponding functions.

CO3: Describe cytological, biochemical, physiological and genetic aspects of the cell, including cellular processes common to all cells, to all eukaryotic cells as well as processes in certain specialized cells.

CO4: Relate normal cellular structures to their functions.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Genetics

Course Code: BSMM-2075 (II)

(THEORY)

Course outcome: -

After passing this course the course the student will be able for:-

CO1: Comprehensive, detailed understanding of the chemical basis of heredity

CO2: Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms.

CO3: Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc.

CO4: Understanding the role of genetic mechanisms in evolution. The knowledge required to design, execute, and analyze the results of genetic experimentation in animal and plant model systems.

CO5: The ability to evaluate conclusions that are based on genetic data. Insight into the mathematical, statistical, and computational basis of genetic analyses that use genome-scale data sets in systems biology settings.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

BOTANY

Course Title: Practical: Genetics and Cell Biology

Course Code: BSMM-2075 (P)

(PRACTICAL)

Course outcome: -

After passing this course the course the student will develop:

CO1: A critical awareness of how genetics techniques can be applied to biological problems.

CO2: A critical awareness of current thinking in a specialist area of cell biology and genetics.

CO3: the ability to evaluate methodologies in the design of experimental procedures.

CO4: The ability to critically evaluate experimental data.

CO5: The ability to synthesize hypotheses from a wide range of information sources.

CO6: The ability to design and implement a wide range of experimental procedures.

CO7: to be able to make sound judgments on the significance of incomplete data sets.

CO8: Demonstration of independence and originality in solving problems.

CO9: The ability to exercise initiative and personal responsibility.

CO10: The development of independent learning skills required for continuing professional development.

Bachelor of Science (Medical) Semester- II (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT HYGIENE AND SANITATION)

Course Code: BSMM-2255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand hygiene, sanitation and importance of personal hygiene of food handler in food industries.

CO2: Learn different methods of cleaning and sanitation in food processing industries.

CO3: Understand basic principles and practices of cleaning and sanitation in different food processing industries.

CO4: Understand pest control, hygiene of water used for processing and waste product handling in food industries.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-3421

Course Outcomes:

CO1: ਚੋਣਵੇ ਪੰਜਾਬੀ ਨਿਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਵਾਰਤਕ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: 'ਸਮਾਂ ਮੰਗ ਕਰਦਾ ਹੈ' ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਇਕਾਂਗੀ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਲੇਖ ਰਚਨਾ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਮੂਲ ਵਿਆਕਰਣਕ ਇਕਾਈਆਂ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਵੰਨਗੀਆਂ (ਭਾਵੰਸ਼, ਸ਼ਬਦ, ਵਾਕੰਸ਼, ਉਪਵਾਕ ਅਤੇ ਵਾਕ)ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- III (Session 2022-23)

PUNJABI

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-3031

Course Outcomes:

CO1: ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਸੰਖੇਪ ਵਿਚ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO2: ਪੈਰ੍ਹਾ ਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉਤਰ ਦੇਣ ਦਾ ਮਨਰੋਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO3: ਕਵਿਤਾ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿ ਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO4: ਕਹਾਣੀ ਭਾਗ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਤਾਂ ਕਿ ਉਹ ਆਧੁਨਿਕ ਦੌਰ ਵਿਚ ਚੱਲ ਰਹੀਆਂ ਕਾਵਿਧਾਰਾਵਾਂ ਅਤੇ ਕਵੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਿਲ ਕਰ ਸਕਣ।

CO5: ਨਿਬੰਧ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਮੁੱਲਵਾਨ ਇਤਿਹਾਸ ਤੋਂਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

Bachelor of Science (Medical) 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: BSML-3431

Course Outcomes

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

CO 1: Understand the society and culture of Medieval Punjab.

CO 2: Understand the growth of various sects during the Bhakti Movement in Punjab.

CO 3: Comprehend and analyse the teachings of Guru Nanak Dev and its relevance today

CO 4 (a): Make a comparison between the philosophy and teachings of first five Sikh Gurus and their relevance in the present scenario.

CO4 (b): Understand and analyze the institutions started by Sikh Gurus and their implications till date.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-3212

Course Outcomes:

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

CO1: Comprehend the basics of grammatical rules governing relative clauses, adjectives, adverbs, conjunctions and prepositions through the study of "English Grammar in Use" by Raymond Murphy

CO2: Develop skills to write an essay on a given topic and enhance their vocabulary through the study of "The Students' Companion" by Wilfred D. Best

CO3: Enhance their reading and analysing power of texts through guided reading through the study of "Making Connections" by Kenneth J. Pakenham

CO4: 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 through the study of the poems in the prescribes text "Moments in Time"

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: Biodiversity-III (Chordates)

Course Code: BSMM-3483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand general body plan of Herdmania and external characters of Amphioxus.

CO2. Understand external characters and affinities of Petromyzon as well as body systems of Labeo.

CO3. Understand body plan and various systems of Frog and Uromastix.

CO4. Understand body systems of Pigeon and Rat.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

ZOOLOGY

Course Title: Practical-III (Related to Evolution and Biodiversity-III)

Course Code: BSMM-3483 (P)

(PRACTICAL)

Course Outcomes:

CO1. Familiarize organ systems.

CO2. Aware about economically important specimens (preserved).

CO3. Understanding of evolutionary phenomena.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL NUTRITION AND METABOLISM

Course Code: BSMM-3343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the nutritional requirements for growth of microorganisms and types of microorganisms on the basis of nutrition.

CO2: Understand the transport of nutrients across the cell membrane.

CO3: Learn about the metabolic pathways and electron transport chain of bacteria.

CO4: Learn about the enzyme kinetics and biosynthesis of nucleic acids.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-3084 (I)
(THEORY)

Course outcomes:

Students will be able to

CO1: To resolve the different enantiomers and differentiate between dextrorotatory-leavorotatory chiral and achiral compounds, understand the concept of isomerism, axial and equatorial bonds.

CO2: Understand the methods of formation, chemical reactions, acidic character of alcohols

CO3: Preparation of understand structure and bonding phenols, acidic character of phenols

CO4: Compare reactivity of aliphatic and aromatic aldehydes and ketones, to understand the various reactions given by carbonyl compounds

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: PHYSICALCHEMISTRY

Course Code: BSMM-3084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: Understand and evaluate thermodynamic property of any system and its applications to various systems, acquire the knowledge of phase equilibria of various systems

CO2: Demonstrate the carnot cycle, understand the concept of Entropy

CO3: Understand the concept of Residual entropy, demonstrate Clausius-Clapeyron equation, CO4: understand concept of spontaneity of a reaction in terms of free energy change.

CO4: Understand and demonstrate the concept of phase equilibria of one component system, two component system

Bachelor of Science (Medical) Semester- III (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-3084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Understand and master the technique of volumetric analysis, analyze an acidic and alkali content in different samples,

CO2: To analyze calcium content in various samples permanganometricall, understand the concept of hardness of water and its analysis by EDTA method

CO3: Understand and master the technique of gravimetric analysis

CO4: To understand the concept of TLC and its applications

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-I

Course Code: BSMM-3075 (I)

(THEORY)

Course outcome:

After passing this course the student will develop:

CO1: Understanding of basic body plan of a flowering plant, Diversity in plant form branching pattern and canopy architecture trees.

CO2: Understanding of shoot apical meristem and its histological organization. Cambium and its function and formation of secondary xylem.

CO3: Understanding of wood in relation to water and minerals, growth rings and structure of secondary phloem and periderm.

CO4: Understanding of origin, development, arrangement and diversity in size and shape of leaf, internal structure in relation to photosynthesis and water loss, senescence and abscission.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS-II

Course Code: BSMM-3075 (II)

(THEORY)

Course outcome:

After passing this course the student will be able to:

CO1: Recognize the major groups of vascular plants and their phylogenetic relationships.

CO2: Know the structure and development of monocot and dicot embryos.

CO3: Understand different means of vegetative reproduction.

CO4: Understand physiology of seed germination.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

BOTANY

Course Title: PRACTICAL – STRUCTURE, DEVELOPMENT AND REPRODUCTION IN FLOWERING PLANTS (I & II)

Course Code: BSMM-3075 (P)

(PRACTICAL)

Course outcome:

After passing this course the student will be able to:

CO1: Develop knowledge about the role of herbarium techniques in plant identification.

CO2: Understand different life forms exhibited by flowering plants.

CO3: Understand anatomy of different plant parts using free hand razor technique.

CO4: Examine flower and their mode of pollination.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: FOOD PROCESSING AND PACKAGING

Course Code: BSMM-3255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Learn about the methods of food preservation and processing of fats, oils and sugar.

CO2: Learn about the processing of salt, tea, coffee, chocolate and cocoa powder, extruded foods and role of enzymes in food processing.

CO3: Learn about spices and flavors, food additives and manufacturing of fermented products.

CO4: Understand types of packaging materials, their properties and machinery.

Bachelor of Science (Medical) Semester- III (Session 2022-23)

Course Title: ENVIRONMENTAL STUDIES (COMPULSORY)

Course Code: AECE-3221

(THEORY)

Course Outcomes:

After passing this course students will be able to:

CO1: Understand the concept and need of environmental education.

CO2: Understand the role of an individual in conservation of natural resources.

CO3: Learn about role of major Eco system and their conservation.

CO4: Develop desirable attitude,value and respect for protection of Biodiversity.

CO5: Learn about the control measure of pollution and solid waste management.

CO6: Understand the role of different agencies in the protection of environment.

CO7: Knowledge regarding welfare programmes and Human rights.

CO8: Knowledge about the applied value of environmental studies.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-4421

Course Outcomes:

CO1: ‘ਪਗਡੰਡੀਆਂ’ (ਸਵੈਜੀਵਨੀ) ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਵੈ ਜੀਵਨੀ ਇਸ ਸਾਹਿਤ ਰੂਪ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ‘ਫ਼ਾਸਲੇ’ (ਨਾਟਕ) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਟਕ ਨੂੰ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਨਾਟਕ ਜਗਤ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਦਫ਼ਤਰੀ ਚਿੱਠੀ ਪੱਤਰ ਲਿਖਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂਨੂੰ ਇਸ ਕਲਾ ਵਿਚ ਨਿਪੁੰਨ ਕਰਨਾ ਹੈ।

CO4: ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰਨ ਦਾ ਮਕਸਦ ਵਿਦਿਆਰਥੀਆਂ ਦੁਆਰਾ ਲਿਖ਼ਤ ਵਿਚ ਕੀਤੀਆਂ ਜਾਣ ਵਾਲੀਆਂ ਗਲਤੀਆਂ ਨੂੰ ਸੁਧਾਰਨਾ ਹੈ।

CO5: ਗੁਰਮੁਖੀ ਲਿਪੀ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਦਾ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

Course Title: PUNJAB HISTORY AND CULTURE (FROM 1605 to 1849 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-4431

Course Outcomes

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: Understand the adoption of new policy by Guru Hargobind and martyrdom of Guru Tegh Bahadur

CO 2: To understand the factors leading to the establishment of Khalsa Panth and its impact .

CO 3: Have deep insight into the conflict with Mughals and the rise of Banda Singh Bahadur and aftermath.

CO 4: Understand the administration under Maharaja Ranjit Singh , also the fairs, festivals and folk music of Punjab.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-4212

Course Outcomes:

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

CO1: Comprehend the basics of grammatical rules governing prepositions and phrasal verbs through the study of "English Grammar in Use" by Raymond Murphy

CO 2: Develop skills to write an essay on a given topic and enhance their vocabulary through the study of "The Students' Companion" by Wilfred D. Best

CO 3: Enhance their reading and analysing power of texts through guided reading through the study of "Making Connections" by Kenneth J. Pakenham

CO4: 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 through the study of the poems in the prescribes text "Moments in Time"

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: BIOCHEMISTRY

Course Code: BSMM-4483 (I)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1. Understand the structure and functions of biologically important molecules.

CO2. Understand about enzymes, coenzymes and lipid metabolism.

CO3. Understand various processes of carbohydrate metabolism.

CO4. Gain knowledge about protein metabolism.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Course Title: ANIMAL PHYSIOLOGY

Course Code: BSMM-4483 (II)

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1.Understand mechanism of digestion and respiration.

CO2. Have knowledge about composition of blood, blood groups, cardiac cycle and urine formation.

CO3. Understand mechanism of skeletal muscle contraction and neural integration.

CO4. Understand physiology of behavior and endocrine system.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

ZOOLOGY

Practical -IV (Related to Biochemistry and Animal Physiology)

Course Code: BSMM-4483 (P)

(PRACTICAL)

Course Outcomes:

CO1. Learn clinical procedures for blood & urine analysis.

CO2. Develop skill in simple biochemical laboratory procedures.

CO3. Skill in observing and to some extent in analysing various Biological Data.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

MICROBIOLOGY

Course Title: MICROBIAL ECOLOGY

Course Code: BSMM-4343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the Diversity of various microbial habitats.

CO2: Understand the various microbial interactions and competition for survival in nature.

CO3: Understand the role of microorganisms in geochemical cycles, concept of microbial toxins, biofertilizers and bioinsecticides.

CO4: Understand the effluent treatment, bioremediation and bioleaching.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: INORGANIC CHEMISTRY

Course Code: BSMM-4084 (I)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Understand the key features of coordination compounds viz. Nomenclature, Isomerism and electronic configurations of coordination compounds, have general knowledge of Chelates, Postulates of VBT.

CO2: Understand the properties and reactions of non-aqueous solvents.

CO3: Write both reduction and oxidation half reactions for a simple redox reaction, Frost and understand the Latimer Pourbaix diagram.

CO4: Understand the positions, electronic configurations, relative stability, preparation, properties, structures and characteristics of the f-block elements in the periodic table

CO5: Understand the role of metal ions and other inorganic elements in biological systems

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: ORGANIC CHEMISTRY

Course Code: BSMM-4084 (II)

(THEORY)

Course Outcomes:

Students will be able to

CO1: Understand structure and bonding in carboxylic acids and carboxylic acid derivatives, Compare the acidity of alcohols, phenols and acids

CO2: Understand preparations and reactions of ethers and epoxides, understand cleavages in ethers, the ring opening reactions of epoxides

CO3: Understand preparation and reactions of nitroalkanes and nitroarenes, differentiate between primary, secondary and tertiary amines, basicity of amines

CO4: Understand nomenclature, structural features, methods of formation and chemical reactions of Organomagnesium, Organolithium, Organozinc and Organocopper compounds.

CO5: Know the various methods of synthesis and compare electrophilic substitution, basicity, reactions of pyrrole, furan, thiophene and nucleophilic substitution reactions of pyridine.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-4084 (P)
(PRACTICAL)

Course Outcomes:

Students will be able to analyze the given organic compound through

CO1: Understand the basics of Qualitative analysis

CO2: Detection of elements (N, S and halogens) in organic compounds.

CO3: Detection of functional groups (phenolic, carboxylic, carbonyl, esters, carbohydrates, amines, amides, nitro and anilide) in simple organic compounds

CO4: Preparation of their derivatives

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I

Course Code: BSMM-4075 (I)

(THEORY)

Course Outcomes:

After passing this course the student will develop:

CO1: Understanding of characters of seed plants, origin and evolution of seed habit, angiosperms and gymnosperms

CO2: Understanding of general characters of gymnosperms, their classification and evolution including fossil and living gymnosperms.

CO3: Understanding of morphology of vegetative and reproductive parts of *Pinus* and *Cycas*

CO4: Understanding of morphology of vegetative and reproductive parts of *Ephedra* and *Ginkgo*

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-II

Course Code: BSMM-4075 (II)

(THEORY)

Course Outcomes:

After passing this course the student will develop:

CO1: Plant description, describe the morphological and reproductive stretch of plant and also identify the different families.

CO2: Understanding of Botanical Nomenclature, classification of angiosperms and Salient features of the systems proposed by Bentham and Hooker, Engler and Prantl

CO3: Understanding diversity of flowering plants in families like Ranuculaceae, Brassicaceae, Rutaceae, Fabaceae, Apiaceae, Acanthaceae.

CO4: Understanding diversity of flowering plants in families like Apocynaceae, sclepiadaceae, Solanaceae, Lamiaceae, Chenopodiaceae, Euphorbiaceae, Liliaceae, Orchidaceae and Poaceae.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

BOTANY

Course Title: PRACTICAL-DIVERSITY OF SEED PLANTS AND THEIR SYSTEMATICS-I&II

Course Code: BSMM-4075 (P)

(PRACTICAL)

Course Outcomes:

After passing this course the student will able to:

CO1: Identify different plants from different families through their vegetative and reproductive characters.

CO2: Understanding different types of placentation system.

CO3: Understanding morphology and anatomy of *Cycas* and *Pinus*.

CO4: Understanding morphology and anatomy of *Ephedra* and *Ginkgo*.

Bachelor of Science (Medical) Semester- IV (Session 2022-23)

FOOD SCIENCE AND QUALITY CONTROL (VOCATIONAL)

Course Title: QUALITY ASSURANCE

Course Code: BSMM-4255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the quality control in food industry and quality attributes.

CO2: Learn about quality assessment methods in different food industries.

CO3: Understand the sampling techniques and sensory evaluation of food.

CO4: Understand the concept of HACCP, GMP and food laws and regulations.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-5421

Course Outcomes

CO1: ਚੋਣਵੀਆਂ ਪੰਜਾਬੀ ਕਹਾਣੀਆਂ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਹਾਣੀਆਂ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ਨਾਵਲ ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ (ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ) ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਨਾਵਲ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਪੈਰ੍ਹਾ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਸਰਲ ਅੰਗਰੇਜ਼ੀ ਪੈਰ੍ਹੇ ਦਾ ਪੰਜਾਬੀ ਵਿਚ ਅਨੁਵਾਦ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਬੁੱਧੀ ਨੂੰ ਤੀਖਣ ਕਰਦਿਆਂ ਉਨਾਂ ਦੀ ਲਿਖਣ ਪ੍ਰਤਿਭਾ ਨੂੰ ਉਜਾਗਰ ਕਰਨਾ ਹੈ।

CO5: ਵਾਕਾਤਮਕ ਜੁਗਤਾਂ : ਮੇਲ ਤੇ ਅਧਿਕਾਰ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-5031

Course Outcomes

CO1: ਇਹ ਪਰਚਾ ਵੀ ਸਿਧਾਂਤਕ ਤੇ ਵਿਹਾਰਕ ਗਿਆਨ ਦਾ ਸੁਮੇਲ ਹੈ।

CO2: ਇਸ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੁਰਾਤਨ ਪੰਜਾਬੀ ਲੋਕ ਨਾਚ,ਲੋਕ ਕਲਾਵਾਂ, ਲੋਕ ਗੀਤਾਂ ਨੂੰ ਸਮਝਣ ਦੇ ਕਾਬਲ ਬਣਾਉਣ ਦਾ ਯਤਨ ਹੈ ।

CO3: ਇਨ੍ਹਾਂ ਦੇ ਅਧਿਐਨ ਦੇ ਮਾਧਿਅਮ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਪੁਰਾਤਨ ਲੋਕਾਂ ਦੇ ਜੀਵਨ ਨੂੰ ਸਮਝ ਸਕਣਗੇ ਕਿਉਂਕਿ ਆਪਣੀਆਂ ਜੜ੍ਹਾਂ ਦੀ ਪਛਾਣ ਕਰ ਸਕਣ ਦੇ ਬਗੈਰ ਕੋਈ ਵੀ ਕੌਮ ਜਾਂ ਲੋਕ ਆਪਣਾ ਵਰਤਮਾਨ ਜੀਵਨ ਚੰਗੀ ਤਰ੍ਹਾਂ ਬਿਤਾ ਸਕਣ ਦੇ ਸਮਰੱਥ ਨਹੀਂ ਹੋ ਸਕਦੇ।

CO4: ਸਿਧਾਂਤ ਪੱਧਰ ਦੇ ਗਿਆਨ ਤੋਂ ਬਾਦ ਇਸ ਗਿਆਨ ਦੇ ਆਧਾਰ ਤੇ ਪੁਰਾਤਨ ਲੋਕ ਗੀਤਾਂ ਜਾਂ ਲੋਕ ਕਹਾਣੀਆਂ ਦਾ ਵਿਹਾਰਕ ਅਧਿਐਨ ਕਰ ਸਕਣ ਦੇ ਸਮਰੱਥ ਬਣਾ ਸਕਣਾ ਹੈ।

CO5: ਇਸ ਪਰਚੇ ਦਾ ਯਤਨ ਨਿਸਚੈ ਹੀ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਪਣੀਆਂ ਜੜ੍ਹਾਂ ਪ੍ਰਤੀ ਸੁਚੇਤ ਕਰਨ ਤੇ ਯਤਨ ਨਾਲ ਸੰਬੰਧਿਤ ਹੈ।

Bachelor of Science (Medical) Semester- V (Session 2022-23)

Punjab History & Culture

Course Title: Punjab History & Culture (From 1849-1947 A.D.)

(Special paper in lieu of Punjabi Compulsory)

(For those students who are not domicile of Punjab)

Course Code: BSML-5431

Course outcomes

After completing the course students will be able to understand:

CO1: The causes that led to war between the British and Sikhs that led to the annexation of the Punjab and how the region was put under the control of Board of Administration

CO2: Various agrarian, industrial and educational policies introduced by the British in Punjab.

CO3: Analyse and evaluate the socio-religious reforms movements of Punjab

CO4: Factors that led to Gurudwara reform movement and various other freedom struggle movements in which the Punjab played a prominent role

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-5212

Course Outcomes:

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

CO 1: Analyze and appreciate the dramatic technique, plot development and art of characterisation in the prescribed play, "All My Sons" by Arthur Miller

CO 2: Widen their knowledge about various literary devices used in poetry such as tone, style, imagery, figures of speech, symbolism etc. thorough the study of prescribed poems from the text "Poems of Nature and Culture"

CO 3: Develop the knowledge, skills and capabilities for effective business writing such as formal letter writing, job application and resume writing

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Developmental Biology

Course Code: BSMM-5483 (I)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO1: Understand the key events in early embryological development like gametogenesis, fertilization and parthenogenesis.

CO2: Explain the process of cleavage, gastrulation, determination and differentiation.

CO3: Elaborate the development of frog, its metamorphosis and chick up to three germ layers.

CO4: Describe the development of rabbit, formation of foetal membranes and placenta.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: Genetics

Course Code: BSMM-5483 (II)

(THEORY)

Course Outcomes

After passing this course the student will be able to:

CO1: Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms. Understanding the role of genetic mechanisms like linkage, crossing over and multiple alleles.

CO2. Understand structure of nucleic acid, process of replication and translation, genetic code.

CO3: Understanding of how genetic concepts of mutations, regulation of gene expression and extranuclear inheritance.

CO4: Evolutionary and quantitative **genetics** including: the basis of **genetic** variation; heritability; Hardy-Weinberg Equilibrium and key concepts in population and how it affects broad societal issues including health and disease, food and natural resources, environmental sustainability, etc.

Bachelor of Science (Medical) Semester- V (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–V (Related to Developmental Biology and Genetics)

Course Code: BSMM-5483 (P)

Course Outcomes

CO1: Understanding of development patterns of frog, chick and Larva of *Herdmania*.

CO2: Knowledge of process of gametogenesis.

CO3: Understanding of pedigree analysis and preparation of family charts.

CO4: Understanding of inheritance of morphogenetic human characters.

CO5: Understanding of finger tip patterns.

Bachelor of Science (Medical) Semester-V Session 2022-23

MICROBIOLOGY

Course Code: BSMM-5343

Course Title: APPLIED MICROBIOLOGY-I

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the history and scope of industrial microbiology and preservation of stock cultures.

CO2: Understand the screening of microorganisms and composition and characteristics of fermentation media.

CO3: Learn about the fermenter and types of industrial fermentation.

CO4: Understand the downstream processing, fermentation economics and patent.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE TITLE: INORGANIC CHEMISTRY

COURSE CODE: BSMM/BSNM-5084 (I)

(THEORY)

Course outcomes

Students will be able to:

CO1: Use Crystal Field Theory to understand the structure, hybridisation, geometry and predict the colour of the complexes.

CO2: To describe the magnetic properties of coordination compounds.

CO3: Describe the stability of metal complexes by the use of formation constants and to calculate thermodynamic parameters from them.

CO4: To draw Orgel diagrams for d^1 to d^{10} systems and predict the possible transitions and to calculate number of microstate and ground state term symbols

CO5: Understand preparations, properties and applications of alkyls aryls of lithium and aluminium, bonding in metal-ethylenic complexes, mechanism of homogeneous hydrogenation.

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY

COURSE TITLE: PHYSICAL CHEMISTRY

COURSE CODE: BSMM/BSNM-5084(II)

(THEORY)

Course outcomes:

Students will be able to:

CO1: Understand conductance and its types, applications of conductivity measurements, conductometric titrations, transport numbers

CO2: Acquire knowledge about electrodes, reversible and irreversible cells, concentration cells, E.M.F, potentiometric titrations

CO3: Understand radioactivity, laws of radioactive decay, nuclear reactions, applications of radioactivity

CO4: Characterise the molecules with the help of various spectroscopic techniques such as vibrational, rotational, raman and electronic spectroscopy

Bachelor of Science (Medical) Semester-V Session 2022-23

CHEMISTRY PRACTICAL

COURSE TITLE: CHEMISTRY PRACTICAL

COURSE CODE: BSMM/BSNM-5084(P)

(THEORY)

Course outcomes:

Students will be able to

CO1: Synthesize and analyse the coordination compounds

CO2: Determine the end point of various conductometric titrations

CO3: Know the principle and working of Abbe's Refractometer

CO4: Determine the composition of unknown mixture of two liquids by refractive index measurements.

CO5: Learn the technique of Rast's methods

CO6: Learn phenomenon of adsorption of acetic acid and oxalic acid on charcoal

CO7: Learn distribution coefficient of of iodine between CCl_4 and water

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Plant Physiology

Course Code: BSMM-5075 (I)

(THEORY)

Course outcome: -

After passing this course the student will be able to:

CO1. Understand the plant cells in relation to water and mineral nutrition.

CO2. Learn about the movement of sap & absorption of water and growth in plant.

CO3. Understand the process of photosynthesis in higher plants with particular emphasis on light and dark reactions, C3 and C4 pathways.

CO4. Understand the growth regulator in higher plants.

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

Course Title: Biochemistry &Biotechnology

Course Code: BSMM-5075 (II)

(Theory)

Course outcome: -

After passing this course the student will be able to:

CO1. Understand the properties and function of enzymes, and process of carbohydrate metabolism.

CO2. Understand the Properties of nitrogen metabolism & lipid metabolism and its significance in plants

CO3. Understand the fundamentals of Recombinant DNA Technology. Know about the Genetic Engineering.

CO4. Understand the principle and basic protocols for Plant Tissue Culture.

Bachelor of Science (Medical) Semester-V Session 2022-23

BOTANY

PRACTICAL – Plant physiology, Biochemistry & Biotechnology (I &II)

Course Code: BSMM-5075(P)

(PRACTICAL)

Course outcomes:

After passing this course the student will be able:

CO 1: Determine the osmotic potential of cell sap by plasmolytic method.

CO2: Determine the Diffusion Pressure Deficit (DPD) of plant cells.

CO3: Determine the effect of time period on the rate of imbibition in different types of seeds.

CO4: Determine the relation between absorption and transpiration.

Bachelor of Science (Medical) Semester-V (Session 2022-23)

FOOD SCIENCE

Course Title: Food Science and Quality Control (Vocational) (FOOD ANALYSIS)

Course Code: BSMM-5255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the food composition and proximate analysis of food components.

CO2: Learn the analysis of micronutrients.

CO3: Understand the physical methods of food analysis including food rheology, refractometry and polarimetry.

CO4: Learn different chromatography techniques.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJABI

Course Title: PUNJABI (COMPULSORY)

Course Code: BSML-6421

Course Outcomes

CO1: ਕਾਵਿ ਗੌਰਵ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਕਵਿਤਾਵਾਂ ਪ੍ਰਤੀ ਦਿਲਚਸਪੀ, ਸੂਝ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ।

CO2: ਧਰਤੀਆਂ ਦੇ ਗੀਤ(ਸਫ਼ਰਨਾਮਾ)ਨੂੰ ਸਿਲੇਬਸ ਵਿਚ ਸ਼ਾਮਿਲ ਕਰ ਕੇ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਫ਼ਰਨਾਮਾ ਪੜ੍ਹਣ ਦੀ ਰੁਚੀ ਨੂੰ ਪੈਦਾ ਕਰਨਾ ਹੈ ਅਤੇ ਇਸ ਸਾਹਿਤ ਰੂਪ ਨਾਲ ਨਾਲ ਜੋੜਣਾ ਹੈ।

CO3: ਲੇਖ ਰਚਨਾ ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਕਰਨ ਨਾਲ ਵਿਦਿਆਰਥੀ ਆਪਣੀ ਗੱਲ ਨੂੰ ਕਹਿਣ ਦੀ ਜਾਚ ਸਿੱਖਣਗੇ ਅਤੇ ਇਹ ਦਿਮਾਗੀ ਕਸਰਤ ਵਿਚ ਸਹਾਈ ਹੋਵੇਗੀ।

CO4: ਵਿਆਕਰਨਕ ਸ਼੍ਰੇਣੀਆਂ : ਲਿੰਗ, ਵਚਨ,ਕਾਰਕ ਕਿਰਿਆ ਵਾਕੰਸ਼ : ਪਰਿਭਾਸ਼ਾ, ਬਣਤਰ ਤੇ ਪ੍ਰਕਾਰ ਨੂੰ ਪੜ੍ਹਾਉਣ ਦਾ ਮਨੋਰਥ ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਭਾਸ਼ਾ ਦੀ ਅਮੀਰੀ ਅਤੇ ਬਾਰੀਕੀਆਂ ਨੂੰ ਸਮਝਣ ਲਈ ਵੱਖਰੇ -ਵੱਖਰੇ ਸਿਧਾਂਤਾਂ ਦਾ ਵਿਕਾਸ ਕਰਨਾ ਹੈ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Basic Punjabi

Course Title: Basic Punjabi (In lieu of Punjabi Compulsory)

Course Code: BSML-6031

Course Outcomes

CO1: ਇਸ ਪਰਚੇ ਵਿਚ ਵਿਦਿਆਰਥੀ ਸਭਿਆਚਾਰ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਲੱਛਣ ਸਭਿਆਚਾਰਕ ਪਰਿਵਰਤਨਾਂ ਦੇ ਨਾਲ ਇਸ ਦਾ ਭੂਗੋਲ, ਮਨੋਵਿਗਿਆਨ ਤੇ ਆਰਥਕਤਾ ਨਾਲ ਸੰਬੰਧਾਂ ਬਾਰੇ ਜਾਨਣ ਤੋਂ ਬਾਅਦ ਸਭਿਆਚਾਰ ਤੇ ਸਭਿਅਤਾ, ਸਭਿਆਚਾਰ ਤੇ ਸਾਹਿਤ, ਸਭਿਆਚਾਰ ਤੇ ਭਾਸ਼ਾ ਦੇ ਆਪਸੀ ਸੰਬੰਧਾਂ ਦਾ ਅਧਿਐਨ ਕਰਨਗੇ।

CO2: ਇਸ ਤੋਂ ਇਲਾਵਾ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਮੂਲ ਸੋਮੇ ਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਨਿਵੇਕਲੇ ਲੱਛਣਾਂ ਬਾਰੇ ਜਾਣ ਸਕਣਗੇ।

CO3: ਸਾਹਿਤ ਕਿਸੇ ਸਭਿਆਚਾਰ ਦੀ ਪੇਸ਼ਕਾਰੀ ਹੀ ਹੁੰਦੀ ਹੈ ਤੇ ਇਸ ਪਰਚੇ ਰਾਹੀਂ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦਾ ਅਧਿਐਨ ਕਰਕੇ ਇਸ ਦੇ ਸਜੀਵ ਤੇ ਗੁਣਵਾਨ ਲੱਛਣਾਂ ਤੇ ਪ੍ਰਵਿਰਤੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ।

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

PUNJAB HISTORY AND CULTURE

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

Course Code: BSML-6431

Course Outcomes: -

After completing this paper, the students will be able to

CO1: Comprehend Punjab's contribution in the freedom struggle, the exodus and Rehabilitation

CO1 (a): Understand the history of Punjab from independence with special reference to partition

CO2: Comprehend the causes that led to the formation of New Punjab in 1966 and outcomes of Green Revolution in the Punjab

CO3: Understand nature of diaspora and growth of education in Punjab Punjabi literature and Drama in the Punjab after Independence

CO4: Understand the drug abuse problem, management and prevention in the Punjab

CO4 (a) Understand the problem of drug addiction and Female Foeticide in context to the Punjab

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ENGLISH

Course Title: ENGLISH (COMPULSORY)

Course Code: BSML-6212

Course Outcomes

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

CO 1: Comprehend, appreciate and critically analyse a novel through the story of the novel *Train to Pakistan* by Khushwant Singh

CO2: Analyze and appreciate the dramatic technique, plot development and art of characterisation through the study of the prescribed plays from the book *Glimpses of Theatre*

CO 3: Enhance their writing skills by writing essay on any given topics well as to write report on any incident witnessed

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course title: -MEDICAL ZOOLOGY

Course Code: BSMM-6483 (I)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO-1. Understand about various pathogenic microbes, life history of various pathogenic protozoans and helminths as well as diseases caused by them.

CO-2. Know about life history, diseases and control measures of arthropod vectors and awareness about epidemic diseases.

CO-3. Provide basics knowledge about immune responses, antigens, antibody structure and immunoglobulins.

CO-4. Understand antigen-antibody interactions and gain knowledge about vaccines.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: MEDICAL LABORATORY TECHNOLOGY

Course Code: BSMM-6483 (II)

(THEORY)

Course Outcomes

After successfully completing this course, students will be able to:

CO 1: Comply with safety regulations and universal precautions during lab investigations and perform basic laboratory techniques on biological specimens.

CO 2: Know about routine clinical laboratory investigations including collection of different samples and perform other routine hematological procedures.

CO 3: Describe basic scientific principles in learning new techniques and procedures in bacteriology and microbiology.

CO 4: Apply knowledge and technical skills associated histopathology, staining techniques and biochemical estimations.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

ZOOLOGY

Course Title: PRACTICAL–V (Related to Medical Zoology & Medical Laboratory Technology)

Course Code: BSMM-6483 (P)

(PRACTICAL)

Course Outcomes

CO1: Apply knowledge and technical skills associated with medical laboratory technology for delivering quality clinical investigations support.

CO2: Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation in accordance with current laboratory safety protocol

CO3: Recognize the role of medical laboratory technology in the context of providing quality patient health care.

CO4: Understanding of sterilization techniques and will also learn about various histotechniques, handling and processing of tissue specimens as well as staining procedures.

CO5: Understanding of estimation of protein & sugar

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

MICROBIOLOGY

Course Title: APPLIED MICROBIOLOGY-II

Course Code: BSMM-6343

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the processing of fermented foods.

CO2: Understand the Microbial Cell as Fermentation Products and production of different industrial chemicals.

CO3: Understand the role of microorganisms in preparation of alcoholic beverages and industrial enzymes.

CO4: Understand the role of microorganisms in the production of vitamins, amino acids and antibiotics.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

COURSE TITLE: Molecular Spectroscopy

COURSE CODE: BSMM-6084 (I)

(THEORY)

Course Outcomes

Students will be able to

CO1: Understand the principle and applications of ultraviolet and apply Woodward Fisher Rule to calculate λ_{max}

CO2: Understand the concepts of Vibrational spectroscopy, Vibrational coupling overtones and Fermi resonance and its application in Organic Chemistry

CO3: Know about the Nuclear magnetic resonance spectroscopy. Proton chemical shift, spin-spin coupling, coupling constants and its applications to determine organic structures

CO4: To understand different cleavage patterns of organic compounds in Mass spectrometry and apply the knowledge for interpretation of the spectrum of an unknown compound.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

Course Title: PHYSICAL CHEMISTRY

Course Code: BSMM-6084 (II)

(THEORY)

Course outcomes:

Students will be able to

CO1: Understand schrodinger wave equation (S.W.E) and its applications to partical in one, two and three dimensional boxes.

CO2: Understand the applications of S.W.E to rigid rotator, harmonic oscillators, hydrogen and hydrogen like atoms, quantum numbers

CO3: Acquire knowledge about unit cell,space lattice, miller indices, symmetry operations, Bragg equation, powder method

CO4: Understand photophysical, photo chemical, radioative and non-radiative processes, quantum yield, energy transfer processes

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

CHEMISTRY

Course Title: CHEMISTRY PRACTICAL

Course Code: BSMM-6084 (P)

(PRACTICAL)

Course outcomes:

Students will be able to

CO1: Separate the various mixtures by Column Chromatography technique

CO2: Synthesize different Organic Compounds

CO3: Synthesise the different compounds by Green Approach

CO4: Prepare the different dyes

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: Ecology

Course Code: BSMM-6075 (I)

(THEORY)

Course outcomes: -

After passing this course the student will develop:

CO1.Understand the abiotic components and relationship with living organism.

CO2.Demonstrate an understanding keys of community ecology and biodiversity

CO3.Understand the structure and function of ecosystem and growth curve

CO4. Study the biogeographical region and vegetation of India

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Economic Botany

Course Code: BSMM-6075 (II)

(THEORY)

Course outcome: -

After passing this course the students will be able to:

CO1: Understand the cultivation and economic importance of various food plant crops, fibre and oil yielding plants.

CO2: Understand the economic importance of spices and condiments.

CO3: Understand economic importance of medicinal plants.

CO4: Understand the processing and economic value of beverages, rubber plant, firewood, timber and bamboos.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

BOTANY

Course Title: PRACTICAL: - Ecology and Economic Botany (I &II)

Course Code: BSMM-6075 (P)

(PRACTICAL)

Course Outcomes:

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

CO1. Determination of abundance and frequency of species by quadrate method.

CO2. To measure the dissolved oxygen content in polluted and unpolluted water samples.

CO3. Study of anatomical peculiarities with reference to ecological adaptations.

CO4. Preparation of different stains, solutions and reagents as per theory paper.

CO5. To understand the economic importance of plants.

CO6. To acquire knowledge in the preparation of herbarium techniques. Submission of field report and practical records.

Bachelor of Science (Medical) Semester- VI (Session 2022-23)

Course Title: Food Science and Quality Control (Vocational) (FOOD PLANT LAYOUT AND MANAGEMENT)

Course Code: BSMM-6255

(THEORY)

Course Outcomes:

After passing this course the student will be able to:

CO1: Understand the importance of plant layout and learn how to set up the proper plant layout to reduce the production cost and increase the productivity.

CO2: Learn how market research helps to understand the consumers, their needs and their satisfaction level.

CO3: Understand the societal changes and their impact on food consumption trends.

CO4: Learn about product development and different types of food products.