

# DEPARTMENT OF LIFE SCIENCES

The college was established in 1969. According to the needs of residents of the local area, there was a dire need of introducing B.Sc medical and B.Sc non-medical. Keeping in view this need, BSc-non-medical and BSc medical were started in the year 1998 and 2000 respectively. Initially, Zoology and Botany were two separate departments. Both BSc medical and B.Sc non-medical were introduced during the tenure of Principal Jaswant Singh Sandhu. Thereafter, permanent faculty members were appointed so that a strong foundation be laid for Basic Science in this economically backward area. The subject of Home Science was started as an elective subject in the year 2008. In the year 2010, a new subject Environment Conservation was introduced under Innovative Scheme of UGC with UGC grant of 36 lacs rupees. The department of Zoology, Botany, Home Science and Environment Conservation are now merged and the department of Life Sciences has been established in the year 2021.

There are individual labs for Zoology, Botany, Environment Conservation and Home Science. It also has a Biodiversity Museum, Root Zone technology unit and Vermi-compost unit. The department organized 3-days UGC sponsored National Conference on 'Climate Change its Impact and Adaptation Practices' in the year 14-16 February 2012 and one day seminar CDC Panjab University Chandigarh sponsored National Seminar on ' Role of Individual and Scientists Towards Conservation of Biodiversity' on February 17, 2017.

## VISION

The holistic development of the students and make them able to contribute effectively for their welfare and society in this dynamic era through sound theoretical and practical academic grounding interface

## MISSION

To impart intensive and extensive knowledge through the provision of:

- Educate students to become responsible members of society
- Develop scientific temper through varied field exposure
- Inculcate values of scientific enquiry and framing solutions based on local resources

- Reinvent thought processes of young minds through awareness, exposure, and experimentation
- Hands on training through a number of co-curricular activities pertaining to the environment, ecosystem and ecological support mechanisms
- Building fundamental research and technology based spirit of innovation and entrepreneurships
- Promoting an enabling environment

## **OBJECTIVES**

- Ensuring a futuristic educational exchange among students on, Cell biology, Classifications of Flora and Fauna ,Environmental biology, Animal Physiology, Biotechnology, Food and Nutrition etc. This will be ensured through:
  - Emphasizing biological literacy through quality education
  - Promoting the role of biological solutions through agriculture and allied fields
  - Examining the viability of lab and field based studies in the local socio economic environment
  - Paving the way for training in skill areas like aquaculture, api-culture, pisci-culture, horticulture, hydroponics, floriculture and other allied sectors
  - Promoting industrial and NGO partnerships for student advancement
  - Enabling the students to prepare themselves for higher education leading to M.Sc./MB.A degree courses
  - Competency to qualify competitive examinations conducted by PPSC/UPSC/SSC

## **Programme run by department:**

1. B.Sc. Medical (General) (Programme code: BSCM)

## B.Sc. Medical (General)

### PROGRAMME LEARNING OUTCOMES OF B.Sc. (General)

#### Graduate Attributes

On successful completion of B.Sc. programme the students will be able to develop following attributes, qualities and skills:

<b>PO 1</b>	<b>Disciplinary Knowledge</b>	Capable of demonstrating comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings in science and its different subfields, and other related fields of study, including broader interdisciplinary subfields.
<b>PO 2</b>	<b>Communication Skills</b>	Course of English in B.Sc. enables them to communicate clearly and convincingly about science and technology ideas, practice and future contributions to expert and non-expert audiences through seminars, open discussion, language learning.
<b>PO 3</b>	<b>Critical Thinking</b>	Ability to employ critical thinking is enhanced by <ul style="list-style-type: none"> <li>● Organizing guest lectures, debates and declamation on hot topics/current subjects.</li> <li>● Presenting logic and reasoning for all forms of topics.</li> <li>● Question to be paused through studying different courses domestically and international.</li> </ul>
<b>PO 4</b>	<b>Problem Solving</b>	The practical and theoretical approaches in basic sciences develop the conceptual, analytical, quantitative and technical skills in the students to solve academic and real life problems.
<b>PO 5</b>	<b>Sense of Inquiry</b>	Experiment based curriculum builds the capability for asking relevant/appropriate questions relating to issues and problems in the field of Science and planning, executing and reporting the results of an investigation.
<b>PO 6</b>	<b>Team player/ worker</b>	Students of B.Sc. are capable of <ul style="list-style-type: none"> <li>● Working effectively in diverse teams in both classroom, laboratory and in industry and field-based situations.</li> <li>● Performing in groups to meet a shared goal with people whose disciplinary and cultural background differs from their own.</li> <li>● Organize field trips, field surveys and photo documentation projects.</li> <li>● Consistently hold science exhibitions, poster contests, short trips to help in shaping personality.</li> </ul>
<b>PO 7</b>	<b>Skilled Project</b>	Undertaking Assignments and projects of various disciplines of Science

	<b>Manager</b>	make them capable of identifying/mobilizing appropriate resources required for a project, and managing a project through to completion, while observing responsible and ethical scientific conduct; and safety-regulations and practices.
<b>PO 8</b>	<b>Digitally Literate</b>	Students of B.Sc. Capable of <ul style="list-style-type: none"> <li>• Using computers for computation and appropriate software for analysis of data Employing modern library search tools to locate, retrieve and evaluate subject-related information.</li> <li>• Various class seminars are arranged for the students to make their ppt. by using e-resources/e-books and different search engines</li> </ul>
<b>PO 9</b>	<b>Ethical Awareness</b>	Course Framework of B.Sc. make students capable of <ul style="list-style-type: none"> <li>• Demonstrating ability to think and analyze rationally with modern and scientific outlook and identify ethical issues</li> <li>• Avoiding unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, and appreciating environmental and sustainability issues.</li> </ul>
<b>PO 10</b>	<b>National and International Perspective</b>	The Multidisciplinary Program enables students to evaluate the role of science, technology, and engineering in addressing current issues facing local and global communities. For example climate change, health and disease, food security, sustainable energy use etc.
<b>PO 11</b>	<b>Lifelong Learners</b>	Make students Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in all areas of science. It promotes interactions with corporate, NGOs and government as well as other agencies.
<b>PO 12</b>	<b>Leadership Readiness/Qualities</b>	B.Sc. program enhanced the <ul style="list-style-type: none"> <li>• theoretical and experimental skills necessary to analyze and solve a range of advances problems, providing an excellent foundation for leadership</li> <li>• Through extra and co-curricular activities (NSS, NCC, Youth Festivals).</li> <li>• To interact with different individuals in society and work for welfare of community.</li> </ul>
<b>PO 13</b>	<b>Multicultural Competence</b>	<ul style="list-style-type: none"> <li>• In youth fest and heritage festival encouraging performance in various items.</li> <li>• Visual and graphic presentation of Indian culture and ethnicities.</li> <li>• Gurpurab celebrations to showcase rich cultural heritage of Punjab.</li> <li>• Encouraging the embellishment of various cultures of the state</li> </ul>

		through its traditional profile presentation in text, oral and other performance initiatives.
<b>PO 14</b>	<b>Self -Directing Learning</b>	Enable them to recognize the need for information, effectively search for, evaluate, manage and apply that information in support of scientific investigation.
<b>PO 15</b>	<b>Scientific reasoning</b>	<ul style="list-style-type: none"> <li>● Introduction of students to labs and lab equipment materials and safe-guard.</li> <li>● Perform experiments and activities in singles and in groups.</li> <li>● Compare and coordinate team spirit in discussant mode.</li> </ul>

### Program Specific Outcomes (PSOs)

<b>PSO1</b>	B.Sc. Medical students are able to acquire knowledge regarding Botany, Zoology, Chemistry, Biotechnology and Entomology.
<b>PSO2</b>	Medical Students will be able to define and explain major concepts in the Biological and chemical sciences.
<b>PSO3</b>	They are able to correctly use different instrumentation and proper laboratory techniques in different subjects.
<b>PSO4</b>	Students will be able to communicate knowledge in oral and written form.
<b>PSO5</b>	Students will be able to recognize the relationship between structure and function at all levels: molecular, cellular and organisms.
<b>PSO6</b>	They can go for Indian Forest Service, IAS and other competitive examinations.
<b>PSO7</b>	They can opt for higher studies in Botany, Zoology, Chemistry, Biotechnology, Biochemistry, Molecular Biology and Forensic Science etc.

### Course Outcomes COs) of B.Sc. Medical

Semester	University Code	College Code	Course Outcomes	
			On completion of the course, students will be able to know the scope and importance of the discipline and its objectives	
Sem. I	PBC	PBC101	<b>CO1</b>	Give an introductory knowledge of PBI language.
			<b>CO2</b>	Examine the various forms of modern poetry
			<b>CO3</b>	To understand the definition and nature of easy and make students capable of writing easily.
			<b>CO4</b>	To develop the skill of Percy writing.
			<b>CO5</b>	To make student able to understand the grammar and its importance in sentence language.

			<b>CO6</b>	To get practical knowledge of various
<b>Sem. I</b>	<b>HCP</b>	<b>HCP101</b>	<b>CO1</b>	Describe extent, town planning and socio-economic life Punjab during Harappan Civilization.
			<b>CO2</b>	Analyze life of people of Punjab in Vedic and Post Vedic Age.
			<b>CO3</b>	Describe Society and Culture of Punjab during Maurya's and Guptas.
			<b>CO4</b>	Explain the origin and features of Bhakti and Sufi movement in Punjab
			<b>CO5</b>	Describe the teachings of Sikh gurus and development of Sikh Religion.
			<b>CO6</b>	Evaluate the changes in society and culture of Punjab and during rule of Maharaja Ranjit Singh.
<b>Sem. I</b>	<b>CHM</b>	<b>CHM101A 1</b>	<b>CO1</b>	Understand the essential facts relating inorganic chemistry concepts.
			<b>CO2</b>	Comprehension of Atomic Structure, Periodic properties of elements.
			<b>CO3</b>	Description of Chemistry of Noble Gases.
			<b>CO4</b>	Knowledge about s-Block Elements.
			<b>CO5</b>	Explanation of Chemical Bonding (V.B.T, VSEPR, hybridization MOT).
<b>Sem. I</b>	<b>CHM</b>	<b>CHM101A 2</b>	<b>CO6</b>	To determine the percentage ionic character from dipole moment and electro negativity difference.
			<b>CO1</b>	Understand the structure and bonding of organic compounds
			<b>CO2</b>	Comprehension of mechanisms of different organic reactions
			<b>CO3</b>	Description of alkanes and cycloalkanes and including their synthesis and chemical reactions
			<b>CO4</b>	Knowledge about optical isomerism in organic compounds.
			<b>CO5</b>	Explanation of geometrical isomerism and
<b>Sem. I</b>	<b>CHM</b>	<b>CHM101 A3</b>	<b>CO6</b>	Conformational isomerism in organic compounds.
			<b>CO1</b>	Acquire the knowledge of mathematical concepts and its application in evaluation of analytical data.
			<b>CO2</b>	Explanation of gaseous state and deviation in their behavior from ideal gases behavior
			<b>CO3</b>	Knowledge about Maxwell distribution of molecular velocity, collision number and mean free path.
			<b>CO4</b>	Description of reaction, rate of reaction, kinetics and their mechanism
			<b>CO5</b>	Understand the effect of temperature on rate of reaction, collision theory, catalysis and radioactive decay
<b>Sem. I</b>	<b>BOT</b>	<b>BOT101 A</b>	<b>CO6</b>	To understand the Michaelis Menten's equation for enzyme catalysis and its mechanism.
			<b>CO1</b>	To Understand the diversity in lower plants with their structural differentiation and life cycle

			<b>CO2</b>	To learn The diversity in various life forms of the plant kingdom
			<b>CO3</b>	To extend a systematic study of algae and fungi.
			<b>CO4</b>	To infer structural differentiation but also provide an insight about the heterotrophic and autotrophic modes of nutrition in the plant kingdom.
			<b>CO5</b>	To extrapolate the basis of any advance study in Botany.
			<b>CO6</b>	To describe about Lichens.
<b>Sem. I</b>	<b>BOT</b>	<b>BOT101B</b>	<b>CO1</b>	Knowledge about basic structural unit of life i.e. cell and its organelles.
			<b>CO2</b>	To extrapolate the structural and cytological basis of functional differentiation in plants.
			<b>CO3</b>	To extend the study of prokaryotic and eukaryotic diversity of life forms.
			<b>CO4</b>	To demonstrate cellular, molecular and biochemical basis of cytological and functional differentiation.
			<b>CO5</b>	To understand Gene regulation in prokaryotes.
			<b>CO6</b>	To learn DNA structure.
<b>Sem. I</b>	<b>ZOO</b>	<b>ZOO101A</b>	<b>CO1</b>	Understand the lower non chordates with their structure and life cycle.
			<b>CO2</b>	Identify and Classify the different non chordates.
			<b>CO3</b>	Explain the prokaryotic and eukaryotic diversity of life forms.
			<b>CO4</b>	To gain knowledge about basic structural unit of life that is cell and its organelles.
			<b>CO5</b>	Demonstrate the principal and application of microscopy and fixative techniques
			<b>CO6</b>	Culture the microorganism like <i>Amoeba</i> , <i>Paramecium</i> .
<b>Sem. I</b>	<b>ZOO</b>	<b>ZOO101 B</b>	<b>CO1</b>	Descriptive knowledge of medically important non chordates, their life cycle and preventive measures
			<b>CO2</b>	Classify the non-chordates up to orders
			<b>CO3</b>	To understand the working of nucleus this is said to be brain of cell.
			<b>CO4</b>	To gain knowledge about basic structure of cell organelles.
			<b>CO5</b>	Differentiate between normal and cancer cell and its type.
			<b>CO6</b>	Recognize the cellular and humoral immunity
<b>Sem. II</b>	<b>PBC</b>	<b>PBC201</b>	<b>CO1</b>	To get basic information of Punjabi language
			<b>CO2</b>	Provide knowledge of Punjabi short story and make student familiar with it
			<b>CO3</b>	Also make student able to write any kind of notice
			<b>CO4</b>	To make student to understand the Punjabi idioms its importance and benefits
			<b>CO 5</b>	To provide practical knowledge of Punjabi language and vocabulary
			<b>CO 6</b>	Theoretical and Practical knowledge of linguistics

<b>Sem. II</b>	<b>HCP</b>	<b>HCP201</b>	<b>CO1</b>	Describe the establishment of colonial rule in Punjab.
			<b>CO2</b>	Analyze the growth of Western Education and Agrarian Policy of Britishers in Punjab.
			<b>CO3</b>	Describe the Social -Religious movement in Punjab.
			<b>CO4</b>	Evaluate the development of Press and literature in Punjab.
			<b>CO 5</b>	Analyze the role of people of Punjab in Freedom Struggle.
			<b>CO 6</b>	Evaluate the social issues in the post-Independence Punjab.
<b>Sem. II</b>	<b>CHM</b>	<b>CHM201A 1</b>	<b>CO1</b>	Appraisal of p-block elements and chemical bonding.
			<b>CO2</b>	Understanding of close packing in ionic solids and radius ratio rule.
			<b>CO3</b>	Comprehension of lattice energy and Born Haber cycle.
			<b>CO4</b>	Knowledge about polarising power and polarisability using fajan's rule .
			<b>CO5</b>	Descriptions of hydrides ,oxides ,oxyacids of p-block elements.
			<b>CO6</b>	To know about the basic properties of halogens, interhalogens and polyhalides.
<b>Sem. II</b>	<b>CHM</b>	<b>CHM201A 2</b>	<b>CO1</b>	Comprehension of alkenes and cycloalkanes including their synthesis and chemical reactions
			<b>CO2</b>	Knowledge about dienes and alkynes incorporating their methods of formation, structures and chemical reactions
			<b>CO3</b>	Understanding the arenes and aromaticity in organic compounds
			<b>CO4</b>	Descriptions of mechanisms of aromatic electrophilic substitutions reactions
			<b>CO5</b>	Appraisal of methods of formation and chemical reaction of alkyl halides and aryl halides.
			<b>CO6</b>	To understand the substitution at allylic and vinylic position of alkenes.
<b>Sem. II</b>	<b>CHM</b>	<b>CHM201 A3</b>	<b>CO1</b>	Appraisal of thermodynamics , first law of thermodynamics
			<b>CO2</b>	Understanding the expansion of ideal gases under isothermal and adiabatic conditions
			<b>CO3</b>	Descriptions of standard state and enthalpy of formation using hess's law
			<b>CO4</b>	Knowledge of colloidal state, its classifications ,sols ,emulsions and gels
			<b>CO5</b>	Comprehension of ideal and non-ideal solutions and their colligative properties.
			<b>CO6</b>	To learn how to determine various colligative properties.
<b>Sem. II</b>	<b>BOT</b>	<b>BOT201 A</b>	<b>CO1</b>	To Understand how different life forms have evolved from simpler to complex ones.
			<b>CO2</b>	To infer developmental stages from lower to higher plants.
			<b>CO3</b>	To identify and explain the life cycle of Bryophytes (the amphibians of plant kingdom).



			<b>CO4</b>	To recognize Pteridophytes -the first vascular land plants and life stages.
			<b>CO5</b>	To analyze a broad perspective of evolutionary trends in the plant kingdom.
			<b>CO6</b>	To extrapolate the difference between Bryophytes and Pteridophytes.
<b>Sem. II</b>	<b>BOT</b>	<b>BOT201B</b>	<b>CO1</b>	To learn the genetic basis of evolutionary trends in plants.
			<b>CO2</b>	To Understand the role of genetics in plant differentiation.
			<b>CO3</b>	To analyze various aspects of hereditary trends observed in successive generations
			<b>CO4</b>	To extrapolate the genomic basis of evolutionary trends in plants coupled with the study of variations in life forms.
			<b>CO5</b>	To describe chromosomal theory of inheritance.
			<b>CO6</b>	To infer Mutation and its types.
<b>Sem. II</b>	<b>ZOO</b>	<b>ZOO201A</b>	<b>CO1</b>	Classify the Non-Chordates from Platyhelminthes to Annelida.
			<b>CO2</b>	Describe the social insects and their importance.
			<b>CO3</b>	Differentiate between the life cycle of <i>Anopheles</i> and <i>Culex</i> .
			<b>CO4</b>	Have insight the type specimen i.e. <i>Periplaneta</i> and <i>Palaemon</i>
			<b>CO5</b>	Gain the conceptual knowledge of ecology ecosystem and ecological factors
			<b>CO6</b>	To analyze the role of environment in morphological, physiological and behavioral adaptation in animals.
<b>Sem. II</b>	<b>ZOO</b>	<b>ZOO201 B</b>	<b>CO1</b>	Understand the basic knowledge of non-Chordates from Phylum Mollusca to Hemichordate
			<b>CO2</b>	Classify the Non Chordates up to Orders
			<b>CO3</b>	To study the external morphology and anatomy of the non-chordates
			<b>CO4</b>	Utilize the Renewable and non-renewable resources
			<b>CO 5</b>	Understand the values of biotic communities, natural resources, environment degradation and its conservation
			<b>CO 6</b>	Summarize the IUCN Red list, conservation projects, Wildlife (Protection) Act, 1972
<b>Sem. III</b>	<b>ENG</b>	<b>ENG301</b>	<b>CO1</b>	To write an effective business document (such as notice, memo, advertisement etc.) which enable them to think analytically.
			<b>CO2</b>	To acquire extensive knowledge of English as a language in its various textual forms and to become thoughtful, imaginative and effective communicators in a diverse and changing society.
			<b>CO3</b>	To enhance their writing skill by building strong vocabulary.
			<b>CO4</b>	To empower an average student in such a way that English learning becomes a Pleasurable endeavor.
			<b>CO5</b>	To acquire knowledge about various literary aspects through the text which capacitates them to enrich their literary and cultural values.

			<b>CO6</b>	To critically appreciate literary texts
<b>Sem. III</b>	<b>CHM</b>	<b>CHM301A 1</b>	<b>CO1</b>	Justification regarding bonding, magnetic as well as spectral properties of transition metal complexes.
			<b>CO2</b>	To understand the Chemistry of Coordination Compounds and their geometries.
			<b>CO3</b>	Structures of Coordination compounds containing central metal atom and ligands.
			<b>CO4</b>	Study of transition series(First, second and third transition series)
			<b>CO5</b>	Demonstration regarding lanthanides and actinide contractions.
			<b>CO6</b>	To understand the use of co-ordination compounds.
<b>Sem. III</b>	<b>CHM</b>	<b>CHM301A 2</b>	<b>CO1</b>	Inculcate the knowledge of alcohols i.e. mono, di, tri hydric alcohols
			<b>CO2</b>	Understand the chemical reactions of vicinal glycols and glycerol
			<b>CO3</b>	Appraisal of phenols and their properties
			<b>CO4</b>	Comprehension of the aldehyde and ketones
			<b>CO5</b>	Discuss the formation of aldehydes and ketones and carboxylic acids.
			<b>CO6</b>	To understand the mechanism of nucleophilic addition to carbonyl compound.
<b>Sem. III</b>	<b>CHM</b>	<b>CHM301 A3</b>	<b>CO1</b>	Understand the intermolecular forces in liquids, liquid crystals and their classifications.
			<b>CO2</b>	Discuss the chemical equilibrium , law of mass action and relationship and types of equilibrium constant
			<b>CO3</b>	Comprehension of the second law of thermodynamics , carnot cycle and its efficiency.
			<b>CO4</b>	Appraisal of entropy change in ideal gases and its mixing.
			<b>CO5</b>	Inculcate the knowledge of third law of thermodynamics; Nernst heat theorem.
			<b>CO6</b>	To understand the classification and structure of liquid crystals.
<b>Sem. III</b>	<b>BOT</b>	<b>BOT301 A</b>	<b>CO1</b>	To learn Fossils, their types and formation .
			<b>CO2</b>	To discuss the geological time scale
			<b>CO3</b>	To describe general features of Fossil seed plants.
			<b>CO4</b>	To illustrate the evolved group of plants with naked seed "GYMNOSPERMS".
			<b>CO5</b>	To explain structure, reproduction and life cycle of non flowering plants.
			<b>CO6</b>	To extrapolate the general characteristics of Gymnosperms.
<b>Sem. III</b>	<b>BOT</b>	<b>BOT301B</b>	<b>CO1</b>	Basic body plan of Flowering plants.
			<b>CO2</b>	To describe modification of different parts of plants.
			<b>CO3</b>	To demonstrate vegetative and reproductive morphology of plants bearing the enclosed seeds.

			<b>CO4</b>	To analyze Diversity in plant form in annuals, biennials and perennials.
			<b>CO 5</b>	To explain shoot, root system, leaf and flowers of seed producing plants.
			<b>CO 6</b>	To understand Tissue system in plants.
<b>Sem. III</b>	<b>ZOO</b>	<b>ZOO301A</b>	<b>CO1</b>	To explain the origin Parental Care and Migration in Chordates.
			<b>CO2</b>	Classify and Identify the chordates From Protochordates to Amphibia.
			<b>CO3</b>	Study the basic structure of different type specimens.
			<b>CO4</b>	To understand how different life forms have evolved from simpler to complex ones
			<b>CO5</b>	Able to know about theories of origin of life and evidences of evolution.
			<b>CO6</b>	To explore the fins and scales in fishes and their importance
<b>Sem. III</b>	<b>ZOO</b>	<b>ZOO301 B</b>	<b>CO1</b>	Gain the knowledge of structure and classification of bio-molecules.
			<b>CO2</b>	Understand the nature, mode of action of enzymes and co-enzymes.
			<b>CO3</b>	To study the regulation of digestive process, absorption, enzymatic and symbiotic digestion.
			<b>CO4</b>	Gain the knowledge of transport of respiratory gases and oxygen dissociation curve of haemoglobin.
			<b>CO5</b>	To analyze the composition, function, and blood grouping including Rh factor of blood.
			<b>CO6</b>	Demonstrate the knowledge of working of heart, ECG, blood pressure and cardiac output
<b>Sem. IV</b>	<b>CHM</b>	<b>CHM401A 1</b>	<b>CO1</b>	Understand the chemistry of Lanthanides and Actinides elements; their properties and separation.
			<b>CO2</b>	Inculcate the concept of acids and bases.
			<b>CO3</b>	Comprehension of theories to understand the classification of acids-bases.
			<b>CO4</b>	Appraisal of oxidation and reduction. to use redox potential data.
			<b>CO5</b>	Describe non-aqueous solvents; their types and properties; principles involved in the extraction of elements.
			<b>CO6</b>	To understand the physical properties of different solvents.
<b>Sem. IV</b>	<b>CHM</b>	<b>CHM401A 2</b>	<b>CO1</b>	Acquire the knowledge of carboxylic acids, halo acids, malic acids ,tartaric acid and citric acids.
			<b>CO2</b>	Classification of the Organic Compounds of Nitrogen.
			<b>CO3</b>	Detection of elements and functional groups in simple organic compounds.
			<b>CO4</b>	Understanding of ethers, epoxides, oils & detergents.
			<b>CO5</b>	To compare the preparation of alkyl and aryl amines
			<b>CO6</b>	To understand the cleavage and auto-oxidation of ethers,

				epoxide.
<b>Sem. IV</b>	<b>CHM</b>	<b>CHM401 A3</b>	<b>CO1</b>	Learn the necessary chemical knowledge about electrochemistry.
			<b>CO2</b>	Appraisal of electrical transport of electrolytes, conductance with dilution.
			<b>CO3</b>	Understanding of Nernst distribution law and thermodynamic derivation.
			<b>CO4</b>	Description of type of reversible electrode, E.M.F. of cell and electrochemical series.
			<b>CO5</b>	Describe non-aqueous solvents; their types and properties; principles involved in the extraction of elements.
			<b>CO6</b>	To know about applications of concentration.
<b>Sem. IV</b>	<b>BOT</b>	<b>BOT401 A</b>	<b>CO1</b>	To Understand the highly advanced and evolved group of plants "ANGIOSPERMS" with their structural differentiation and reproduction.
			<b>CO2</b>	To illustrate gradual transition from seedless plants to seed plants would make students familiar with the origin of structural and functional complexity in the plant kingdom.
			<b>CO3</b>	To recognize the importance of taxonomy and species concepts.
			<b>CO4</b>	To Define terminology pertaining to floral description
			<b>CO5</b>	To describe general account and diagnostic features of different families of flowering plants.
			<b>CO6</b>	To infer General characteristics of Flowering Plants.
<b>Sem. IV</b>	<b>BOT</b>	<b>BOT401B</b>	<b>CO1</b>	To understand structure development and reproduction in flowering plants – the most fascinating group of plants on earth
			<b>CO2</b>	To analyze internal structure of various plant parts, their growth patterns and abnormalities in structural development.
			<b>CO3</b>	To describe the vast range of variation found in flowering plants for the foundation of applied branches like horticulture, floriculture, olericulture and arboriculture.
			<b>CO4</b>	To learn Significance of seed and seed formation.
			<b>CO5</b>	To compute Contrivances for self and cross pollination.
			<b>CO6</b>	To extrapolate types of fruits.
<b>Sem. IV</b>	<b>ZOO</b>	<b>ZOO401A</b>	<b>CO1</b>	Classify the chordates from Reptiles to Mammals.
			<b>CO2</b>	Identify poisonous and nonpoisonous snakes.
			<b>CO3</b>	To explain flight adaptations of birds.
			<b>CO4</b>	To gain knowledge of type specimens
			<b>CO5</b>	Understand the biological species concept and Micro, Macro and human evolution.
			<b>CO6</b>	Determine the fossil and Dating of fossils
<b>Sem. IV</b>	<b>ZOO</b>	<b>ZOO401B</b>	<b>CO1</b>	Analyze the process of Lipid metabolism by B-oxidation of fatty acids and interaction of carbohydrates and lipids etc.
			<b>CO2</b>	Gain the knowledge about metabolism of amino acids and

				ornithine cycle.
			<b>CO3</b>	Study the structure of nephron, osmoregulation and counter current mechanism of urine.
			<b>CO4</b>	Understand the chemical and physiological basis of skeletal muscle contraction.
			<b>CO5</b>	Gain the knowledge of neuron, origin and propagation of impulse along the axon.
			<b>CO6</b>	Analyze the role hormones and its functions of endocrine system.
<b>Sem. V</b>	<b>CHM</b>	<b>CHM501A 1</b>	<b>CO1</b>	Comprehension of crystal field theory and valence bond theory of metal ligand bonding in transition metal complexes.
			<b>CO2</b>	Description of thermodynamic and kinetic aspects of Metal Complexes.
			<b>CO3</b>	Knowledge about synthesis, structure, properties and applications of organometallic compounds of Li,Al,Hg,Sn and Ti.
			<b>CO4</b>	Analysis of metal-ethylenic complexes,homogeneous hydrogenation and mononuclear carbonyls.
			<b>CO5</b>	Explanation of metalloporphyrins, nitrogen fixation and biological role of alkali and alkaline earth metal ions .
			<b>CO6</b>	To appraise the biological importance of alkali and alkaline earth metals.
<b>Sem. V</b>	<b>CHM</b>	<b>CHM501A 2</b>	<b>CO1</b>	Appraisal of the use of spectroscopic techniques to analyze the synthesised organic compounds.
			<b>CO2</b>	Apply the concept of absorption laws to compute molar absorptivity, to differentiate between chromophores and auxochrome.
			<b>CO3</b>	Demonstration of infrared spectroscopy to detect the present functional groups in the given organic compounds.
			<b>CO4</b>	Apply the concept of nuclear magnetic resonance (NMR) spectroscopy to find the structure of the given organic compounds.
			<b>CO5</b>	Count the biological importance of carbohydrates.
			<b>CO6</b>	To interpret the NMR spectrum of simple organic compounds.
<b>Sem. V</b>	<b>CHM</b>	<b>CHM501 A3</b>	<b>CO1</b>	Description of elementary quantum mechanics, black body radiation, Schrodinger wave equation for H-atom.
			<b>CO2</b>	Apply the Schrodinger wave equation to find the wavefunctions of the given system to account for its stability.
			<b>CO3</b>	Demonstrate the use of quantum mechanics to calculate the hybridisation of atomic orbitals.
			<b>CO4</b>	Inculcate the knowledge of photochemical reactions and the laws governing the photochemical reactions.
			<b>CO5</b>	Description of fluorescence, phosphorescence and quantum yield

				of photochemical reactions.
			<b>CO6</b>	To understand the photochemistry of carbonyl compounds and alkenes.
<b>Sem. V</b>	<b>BOT</b>	<b>BOT501 A</b>	<b>CO1</b>	To Understand the concept of function and metabolism of plants
			<b>CO2</b>	To Acquire the knowledge about Structural Diversity of various plant forms with plant differentiation.
			<b>CO3</b>	To learn biological aspects like nitrogen fixation and mineral nutrition
			<b>CO4</b>	To analyze Plant water relationship.
			<b>CO5</b>	To Illustrate structure and classification of proteins and enzymes.
			<b>CO6</b>	To infer Ascent of SAP.
<b>Sem. V</b>	<b>BOT</b>	<b>BOT501B</b>	<b>CO1</b>	To describe Ecology and the role of the Environment in causing structural and functional variation in plants.
			<b>CO2</b>	To understand the present day problems of varied nature like pollution.
			<b>CO3</b>	To illustrate Global Warming and conservation of natural resources
			<b>CO4</b>	To learn Climatic, edaphic, topographic and biotic factors affecting growth and distribution of plants.
			<b>CO5</b>	To Define Ecosystem.
			<b>CO6</b>	To extrapolate adaptations in plants and Ecological Succession
<b>Sem. V</b>	<b>ZOO</b>	<b>ZOO501A</b>	<b>CO1</b>	Gain the knowledge of gametogenesis, vitellogenesis and role of subtesticular cells.
			<b>CO2</b>	Understand the process of fertilization and parthenogenesis
			<b>CO3</b>	To study types of cleavage, blastula and types of blastula.
			<b>CO4</b>	To analyze cell interaction, basic concept of organizers and inducers and their role.
			<b>CO5</b>	Gain conceptual knowledge of development up to three germs layers in <i>Herdmania</i> , frog chick etc.
			<b>CO6</b>	Gain knowledge of foetal membranes, mammalian placenta, their formation and functions.
<b>Sem. V</b>	<b>ZOO</b>	<b>ZOO501 B</b>	<b>CO1</b>	To understand the concept of Entomology
			<b>CO2</b>	To acquire the knowledge about different types of development stages in insects.
			<b>CO3</b>	Comprehensive knowledge of Economic Entomology and Pest Management
			<b>CO4</b>	Identify and classify pest the of crops, vegetables Stored grains and medical important insects.
			<b>CO5</b>	Develop skill in Agriculture Practices like pest controls and nature of damage.
<b>Sem. VI</b>	<b>CHM</b>	<b>CHM601A</b>	<b>CO1</b>	Inculcate the knowledge of Silicones and Phosphazenes.

		<b>1</b>	<b>CO2</b>	Comprehension of HSAB concept ,symbiosis and theoretical basis of hardness and softness.
			<b>CO3</b>	Knowledge about types and selection rules for electronic transitions.
			<b>CO4</b>	Analysis of Orgel- energy level diagram for d1 and d9 states.
			<b>CO5</b>	Description of magnetic properties of transition metal complexes.
			<b>CO6</b>	To understand symbiosis and its theoretical basis.
<b>Sem. VI</b>	<b>CHM</b>	<b>CHM601A 2</b>	<b>CO1</b>	Familiarized with Amino Acids, Peptides, Proteins and Nucleic Acids.
			<b>CO2</b>	Description of synthetic polymer; their types, synthesis and uses.
			<b>CO3</b>	Inculcate the knowledge of organic synthesis via enolates.
			<b>CO4</b>	Description of organometallic compounds; its types and their synthesis.
			<b>CO5</b>	To understand the double helical structure of DNA.
			<b>CO6</b>	To study preparation and reactions of amino acids.
<b>Sem. VI</b>	<b>CHM</b>	<b>CHM601 A3</b>	<b>CO1</b>	Understanding of space lattice, unit cell, miller indices.
			<b>CO2</b>	Appraisal of Bragg's equation and X-ray diffraction.
			<b>CO3</b>	Knowledge about electromagnetic radiation and different spectrometers.
			<b>CO4</b>	Description of rigid rotor and non-rigid rotor.
			<b>CO5</b>	Inculcate the concepts vibrational and electronic spectrum.
			<b>CO6</b>	To interpret different types of physical spectra.
<b>Sem. VI</b>	<b>BOT</b>	<b>BOT601 A</b>	<b>CO1</b>	To Understand plant development, differentiation and regulatory mechanism.
			<b>CO2</b>	To learn basics in tissue culture
			<b>CO3</b>	To recognize Photosynthesis its Significance, historical aspect and action spectra.
			<b>CO4</b>	To illustrate the Respiration process in plants.
			<b>CO5</b>	To explain Growth and Development.
			<b>CO6</b>	To extrapolate Seed Dormancy and photoperiodism.
<b>Sem. VI</b>	<b>BOT</b>	<b>BOT601B</b>	<b>CO1</b>	To recall Plant wealth, economic importance.
			<b>CO2</b>	To Illustrate cultivation practices of plants.
			<b>CO3</b>	To describe forest Conservation.
			<b>CO4</b>	To apply the basis of ecology and economic botany to venture into fields like Environmental Biology.
			<b>CO5</b>	Understanding Wood seasoning.
			<b>CO6</b>	To Learn Economic Importance of medicinal plants
<b>Sem. VI</b>	<b>ZOO</b>	<b>ZOO601A</b>	<b>CO1</b>	Summarize the Mendelian and Non-Mendelian ratios (Non allelic gene interaction).
			<b>CO2</b>	To analyze the study of gene modifications due to incomplete dominance and Pleiotropic genes.
			<b>CO3</b>	Gain the knowledge of inheritance of quantitative traits (skin

				colour in man).
			<b>CO4</b>	Understand the process of linkage, crossing over, gene and genetic code.
			<b>CO5</b>	Analyze the process of mutation and inborn errors of metabolism and regulation of gene expression.
			<b>CO6</b>	Gain the knowledge Population and Applied genetics; gene cloning, DNA fingerprinting
<b>Sem. VI</b>	<b>ZOO</b>	<b>ZOO601 B</b>	<b>CO1</b>	Acquire the knowledge of Sericulture, Apiculture, Lac Culture.
			<b>CO2</b>	Understand Recent methods of Pest Control: chemical and biological Control.
			<b>CO3</b>	Framework of IPM program and perspectives in IPM.
			<b>CO4</b>	Understand the banned pesticides and also their ill effects on flora, fauna and environment.
			<b>CO5</b>	Gain practical knowledge to Design Project Reports.
			<b>CO6</b>	Develop Skill for Entrepreneurship

### Mapping of Course Outcomes (COs) with Programme Outcomes(POs)

Programme Outcome																	
College code	Course Out-comes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	
<b>Semester I</b>																	
<b>PBC101</b>	<b>CO1</b>	1	2	3	2	1	3	2	X	3	2	1	2	3	2	2	
	<b>CO2</b>	2	X	2	1	2	2	1	1	1	1	X	1	1	1	1	
	<b>CO3</b>	X	2	1	1	1	1	X	2	2	3	2	3	2	3	3	
	<b>CO4</b>	3	1	X	3	2	2	2	2	2	X	2	3	X	1	1	1
	<b>CO5</b>	1	1	2	2	X	1	2	3	2	2	X	1	2	1	1	1
	<b>CO6</b>	1	3	1	1	3	X	1	1	2	1	2	1	2	1	2	X
<b>HCP101</b>	<b>CO1</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1	
	<b>CO2</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1	
	<b>CO3</b>	X	2	1	1	2	X	X	X	X	1	2	1	2	X	1	
	<b>CO4</b>	X	2	1	1	2	X	X	X	3	1	2	1	2	X	2	
	<b>CO5</b>	X	2	1	X	2	X	X	X	3	1	2	1	2	X	2	



	<b>CO6</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1
<b>CHM101 A1</b>	<b>CO1</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	<b>CO2</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	<b>CO3</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	<b>CO4</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	<b>CO5</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	<b>CO6</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
<b>CHM101 A2</b>	<b>CO1</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO2</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO3</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO4</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO5</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO6</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
<b>CHM1 01A3</b>	<b>CO1</b>	2	2	X	2	1	1	2	1	2	1	X	X	X	1	1
	<b>CO2</b>	1	2	X	1	1	1	2	1	1	2	X	X	X	2	1
	<b>CO3</b>	2	2	X	1	1	1	2	1	1	1	X	X	X	1	1
	<b>CO4</b>	1	2	X	1	1	1	2	1	1	1	X	X	X	1	1
	<b>CO5</b>	2	2	X	1	1	1	2	1	1	1	X	X	X	1	1
	<b>CO6</b>	2	2	X	1	1	1	2	1	1	1	X	X	X	1	1
<b>BOT10 1A</b>	<b>CO1</b>	3	1	3	3	3	2	3	2	3	1	3	X	X	3	3
	<b>CO2</b>	3	1	2	2	3	3	2	2	2	X	2	X	X	2	3
	<b>CO3</b>	3	1	2	3	2	3	2	2	1	X	2	X	X	2	3
	<b>CO4</b>	3	1	3	2	3	2	2	2	2	X	2	X	X	1	3
	<b>CO5</b>	3	1	2	2	2	2	1	2	2	X	2	X	X	2	3
	<b>CO6</b>	3	1	2	2	2	2	1	2	2	X	2	X	X	2	3
<b>BOT101B</b>	<b>CO1</b>	3	1	3	3	3	2	3	2	3	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	2	X	2	X	X	2	3

	<b>C03</b>	3	1	3	3	3	3	2	2	1	1	2	X	X	3	3
	<b>C04</b>	3	1	2	2	3	2	2	2	2	X	2	X	X	1	3
	<b>C05</b>	3	1	2	2	1	2	1	2	2	X	2	X	X	2	3
	<b>C06</b>	3	1	2	2	1	2	1	2	2	X	2	X	X	2	3
<b>ZOO101A</b>	<b>C01</b>	2	1	2	1	2	1	2	1	2	1	2	X	X	2	3
	<b>C02</b>	3	1	3	2	2	2	1	1	2	1	2	X	X	2	3
	<b>C03</b>	2	1	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>C04</b>	2	1	2	3	2	2	1	1	1	1	2	X	X	2	3
	<b>C05</b>	2	1	2	3	2	2	1	2	2	2	3	2	X	2	3
	<b>C06</b>	1	1	1	2	2	3	2	2	2	1	2	X	X	2	3
<b>ZOO101B</b>	<b>C01</b>	2	1	2	1	2	1	2	1	2	1	2	X	X	2	3
	<b>C02</b>	3	1	3	2	2	2	1	1	2	1	2	X	X	2	3
	<b>C03</b>	2	1	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>C04</b>	2	1	2	3	2	2	1	1	1	1	2	X	X	2	3
	<b>C05</b>	2	1	2	3	2	2	1	2	2	2	3	2	X	2	3
	<b>C06</b>	1	1	1	2	2	3	2	2	2	1	2	X	X	2	3
<b>Semester-II</b>																
<b>PBC201</b>	<b>C01</b>	1	2	1	3	1	2	1	2	3	1	2	3	1	2	2
	<b>C02</b>	1	1	3	1	X	1	X	1	1	3	1	2	2	3	3
	<b>C03</b>	3	X	2	X	2	X	2	1	2	1	3	2	2	1	1
	<b>C04</b>	2	3	1	1	3	2	2	X	2	2	1	1	X	2	2
	<b>C05</b>	2	2	X	1	1	3	1	2	X	2	2	X	3	X	1
	<b>C06</b>	X	1	2	2	1	1	3	2	1	X	2	1	2	1	1
<b>HCP201</b>	<b>C01</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1
	<b>C02</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1
	<b>C03</b>	X	2	1	1	2	X	X	X	X	1	2	1	2	X	1
	<b>C04</b>	X	2	1	1	2	X	X	X	3	1	2	1	2	X	2

	<b>CO5</b>	X	2	1	X	2	X	X	X	3	1	2	1	2	X	2
	<b>CO6</b>	X	2	1	X	2	X	X	X	X	1	2	1	2	X	1
<b>CHM201 A1</b>	<b>CO1</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	<b>CO2</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	<b>CO3</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	<b>CO4</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	<b>CO5</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	<b>CO6</b>	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
<b>CHM201 A2</b>	<b>CO1</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO2</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO3</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO4</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO5</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO6</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
<b>CH 201A3</b>	<b>CO1</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	<b>CO2</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	<b>CO3</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	<b>CO4</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	<b>CO5</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	<b>CO6</b>	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
<b>BOT20 1A</b>	<b>CO1</b>	3	1	2	3	2	2	3	2	2	2	3	X	X	3	2
	<b>CO2</b>	3	1	2	3	2	3	2	3	3	3	2	X	X	2	3
	<b>CO3</b>	3	1	3	3	3	3	2	2	1	1	2	X	X	3	3
	<b>CO4</b>	3	1	2	2	3	2	2	2	2	X	2	X	X	1	3
	<b>CO5</b>	3	1	2	1	1	2	1	2	3	1	2	x	x	2	3
<b>BOT201B</b>	<b>CO1</b>	3	1	2	3	2	2	3	2	2	2	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	3	1	2	X	X	2	3

	<b>C03</b>	3	1	3	3	3	3	1	2	1	2	1	X	X	3	3
	<b>C04</b>	3	1	2	2	3	2	3	2	2	X	2	X	X	1	3
	<b>C05</b>	3	1	2	2	1	2	2	3	2	X	2	X	X	3	3
	<b>C06</b>	3	1	2	2	1	2	2	3	2	X	2	X	X	3	3
<b>ZOO201 A</b>	<b>C01</b>	2	1	2	1	2	1	2	1	2	1	2	X	X	2	3
	<b>C02</b>	3	1	3	2	2	2	1	1	2	1	2	X	X	2	3
	<b>C03</b>	2	1	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>C04</b>	3	1	2	3	2	2	1	1	1	1	2	X	X	2	3
	<b>C05</b>	2	1	2	3	2	2	1	2	3	3	3	2	X	2	3
	<b>C06</b>	1	1	1	2	2	3	2	2	3	3	3	X	X	2	3
<b>ZOO201 B</b>	<b>C01</b>	2	1	2	1	2	1	2	1	2	1	2	X	X	2	3
	<b>C02</b>	3	1	3	2	2	2	1	1	2	1	2	X	X	2	3
	<b>C03</b>	2	1	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>C04</b>	3	1	2	3	2	2	1	1	3	3	3	X	X	2	3
	<b>C05</b>	2	1	2	3	2	2	1	2	3	3	3	2	X	2	3
	<b>C06</b>	1	1	1	2	2	3	2	2	3	3	3	X	X	2	3
<b>Semester-III</b>																
<b>ENG301</b>	<b>C01</b>	2	2	2	1	2	1	X	X	X	X	1	1	2	1	X
	<b>C02</b>	2	3	2	1	1	1	X	X	X	X	1	1	2		X
	<b>C03</b>	2	2	2	1	1	1	X	X	X	X	1	1	2	1	X
	<b>C04</b>	2	2	2	1	2	2	X	X	X	X	1	1	2	2	X
	<b>C05</b>	2	2	2	1	1	1	X	X	X	X	1	1	2	1	X
	<b>C06</b>	2	2	3	1	1	1	X	X	X	X	1	1	2	1	X
<b>CHM301 A1</b>	<b>C01</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	<b>C02</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	<b>C03</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	<b>C04</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2

	<b>CO5</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	<b>CO6</b>	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
<b>CHM301 A2</b>	<b>CO1</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO2</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO3</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO4</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO5</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO6</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
<b>CHM3 01A3</b>	<b>CO1</b>	2	1	1	1	1	1	1	1	1	1	1	1	X	X	X
	<b>CO2</b>	2	X	1	2	2	1	X	1	1	2	X	X	X	1	1
	<b>CO3</b>	1	1	1	2	2	1	1	1	2	1	X	X	1	1	1
	<b>CO4</b>	1	X	1	1	1	1	1	1	X	X	X	X	1	2	2
	<b>CO5</b>	2	1	1	2	1	1	1	1	1	X	X	X	2	1	1
	<b>CO6</b>	2	1	1	2	1	1	1	1	1	X	X	X	2	1	1
<b>BOT30 1A</b>	<b>CO1</b>	3	1	3	2	3	2	3	2	3	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	3	2	3	2	2	2	1	2	X	X	3	2
	<b>CO3</b>	3	1	3	3	3	3	2	2	2	1	2	X	X	2	3
	<b>CO4</b>	3	1	1	2	3	2	2	2	2	X	2	X	X	1	3
	<b>CO5</b>	3	1	2	2	1	2	1	2	1	X	2	X	X	2	3
	<b>CO6</b>	3	1	2	2	1	2	1	2	1	X	2	X	X	2	3
<b>BOT301B</b>	<b>CO1</b>	3	1	2	2	3	3	3	3	2	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	3	1	2	X	X	3	3
	<b>CO3</b>	3	1	3	3	3	2	2	2	2	X	2	X	X	2	3
	<b>CO4</b>	3	1	3	2	1	2	2	2	1	1	3	X	X	1	2
	<b>CO5</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
	<b>CO6</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
<b>ZOO301A</b>	<b>CO1</b>	2	2	3	1	1	1	2	1	2	1	2	X	X	2	3

	<b>CO2</b>	3	2	3	2	1	2	1	1	2	1	2	X	X	2	3
	<b>CO3</b>	2	2	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>CO4</b>	2	2	2	2	2	2	1	1	1	1	2	X	X	2	3
	<b>CO5</b>	2	2	2	2	2	2	1	2	2	2	3	2	X	2	3
	<b>CO6</b>	2	2	3	2	2	3	2	2	2	1	2	X	X	2	3
<b>ZOO301 B</b>	<b>CO1</b>	2	1	1	3	3	2	3	2	2	3	X	1	X	3	3
	<b>CO2</b>	3	2	2	3	2	1	1	2	2	3	X	1	X	1	3
	<b>CO3</b>	2	2	3	3	3	2	1	1	2	2	2	X	1	2	3
	<b>CO4</b>	2	1	3	3	2	2	2	1	2	3	1	1	X	2	2
	<b>CO5</b>	3	2	3	3	3	2	2	2	3	2	2	2	2	3	3
	<b>CO6</b>	2	2	2	3	3	2	3	2	3	2	3	2	2	2	3
<b>Semester-IV</b>																
<b>ENG401</b>	<b>CO1</b>	2	3	2	1	2	1	X	1	X	1	2	2	2	1	1
	<b>CO2</b>	2	3	2	1	2	1	X	1	X	1	2	2	2	1	1
	<b>CO3</b>	2	3	2	1	2	1	X	1	X	1	2	2	2	1	1
	<b>CO4</b>	2	3	2	1	2	1	X	1	X	1	2	1	2	1	1
	<b>CO5</b>	2	3	2	1	2	1	X	1	X	1	2	2	2	1	1
	<b>CO6</b>	2	3	3	1	3	1	x	1	X	1	2	2	2	1	1
<b>CHM401 A1</b>	<b>CO1</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO2</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO3</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO4</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO5</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO6</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
<b>CHM401 A2</b>	<b>CO1</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	<b>CO2</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	<b>CO3</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3

	<b>C04</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	<b>C05</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	<b>C06</b>	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
<b>CHM4 01A3</b>	<b>C01</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>C02</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>C03</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>C04</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>C05</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>C06</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
<b>BOT401A</b>	<b>C01</b>	3	1	2	3	2	3	3	3	3	2	3	X	X	3	2
	<b>C02</b>	3	1	2	2	2	3	2	2	2	1	2	X	X	2	3
	<b>C03</b>	3	1	3	3	3	2	2	2	2	2	2	X	X	3	2
	<b>C04</b>	3	1	3	2	1	2	2	2	1	X	3	X	X	2	3
	<b>C05</b>	3	1	2	2	3	3	1	2	2	2	2	X	X	1	2
	<b>C06</b>	3	1	2	2	3	3	1	2	2	2	2	X	X	1	2
<b>BOT401B</b>	<b>C01</b>	3	1	2	2	3	3	3	3	2	1	3	X	X	2	3
	<b>C02</b>	3	1	3	2	2	3	2	2	3	1	X	X	X	3	3
	<b>C03</b>	3	1	2	3	3	2	2	2	2	X	2	X	X	2	3
	<b>C04</b>	3	1	3	2	1	2	2	2	1	1	3	X	X	1	2
	<b>C05</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
	<b>C06</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
<b>ZOO401A</b>	<b>C01</b>	2	2	3	1	1	1	2	1	2	1	2	X	X	2	3
	<b>C02</b>	3	2	3	2	1	2	1	1	2	1	2	X	X	2	3
	<b>C03</b>	2	2	2	2	2	1	1	1	2	1	2	X	X	2	3
	<b>C04</b>	2	2	2	2	2	2	1	1	1	1	2	X	X	2	3
	<b>C05</b>	2	2	2	2	2	2	1	2	2	2	3	2	X	2	3
	<b>C06</b>	2	2	3	2	2	3	2	2	2	1	2	X	X	2	3

<b>ZOO401 B</b>	<b>CO1</b>	2	1	2	2	3	2	3	2	1	3	X	1	X	2	3
	<b>CO2</b>	3	2	2	2	2	1	2	2	1	3	X	X	X	1	3
	<b>CO3</b>	2	1	2	3	2	2	2	1	1	2	1	X	X	2	3
	<b>CO4</b>	2	1	1	3	2	2	2	1	2	2	1	1	X	2	2
	<b>CO5</b>	3	1	2	2	2	2	2	2	2	2	1	1	X	2	3
	<b>CO6</b>	2	2	2	2	3	2	3	2	2	2	1	1	X	2	3
<b>Semester-V</b>																
<b>CHM501 A1</b>	<b>CO1</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO2</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO3</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO4</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO5</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	<b>CO6</b>	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
<b>CHM501 A2</b>	<b>CO1</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	<b>CO2</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	<b>CO3</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	<b>CO4</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	<b>CO5</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	<b>CO6</b>	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
<b>CHM5 01A3</b>	<b>CO1</b>	2	1	2	2	2	X	1	1	1	X	1	X	X	2	2
	<b>CO2</b>	1	2	1	2	1	X	1	2	X	X	X	X	X	2	2
	<b>CO3</b>	3	1	1	2	1	1	1	1	X	X	X	X	X	1	1
	<b>CO4</b>	1	1	1	1	1	X	X	X	1	X	X	X	X	2	1
	<b>CO5</b>	2	2	2	2	1	1	1	2	X	1	1	X	X	2	2
	<b>CO6</b>	2	2	2	2	1	1	1	2	X	1	1	X	X	2	2
<b>BOT501A</b>	<b>CO1</b>	3	1	3	2	3	3	3	3	3	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	2	2	2	3	X	2	X	X	2	3



	<b>CO3</b>	3	1	3	3	3	3	2	2	2	1	2	X	X	3	2
	<b>CO4</b>	3	1	3	2	3	2	2	2	1	1	3	X	X	1	2
	<b>CO5</b>	3	1	2	2	1	3	1	2	2	X	2	X	X	2	3
	<b>CO6</b>	3	1	2	2	1	3	1	2	2	X	2	X	X	2	3
<b>BOT501B</b>	<b>CO1</b>	3	1	2	2	3	3	3	3	2	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	3	1	2	X	X	3	3
	<b>CO3</b>	3	1	3	3	3	2	2	2	2	X	2	X	X	2	3
	<b>CO4</b>	3	1	3	2	1	2	2	2	1	1	3	X	X	1	2
	<b>CO5</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
	<b>CO6</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	2	2
<b>ZOO501A</b>	<b>CO1</b>	2	2	1	3	3	2	3	2	2	2	2	1	1	3	3
	<b>CO2</b>	3	2	2	3	2	1	1	2	2	3	1	1	X	1	2
	<b>CO3</b>	2	3	3	2	3	2	1	2	2	2	2	X	X	2	3
	<b>CO4</b>	2	1	3	3	2	3	2	1	2	3	1	1	X	2	3
	<b>CO5</b>	3	2	3	3	3	2	2	2	3	2	2	2	X	3	2
	<b>CO6</b>	2	2	2	3	3	2	3	2	3	2	3	2	X	2	2
<b>ZOO501 B</b>	<b>CO1</b>	3	1	1	1	2	2	2	3	2	2	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	2	2	2	2	2	2	X	X	2	2
	<b>CO3</b>	3	1	2	2	1	2	2	2	2	3	3	1	X	2	3
	<b>CO4</b>	2	1	2	3	2	2	2	2	2	3	3	1	X	2	3
	<b>CO5</b>	2	1	3	3	2	2	3	3	2	3	1	X	X	2	2
	<b>CO6</b>	2	1	3	2	2	2	3	2	2	2	2	X	X	2	2
<b>Semester-VI</b>																
<b>CHM601 A1</b>	<b>CO1</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO2</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO3</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO4</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3

	<b>CO5</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO6</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
<b>CHM601 A2</b>	<b>CO1</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO2</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO3</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO4</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO5</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	<b>CO6</b>	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
<b>CHM6 01A3</b>	<b>CO1</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	<b>CO2</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	<b>CO3</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	<b>CO4</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	<b>CO5</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	<b>CO6</b>	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
<b>BOT601A</b>	<b>CO1</b>	3	1	2	2	3	3	3	3	2	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	3	2	2	X	X	3	2
	<b>CO3</b>	3	1	3	3	3	2	3	2	2	1	2	X	X	2	3
	<b>CO4</b>	3	1	3	2	1	2	2	3	1	x	2	X	X	1	3
	<b>CO5</b>	3	1	2	2	3	3	1	2	2	x	3	X	X	2	2
	<b>CO6</b>	3	1	2	2	3	3	1	2	2	x	3	X	X	2	2
<b>BOT601B</b>	<b>CO1</b>	3	1	2	2	3	3	3	3	2	1	3	X	X	2	3
	<b>CO2</b>	3	1	2	2	2	3	2	2	3	X	2	X	X	2	2
	<b>CO3</b>	3	1	3	3	3	2	2	3	2	1	1	X	X	3	2
	<b>CO4</b>	3	1	3	2	1	2	2	2	1	1	3	X	X	2	3
	<b>CO5</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	1	2
	<b>CO6</b>	3	1	2	2	3	3	1	2	2	X	2	X	X	1	2
<b>ZOO601A</b>	<b>CO1</b>	3	2	3	3	2	1	1	1	2	2	3	X	X	2	3

	<b>CO2</b>	2	2	3	3	2	1	1	1	2	2	2	X	X	2	3
	<b>CO3</b>	2	2	3	3	2	2	X	1	2	1	3	1	X	2	3
	<b>CO4</b>	3	2	3	3	2	2	X	1	2	2	3	1	X	2	3
	<b>CO5</b>	3	2	3	3	2	1	1	1	2	3	2	X	X	2	3
	<b>CO6</b>	3	2	3	3	2	2	1	1	3	2	2	X	X	2	3
<b>ZOO601 B</b>	<b>CO1</b>	3	1	2	1	3	3	3	2	2	3	2	1	X	3	3
	<b>CO2</b>	3	1	3	2	2	1	3	2	2	3	2	1	X	2	3
	<b>CO3</b>	3	1	2	3	2	2	3	2	2	2	2	X	1	2	3
	<b>CO4</b>	3	2	1	2	1	2	3	2	2	3	1	1	X	2	3
	<b>CO5</b>	3	2	1	X	1	1	3	2	3	2	2	2	X	3	3
	<b>CO6</b>	3	2	2	1	1	2	3	2	3	2	3	2	X	2	3

### Mapping of Course Outcomes(COs) with programme Specific outcomes(PSOs)

College code	Course Outcomes	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
<b>PBC101</b>	<b>CO1</b>	1	2	3	2	1		
	<b>CO2</b>	2	1	1	1	3		
	<b>CO3</b>	2	1	1	1	2		
	<b>CO4</b>	1	3	2	2	2		
	<b>CO5</b>	3	2	2	3	1		
	<b>CO6</b>	1	1	1	2	1		
<b>HCP101</b>	<b>CO1</b>	X	X	X	X	X	X	2
	<b>CO2</b>	X	X	X	X	X	X	2
	<b>CO3</b>	X	X	X	X	X	X	2
	<b>CO4</b>	X	X	X	X	X	X	2
	<b>CO5</b>	X	X	X	X	X	X	2
	<b>CO6</b>	X	X	X	X	X	X	2

<b>CHM101A1</b>	<b>C01</b>	3	3	2	2	1	3	3
	<b>C02</b>	3	3	2	2	1	3	3
	<b>C03</b>	3	3	2	2	1	3	3
	<b>C04</b>	3	3	2	2	1	3	3
	<b>C05</b>	3	3	2	2	1	3	3
	<b>C06</b>	3	3	2	2	1	3	3
<b>CHM101A2</b>	<b>C01</b>	3	3	2	2	2	3	3
	<b>C02</b>	3	3	2	2	2	3	3
	<b>C03</b>	3	3	2	2	2	3	3
	<b>C04</b>	3	3	2	2	2	3	3
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