ST. ALOYSIUS COLLEGE(AUTONOMOUS), JABALPUR

Reaccredited 'A+ 'Grade by NAAC(CGPA:3.68/4.00)
College with Potential for Excellence by UGC
DST-FIST Supported & STAR College Scheme by DBT

Faculty of Bioscience

Course Outcomes

Bachelor of Science (BSc)

SUBJECT: ZOOLOGY

B.Sc. I Sem (Major/Minor/Elective)

Paper- I: Animal Diversity: Non-Chordata

CO No.	Course Outcomes	Cognitive Level
CO-1	Learn about the importance of systemic, taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla	An
CO-2	*Describe general taxonomic rules on animal classification at global level*	U
CO-3	*Acquire understanding of the economic, ecological, and medical importance of diverse animal species in advancing human welfare, considering and addressing global, national, and local/regional needs and contexts.*	An
CO-4	Understand the important parasites and their control measures	U
CO-5	Understand the Evolutionary significance of Larval forms of Echinodermata & Hemichordata	U

B.Sc. II Sem (Major/Minor/Elective)

Cell Biology ,Reproductive biology and developmental biology

CO No.	Course Outcomes	Cognitive Level
CO-1	Develop deeper understanding of what life is and how it functions at cellular level	U
CO-2	Understand the nature and basic concepts of Cell biology, Reproductive and Developmental biology.	U
CO-3	Understand structure and functions of cell membrane and cellular organelles	U
CO-4	Understand the importance of latest reproductive trends, reproductive techniques to be applied for human welfare.	App

CO-5	Understand the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multi-cellular organisms.	An

B.Sc. II Year (Major)

Paper- I: Diversity of Chordates and Comparative Anatomy

CO No.	Course Outcomes	Cognitive Level
CO-1	Understand chordate diversity of animals and theirtaxonomic positions.	U
CO-2	***Enhance the understanding of local resource utilization, livestock, fish farming products and its marketing as per National/Global standards. Identify the morphological and anatomical features and basis of chordate classification.***	R
CO-3	***Understand the global, national, and local/regional economic importance and current status of biodiversity to foster a positive attitude towards its conservation.***	An
CO-4	Differentiate the organism belonging to different taxa, by studyingcomparative anatomy.	U
CO-5	The project, assignment will give them a flavor of research in studying biodiversity, taxonomy besides improving their writing skills and lay foundation of career in Zoology	Apply

B.Sc. II Year(Major Paper II/Minor/Elective)

Physiology and Biochemistry

CO No.	Course Outcomes	Cognitive Level
CO-1	Students will be able to how organs function at different levels i.e. from cellular to system levels.	U
CO-2	Examine internal harmony of different body systems by Learning inherent disorders and deficiencies, which is needed tomaintain good health.	U
CO-3	Understand functions of biomolecules & their role in metabolism by studying biochemistry.	App
CO-4	Develop a strong foundation for research & employabilityskills	App
CO-5	Improve the student's perspective of health biologythrough deep study of physiology	An

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DEPARTMENT OF BIOTECHNOLOGY

Course Outcomes

BSc. Semester I

Cell Biology and Biochemistry

CO No.	Course Outcomes	Cognitive Level
CO-1	Understand basics of cell biology.	U. R
CO-2	Appreciate the importance of bonding and spatial arrangements of molecules for proper functioning and stability.	U, R
CO-3	Understand both the physical as well as chemical properties of biomolecules	U. R
CO-4	Students can also go in for medical Laboratory Technique Courses, opening opportunities in hospitals and pathological laboratories.	App, C

B.Sc. Semester II

Paper Microbiology and Immunology

CO No.	Course Outcomes	Cognitive Level
CO-1	Student will be able to understand the basics of Microbial diversity and nutrition.	U
CO-2	To expose the students towards the emerging world of Immune system, its properties and types.	U
CO-3	Student will be able to understand Immunoglobulin structure, types and functions and can apply the concept of hypersensitivity and vaccination for different diseases.	R, E
CO-4	To develop skills required in performing various microbial and immunological techniques.	App

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B.Sc. II Year

Paper I - Basic Molecular Biology

CO No.	Course Outcomes	Cognitive Level
CO-1	Students will be able to explain role of different protein/ enzymes involved in cell signaling.	U
CO-2	They will be able to understand mechanism of genetic damage caused by mutation and role of various repair system in neglecting the effect of these mutation.	U
CO-3	Students will be able to explain mechanism of DNA replication, transcription, translation and other related processes.	U, AN

Paper II - Recombinant DNA Technology

CO No.	Course Outcomes	Cognitive Level
CO-1	The objectives of this course are to teach students with various approaches to conduct genetic engineering and their applications in biological research as well as in biotechnology industries.	U
CO-2	Genetic engineering is a technology that has been developed based on our fundamental understanding of the principles of molecular biology and this is reflected in the contents of this course.	U
CO-3	***Given the impact of genetic engineering in modern society, the students should be endowed with strong theoretical knowledge of this technology.***	U, R
CO-4	In conjunction with the practical in molecular biology and genetic engineering, the students should be able to take up biological research as well as placement in the relevant biotech industry	Ev

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Bachelor of Science (B.Sc.)

SUBJECT: BOTANY

B.Sc. I sem Minor/Elective (Applied Botany)

CO No.	Course Outcomes	Cognitive Level
CO-1	*Apply principles of agriculture and scientific methods to enhance student's understanding of agricultural problems.*	U, A
CO-2	Understand the significance and role of botany.	U,R
CO-3	Learn the basic aspects of applied botany.	R, U
CO-4	Students will be able to explore about employment opportunities in field of botany.	A, C
CO-5	Understand the opportunities of social services.	A,C
CO-6	Students will be able to gain knowledge about best health practices.	U, A
CO-7	Students will be able to explore startup opportunities in field of botany.	A, C

B.Sc II sem

Minor / Elective (Basic Botany)

CO No.	Course Outcomes	Cognitive Level
CO-1	Students will be able to understand the diversity of plants and evolutionary process in plant kingdoms.	
CO-2	Students will be able to understand an account of plant adaptations from aquatic condition to colonize terrestrial habitat.	U, R
CO-3	Students will be able to explore the changes in morphological, anatomical and reproductive structures that propel plant evolution.	U,R
CO-4	*Students will comprehend the economic significance of plants in their natural environment, aligning with both national and global standards.*	U,R
CO-5	*Students will be able to get acquainted with locally prevalent microbial diseases of plants and humans.*	U,R

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B.Sc II year

Paper: Minor/Elective (Industrial Botany)

CO No.	Course Outcomes	Cognitive Level
CO 1	Students will be able to gain knowledge on plants and their parts used in various industries.	U, Ap
CO 2	Students will be able to get an idea to establish plant based natural product industry.	U, C
CO 3	Students will be able to make the students self-reliant.	U,C,R

B.Sc I Semester

Industrial Microbiology

Major: Tools and Techniques in Industrial Microbiology

CO No.	Course Outcomes	Cognitive Level
CO-1	Students will be able to understand the relevance of microscopic approaches in life sciences.	U,R
CO-2	Students will be able to develop skills to understand concept and applications of instruments used in life sciences.	Ap
CO-3	Students will be able to develop scientific understanding of analytical techniques.	U,R
CO-4	Students will be able to be able to interpret the results of an experiment.	A
CO-5	***Students will be able to demonstrate use of different tools and different modern techniques in the field of Industrial Microbiology. Please rewrite with Global National local regional needs***	U,R

B.Sc II Semester

Industrial Microbiology

Major: (Fundamentals of Industrial Microbiology)

CO No.	Course Outcomes	Cognitive Level
CO-1	Students will be able to understand the history and development of Microbiology	R

CO-2	***Students will be able to describe the role and significance of microorganisms in societal welfare.***	Ap, R
CO-3	Students will be able to identify and classify the important microorganisms.	R
CO 4	Students will be able to discover the contributions of important scientists in the field.	R

B.Sc II year Industrial Microbiology

Paper 1 Major : (Application of Industrial Microbiology)

CO No.	**Course Outcomes**	**Cognitive Level**
CO-1	Students will be able to understand working and design of a fermenter, its uses, and its different types.	U,R
CO-2	Students will be able to demonstrate the knowledge and understanding of basic fermentations processes.	U,A
CO-3	***Students will gain the ability to identify industrially significant microbes for cost-effective utilization, tailored to meet global, national, and local/regional economic demands and opportunities.***	A
CO-4	Students will be able to screen and identify organism of potential industrial importance	A
CO-5	Students will be able to describe various separation techniques and downstream processing different metabolites.	R

B.Sc II year IMB

Paper 2 Major: (Physiology and Biochemistry of Microbes)

CO No.	**Course Outcomes**	**Cognitive Level**
CO-1	The students will be able to demonstrate a knowledge and understanding of the basic. principle of biochemistry including important molecules their economic and scientific importance inside the cell.	U,R
CO-2	The students will be able to understand the biochemical pathways of synthesis and degradation of these molecules.	R
CO-3	The students will be able to classify various types of enzymes and explain enzyme kinetics.	R

CO-4	The students will be able to explain the transport of different metabolites generated, with application in industrial processes.	U,R
CO-5	The students will have comprehensive knowledge of the microbial physiology and biochemistry.	R

Bachelor of Science (B.Sc.)

SUBJECT: Chemistry

B.Sc. I SEM

Paper- I: Major/Minor (FUNDAMENTALS OF CHEMISTRY)

CO No.	Course Outcomes	Cognitive Level
CO-1	Gain a thorough knowledge about various theories and principles applied to reveal atomic structure and quantum number	U, An
CO-2	Understand concepts of periodic properties of elements.	R, App
CO-3	Develop the Acid-Base concept and pH buffer	U,App
CO-4	Gain a thorough knowledge about factors responsible for reactivity of organic molecules	An, Ev
CO-5	Develop an understanding related to basics and Mechanism of Chemical Kinetic	U, K

Paper- I: Elective (Fundamentals of Chemistry)

CO No.	Course Outcomes	Cognitive Level
CO-1	Gain a thorough knowledge about various theories and principles applied to reveal atomic structure and quantum number	U, An
CO-2	Understand concepts of periodic properties of elements.	R, App
CO-3	Develop the Acid-Base concept and pH buffer	U,App
CO-4	Gain a thorough knowledge about factors responsible for reactivity of organic molecules	An, Ev
CO-5	Develop an understanding related to basics and Mechanism of Chemical Kinetic	U, K

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B.Sc. II SEM

Paper- II: Major/Minor/Elective (Analytical Chemistry)

CO No.	Course Outcomes	Cognitive Level
CO-1	*Comprehend the fundamental applications of mathematics and computers in the field of chemistry, considering and adapting to global, national, and local/regional needs.*	U, R
CO-2	Gain a thorough knowledge about fundamentals of analytical chemistry and steps involved in analysis.	K, C, An
CO-3	Build the concepts of thermodynamics and chemical equilibrium	App, An
CO-4	Develop an understanding about principle of chromatography and spectroscopy and utilization of chromatographic and spectroscopic techniques in analysis	R, Ev

B.Sc. II Year

Major/Minor/Elective

Paper-1

Paper- I: Reaction, reagent and Mechanism in Organic Chemistry

CO No.	Course Outcomes	Cognitive Level
CO-1	Develop knowledge of various organic reactions, reagents and their mechanism in understanding organic synthesis	App, Ev
CO-2	*Gain an understanding of the practical applications of reactions in diverse industries such as pharmaceuticals, polymers, pesticides, textiles, and dyes, tailored to meet global, national, and local/regional needs.*	U, App
CO-3	Develop knowledge about important key reactions used in higher studies and research in chemistry	R, Ev
CO-4	Perform various reactions, which will be helpful in understanding organic synthesis.	R, App
CO-5	Understand the use reagents while performing experiments based on certain organic reactions	K, An
CO-6	Analyze and Synthesize some organic compounds	U, App

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B.Sc. II YEAR

Major/Minor/Elective (Theory)

Paper 2: Transition Elements, Energetic, Phase equilibrium

CO No.	Course Outcomes	Cognitive Level
CO-1	Develop an understanding about traditional Indian Chemistry	R, Un
CO-2	Understand the concepts of chemistry of d & f block elements, basic concepts of coordination chemistry.	App, U
CO-3	Explain Stereochemistry of transition metal complexes.	R, An
CO-4	Gain a thorough knowledge about Laws of thermodynamics and thermochemistry	K, Un
CO-5	Develop the concept of phase equilibrium with reference to solid solution, liquid-liquid mixture, partially miscible liquids.	App, C
CO-6	Develop an understanding about basic concepts of electrochemistry, various types of electrodes and their reactions.	Un, C

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