

Program Details

B.Sc. (Hons.) Biochemistry - 3 years program

About the Program:

B.Sc. (Hons.) Biochemistry course is designed to provide the students with a grounding in a subject that forms the basis of virtually whole biological world. The 3 years undergraduate program aims to impart a thorough knowledge of the principles and theories pertaining to the different areas of Biological world such as Biochemistry, Molecular Biology, Genetic Engineering, Biotechnology, Bioinformatics, Cell signaling, Microbial Cellular Communication, Immunology etc. In addition, the program aims at imparting academic excellence, personality development, systematic and disciplined work and scientific temper among students to face the challenges in the field of Biosciences.

Program Education Objectives (PEOs):

PEO-1: The graduated young minds will be ignited to understand the concepts of biochemistry through application-based learning.

PEO-2: The graduates will be emphasized on applied aspects of advance biochemical techniques by hands-on training and to inculcate ethics and professional attitude.

PEO-3: The graduates of biochemistry will be trained for self-directed learning, recognizing, continuing educational needs in occupying positions in research, industries and related organization.

Program Specific Outcomes (PSOs):

PSO1: Disciplinary Knowledge and Problem Analysing: The graduated young minds will be ignited to understand the concepts of biochemistry through application-based learning and to apply the knowledge in analyzing the problems related to various fields of life sciences for their solutions and enhances overall development and also equip with advanced biochemical techniques by hands-on training and to inculcate ethics and professional attitude with problem solving skills.

PSO2: Formulation and Design: The graduates will be trained to handle the advanced techniques of biochemistry to formulate the solutions of variety of problems related to the real life and will be trained for self-directed learning, recognizing and continuing educational needs in occupying positions in research, industries and related organizations.

Program Outcomes (POs):

PO1: Critical thinking and analytical reasoning: Acquire ability of critical thinking and logical reasoning and capability of recognizing and distinguishing the various aspects of real life problems.

PO2: Conduct investigations of complex research problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO3: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern science and research tools including prediction and modelling to complex scientific activities with an understanding of the limitations.

PO4: Communication: Communicate effectively on scientific activities with the community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO5: Environment and sustainability: Understand the impact of the professional scientific solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO6: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the scientific practice.

PO7: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO8: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

B.Sc. (Hons.) Biochemistry
Summary of Credits

Course Category	For 3 years Program
Discipline Core Courses	60
Discipline Specific Electives (DSE)	12
Generic Electives	24
Multi-Disciplinary Courses (MDC)	10
Ability Enhancement Courses (AEC)	8
Skill Enhancement Courses (SEC)	10
Value Added Courses (VAC)	6
Industrial/Academic Internship	2
Dissertation	NA
Total Credits	132

Curriculum Structure

B.Sc. (H) Biochemistry

SEMESTER I							
S. No	Course Code	Course Name	Category of Course	L	T	P	Credits
		Fundamentals of Cell Biology	Discipline Core Course 1	3	0	1	4
		Biochemistry & Physiology	Discipline Core Course 2	4	0	0	4
		Bioorganic and Medicinal Chemistry	Discipline Core Course 3	3	0	1	4
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Electives - 1				4
		Ecology and Environment	Ability Enhancement course-1	2	0	0	2
		Introduction to Python programming/ Graphical Tools	Skill Enhancement course- 1	1	0	1	2
		Health and Nutrition/First Aid	Value Added Course-1	2	0	0	2
			TOTAL				22
SEMESTER II							
S. No.	Course Code	Course Name	Category of Course	L	T	P	Credits
		Biochemistry of Metabolism	Discipline Core Course 4	4	0	0	4
		Toxicology and Pharmacology	Discipline Core Course 5	3	0	1	4
		Biotechnology	Discipline Core Course 6	3	0	1	4
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Electives - 2				4

		Logical Communication	Ability Enhancement course-2	1	0	1	2
		Essentials of IT Tools	Skill Enhancement course- 2	1	0	1	2
		Art of Happiness	Value Added Course-2	2	0	0	2
			TOTAL				22
SEMESTER III							
S. No.	Course Code	Course Name	Category of Course	L	T	P	Credits
		Fundamentals of Molecular Biology	Discipline Core Course 7	3	0	1	4
		Introduction to Microbial World	Discipline Core Course 8	3	0	1	4
		Evolutionary and Developmental Biology	Discipline Core Course 9	4	0	0	4
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Electives - 3	4	0	0	4
		Critical Thinking & Writing	Ability Enhancement course-3	2	0	0	2
		Introduction to Artificial Intelligence	Skill Enhancement course- 3	2	0	0	2
		NCC/NSS/Social Internship/Vedic Mathematics	Value Added Course-3	2	0	0	2
			TOTAL				22
SEMESTER IV							
S. No.	Course Code	Course Name	Category of Course	L	T	P	Credits
		Concept of Immunology	Discipline Core Course 10	3	0	1	4
		Gene Technology and Human Welfare	Discipline Core Course 11	3	0	1	4

		Bioinstrumentation & Biotechniques	Multi Disciplinary Course 1	3	0	0	3
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Electives - 4				4
		Disaster Management	Ability Enhancement Course-4	2	0	0	2
		Cyber Sphere & Security Global Concern	Skill Enhancement Course- 4	2	0	0	2
		Nanobiotechnology	Multi Disciplinary Course 2	3	0	0	3
			TOTAL				22
SEMESTER V							
S. No.	Course Code	Course Name	Category of Course	L	T	P	Credits
		Medical Biochemistry	Discipline Core Course 12	3	0	1	4
		Inheritance Biology	Discipline Core Course 13	3	0	1	4
		Research Methodology and Ethics	Multi Disciplinary Course 3	4	0	0	4
		DSE from Gp. 1	DSE-1				4
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Elective - 5				4
		Internship	Industrial/Academic Internship	0	0	2	2
			TOTAL				22
SEMESTER VI							
S. No.	Course Code	Course Name	Category of Course	L	T	P	Credits
		Plant Biochemistry	Discipline Core 14	3	0	1	4
		Ecology, Ethology, Environmental Science and Wildlife	Discipline Core 15	4	0	0	4

		DSE from Gp. 1	DSE-2				4
		DSE from Gp. 1	DSE-3				4
		Generic Elective (Forensic Science/Maths/Chemistry/Physics/Economics/Computer Science)	Generic Electives - 6				4
		One from the List of choices	Skill Enhancement Course- 5	2	0	0	2
			TOTAL				22
After 3 years, Students will get the degree of B.Sc. (Hons.) Biochemistry with Total Credits=132							

Choices for Skill Enhancement Course- 4/5

Subject	L	T	P	Credits
Testing of cosmetics and hygienic products	1	0	1	2
Innovation and Entrepreneurship	2	0	0	2
Statistics with R	1	0	1	2
Electronic Product Testing	1	0	1	2
Fundamentals of Clinical Research	2	0	0	2
Social Media Crimes and Awareness	2	0	0	2
Graphical Tools	1	0	1	2
Latex writing	1	0	1	2

List of Discipline Specific Electives (DSE)

Infectious Microbiology Specialization

Category of Course	Subject	L	T	P	Credits
Elective-1	Parasitology	4	0	0	4

	Virology	4	0	0	4
Elective-2	Toxicology and Vector Biology	3	0	1	4
	Bacteriology	3	0	1	4
Elective-3	Pharmaceutical Microbiology	4	0	0	4
Elective-4	Genomics	4	0	0	4
	Phycology and Mycology	3	0	1	4
Elective-5	Metagenomics	3	0	1	4
	Food and Dairy Microbiology	3	0	1	4
Elective-6	Medical Microbiology	3	0	1	4

Parasitology Specialization

Category of Course	Subject	L	T	P	Credits
Elective-1	Parasitology	4	0	0	4
	Virology	4	0	0	4
Elective-2	Toxicology and Vector Biology	3	0	1	4
	Bacteriology	3	0	1	4
Elective-3	Genetic disorders	4	0	0	4
	Plant Pathology	3	0	1	4
Elective-4	Genomics	4	0	0	4
	Phycology and Mycology	3	0	1	4
Elective-5	Metagenomics	3	0	1	4
Elective-6	Epigenetics and Chromatin Biology 4		0	0	4

Medical Biochemistry Specialization

Category of Course	Subject	L	T	P	Credits
--------------------	---------	---	---	---	---------

Elective-1	Clinical correlations of disease	4	0	0	4
Elective-2	Toxicology and Vector Biology	3	0	1	4
	Medical Biochemistry	3	0	1	4
Elective-3	Genetic disorders	4	0	0	4
Elective-4	Genomics	4	0	0	4
	Biochemistry of Metabolism	4	0	0	4
Elective-5	Metagenomics	3	0	1	4
	Bioorganic and Medicinal Chemistry	3	0	1	4
Elective-6	Epigenetics and Chromatin Biology	4	0	0	4
	Hormones: Biochemistry and Function	4	0	0	4