



DEPARTMENT OF BIOTECHNOLOGY

UNIVERSITY OF KASHMIR

(NAAC Accredited Grade A⁺)

BIOTECHNOLOGY CURRICULUM

FOR

M.Sc. IN BIOTECHNOLOGY

**SPONSORED BY DEPARTMENT OF
BIOTECHNOLOGY (DBT), MINISTRY OF SCIENCE
AND TECHNOLOGY, GOVERNMENT OF INDIA**

(EFFECTIVE FROM, 2023)

CURRICULUM OVERVIEW

The curriculum is based on choice based credit system (CBCS), spanning four semesters. The students have to obtain 24 credits in each semester. Out of 24 credits, 22 credits have to be obtained from the department of Biotechnology, while 2 credits are required to obtain either from other departments of school of Biological sciences (Named as “Generic elective” (GE), or from any other department of university other than the departments of Biological Sciences (Named as “Open elective” (OE).

The semester I, II and III are based on class teaching, tutorials and laboratory courses, while semester IV is exclusively devoted to 6 months of research project work.

Glossary of terms used in the curriculum

One Credit: 16 hours of Lecturers (L) or 32 hours of Tutorial (T) or 32 hours of practical(P)

IA: Internal Assessment

SEE: Semester End Examination

CR: Core

DCE: Discipline centric

GE: Generic Elective

OE: Open Elective

Program Objective

The M.Sc Biotechnology course offered by the department of Biotechnology, University of Kashmir objective is to utilize the academic expertise and research training of its faculty members in providing the platform for imparting highest level of knowledge in the field of biotechnology to the post graduate students. The curriculum structure is designed in a manner so as to provide in first semester the basic knowledge about the cellular, molecular, immunological and metabolic aspects of the living cells. In the subsequent semester two and three, the courses offered orients the students towards the biotechnology specialization, like genetic engineering, plant biotechnology and Bioprocess engineering and fermentation technology. The aim of these courses is to abreast students with latest concepts in the field of biotechnology. The 4th semester research-training objective is to provide research orientation to students.

Program outcome

After completion of the M.Sc Biotechnology course, the students will possess fundamental concepts of cellular functioning at the molecular level. The students will be able to understand how metabolic pathways operate in the human cells and their significance in physiological and pathophysiological aspects. The immune biology concepts will help students to understand how human body interacts with pathogens and how immune intervention can be helpful in treating various communicable diseases. The students will get to know how genetic engineering and recombinant DNA techniques can be utilized to manipulate animal and plant genomes for the betterment of human welfare. The environmental biotechnology course will help students to understand and implement the biological means in providing safe and clean environment. The Bioethical and biosafety courses will make students aware about the ethical and safety means required during implementation of biotechnological research interventions. Finally, the students will be able to develop research skills and training to explore their abilities as potential scientists.