



**SHARDA**  
UNIVERSITY  
*Beyond Boundaries*



**SHARDA SCHOOL OF  
BIO SCIENCE &  
TECHNOLOGY**



COURSE

**BIOTECHNOLOGY  
AND ITS  
SOCIETAL IMPACT  
(NV35012)**

**VALUE ADDED  
COURSE BROCHURE-30 HRS  
2025-26**

## ABOUT THE UNIVERSITY

Sharda University is a leading Educational institution based out of Greater Noida, Delhi NCR. A venture of the renowned Sharda Group of Institutions (SGI), The University has established itself as a high quality education provider with prime focus on holistic learning and imbuing competitive abilities in students.

The University is approved by UGC and prides itself in being the only multi-discipline campus in the NCR, spread over 63 acres and equipped with world class facilities.

Sharda University promises to become one of the India's leading universities with an acknowledged reputation for excellence in research and teaching. With its outstanding faculty, world class teaching standards, and innovative academic programs, Sharda intends to set a new benchmark in the Indian education system.

## ABOUT SCHOOL

The Sharda School of Bio-Science and Technology is one of the most dynamic and vibrant School for Life Sciences and Biological Engineering in the Delhi-NCR, Greater Noida India. The school is providing excellent and quality educational opportunities in are areas of Moleuclar Biology, Biochemistry, Immunology, Microbiology, Virology, Cancer Biology, Plant Molecular Biology, Agriculture Biotechnology, Animal Biotechnology etc by training the student community for Entrepreneurship development, Research and technical skills for the student community in particular for those coming from the diverse cultural and socio-economic background of the nation. SSBT offers innovative postgraduate and PhD programmes that inculcate personal and professional enrichment leading to the formation of vivacious and enthusiastic student community.

## ABOUT COURSE

This course will enhance careers in Biotechnology. Biotechnology is considered a boon to the society by playing a major role in disease treatment. It will be beneficial to students who are interested to become entrepreneurs in this field. This course can provide employability in food, agriculture, cosmetic and pharmaceutical companies.

## COURSE CONTENT

Week	Content	Duration
1.	General history, importance of biotechnology	2
2.	Difference between old and modern biotechnology	2
3.	Advancement in the biotechnology field	2
4.	Basic steps of recombinant DNA technology	2
5.	Genetically modified organisms	2
6.	Clone organisms	2
7.	Green biotechnology, Blue biotechnology, Red biotechnology	2
8.	White biotechnology, Gold biotechnology, Grey biotechnology	2
9.	Yellow biotechnology, Violet biotechnology, Brown biotechnology	2
10.	Pharmacology: Terms and definitions	2
11.	Drugs, chemicals, antibiotics and probiotics and their mode of actions	2
12.	Preventive strategies, quarantine and health certification	2
13.	Bioremediation strategies for health management	2
14.	Bio remediators and other prophylactic measures	2
15.	Immunostimulants and vaccines	2
<b>Total</b>		<b>30hrs</b>

## RESOURCE PERSON

### Dr. Ashwini Kumar

Dr. Ashwini Kumar is presently working as an Assistant Professor in the Department of Life Sciences, Sharda School of Basic Sciences and Research, Sharda University, Greater Noida, Uttar Pradesh. Previously, he has served as an Assistant Professor in the Biotechnology and Bioinformatics Area at NIIT University, Neemrana (Rajasthan), Department of Biotechnology at IMS Engineering College, Ghaziabad, and as a Lecturer in the Department of Biotechnology, National Institute of Technology, Raipur, Chhattisgarh. The central component of Dr Kumars research has been biomaterial science, more specifically, in the field of novel drug delivery systems. The target applications of his research are formulating non-invasive and minimally invasive drug delivery approaches for better results both in terms of pharmaceuticals and patient compliance. His interest also lies in the field of tissue engineering and diabetes. He has authored 23 journal articles in national and international journals, 9 book chapters, and a book. He also holds a patent on his work from PhD.

### Dr. Sanjay Kumar

He completed my PhD in the field of reproductive biology from All India Institute of Medical Sciences, New Delhi. He established the role of human seminal plasma proteins (HSA-PIP complex and carboxypeptidase E) in the reproductive functions. After his PhD, he continued as a post-doctoral fellow in the same lab for 7 months. Then I worked as a scientist in IVF (In vitro Fertilization) laboratory, Department of Presidents Affairs (DOPA), Al Ain, UAE and established IVF in animal model such as camel. Then he moved to Mayo Clinic, Rochester, US, where he worked as post-doctoral fellow in division of Hematology/Nephrology. During this period, he developed MALDI-TOF/MS based method for the identification of N-glycosylation in IgG light chain in patients with AL amyloidosis. Also, explored the role of extracellular vesicles microRNA in the progression of kidney disease.

### Dr. Smita Jain

Dr. Smita Jain is Assistant Professor in the Department of Life Sciences, School of Basic Science and Research. She has more than 8 years of UG/PG teaching experience and had been associated with Department of Biochemistry, Institute of Home Economics, University of Delhi. She has completed her MSc (Biotechnology), UGC-CSIR JRF-SRF scholar and PhD in Biochemistry from Delhi University. Her area of specialization is exploring the neurodegenerative changes, altered protein expression in clinical disorders such as Migraine, headache related neuronal disorders. During her PhD tenure, she has identified the adverse toxicity of xenobiotics including pesticides and plant derived drugs with respect to its bioaccumulation and transport across the highly specific and impermeable blood-brain barrier, subsequent impact on the brain inhabited memory related proteins. She has published her research work in various peer reviewed national and international journals of high impact factor. She has also published few book chapters published nationally. She has been awarded with an Institutional Research Grant by Research and Development Centre, Sharda University to explore the role of Vitamin D and memory neurotrophins in association with ferritin levels in migraine patients of North India. She has been assigned as Departmental ERP (Enterprise Resource Planning) champion by Dean academic Affairs, Shada University from past two years. She is also part of Cultural and Sports Committee for conducting Co-curricular programs/activities/events at Intra-Departmental and Inter-Departmental level.

School: SSBT

Programme: UG.

Branch: B.Sc. Biotechnology, B.Sc. Zoology, B.Sc. Microbiology, B.Sc. Food Science and Technology

Batch : 2025-2028

Current Academic Year: 2025-2026

1. Course Code	NV35012	
2. Course Title	Biotechnology and its Societal Impact	
3. Credits	0	
4. Contact Hours (L-T-P)	30 Hours	
Course Type	Value added course	
5. Course Objective	1.To introduce fundamental concepts of Biotechnology 2.To train the students in various biotechnology aspects. 3.To make the students become an entrepreneur.	
6. Course Outcomes	On successful completion of the course, students will be able to: CO1: To understand the basic concepts of historical background, and importance of biotechnology CO2: To provide the knowledge of recombinant DNA technology CO3: To describe the different colours of biotechnology CO4: To provide the knowledge of pharmaceutical biotechnology and its importance CO5: To deep insight of biotechnology and its impact on human health CO6: To develop an idea about the feasibility of various biotechnological fields for the benefit of the humans.	
7. Course Description	This course will enhance careers in Biotechnology. Biotechnology is considered a boon to the society by playing a major role in disease treatment. It will be beneficial to students who are interested to become entrepreneurs in this field. This course can provide employability in food, agriculture, cosmetic and pharmaceutical companies.	
8. Outline syllabus		CO Mapping
<b>Unit 1</b>	<b>Introduction</b>	
A	General history, importance of biotechnology in society	CO1,CO6
B	Difference between old and modern biotechnology	CO1,CO6
C	Social and technological advancement in the biotechnology field	CO1,CO6
<b>Unit 2</b>	<b>Recombinant DNA technology</b>	
A	Basic steps of recombinant DNA technology	CO2,CO6
B	Genetically modified organisms and their societal implications	CO2,CO6
C	Cloning technology and ethical considerations	CO2,CO6
<b>Unit 3</b>	<b>Colours of Biotechnology and their applications</b>	
A	Green biotechnology, Blue biotechnology, Red biotechnology in health and environment	CO3,CO6
B	White biotechnology, Gold biotechnology, Grey biotechnology in industry and sustainability	CO3,CO6
C	Yellow biotechnology, Violet biotechnology, Brown biotechnology in public welfare.	CO3,CO6
<b>Unit 4</b>	<b>Pharmaceutical Biotechnology</b>	
A	Pharmacology: Terms and definitions	CO4,CO6
B	Drugs, chemicals, antibiotics and probiotics and their societal implications	CO4,CO6
C	Preventive strategies, quarantine and health certification	CO4,CO6
<b>Unit 5</b>	<b>Biotechnology in Health management</b>	
A	Bioremediation strategies for health management	CO5,CO6
B	Bio remediators and other preventive measures for public health	CO5,CO6
C	Development of Immunostimulants and vaccines	CO5,CO6
<b>Mode of Examination</b>	Quiz/Viva	