

DEPARTMENT OF BIOTECHNOLOGY

B.Sc. Biotechnology B.Sc. Biotechnology

Course Contents & Syllabi



NEP

**Dolphin (PG) Institute of Biomedical & Natural
Sciences, Dehradun-248007**

Dolphin PG Institute of Biomedical and Natural Science, Dehradun

(An Autonomous College)

Department of Biotechnology: Composition of Board of Studies

S. No.	Category	Name	Signature
1.	Head of the Department- Chairperson	Dr. Shalini Singh	
2.	All Faculty members of the Department	Ms. Deepti Gulati Dr. Sachin Singh Ms. Tripti Garg	
3.	Two subject experts from outsidethe parent University nominated by the academic council.	Dr. Santan Barthwal Scientist G and Head, Division, Genetics and Tree Improvement, Forest Research Institute, Dehradun Dr. Nishesh Sharma, Head, Department of Biotechnology, School of Applied and Life Sciences, Uttaranchal University, Dehradun	
4.	One expert nominated by the Vice-chancellor	Dr. Gopal Joshi, Professor, Department of Biotechnology, HNBGU, Garhwal, Uttarakhand.	
5.	One representative from industry nominated by the principal	Dr. Virender Bhardwaj GM, Quality and Standards, Kala Amb, HP	
6.	One member of the college alumni nominated by the principal	Dr. Manisha Nanda, Associate Prof., Department of Microbiology, Graphic Era Deemed to be University, Dehradun	

The Academic Ordinance Governing UG & PG Programs under NEP-2020 DIBNS shall be applicable to all Certificate Programs, Diploma Programs, Under Graduate (3 or 4 years) Programs, Post Graduate (1-2 years) Programs offered by the Institute except those programs where any concerned Statutory Council stated otherwise.

Content framework

Programme:

B.Sc. Biotechnology (Honours/ Honours with Research)

Introduction

Biotechnology is a field of science where biology and technology come together to provide solution to various problems.

- It gives students thorough understanding of the biological sciences together with the abilities to use that understanding in the biotechnology sector.
- In addition to providing students with expertise in fields like molecular biology, biochemistry, genetics, and bioinformatics, this field is extremely relevant in today's society and has the potential to revolutionize the way we create food, pharmaceuticals, and other things.
- A B.Sc. Biotechnology degree will enable a student to recognize and address issues in the biotechnology sector. Specialization options include bioprocessing, biomanufacturing, agriculture, biomedicine, and bioremediation jobs in the future.

Eligibility:

- 12th (PCB/PCM) with 45% marks or equivalent from any state board or university (*bridge course of biology is compulsory in first semester for non-biology students at 12th level.

Future prospects/ Job availability/ Scope

Biotechnology jobs span across a wide range of industries and companies. Here are a few examples:

i. Pharmaceutical Companies:

Biotechnology professionals work in pharmaceutical companies to develop new drugs and therapies. They may be involved in research and development, clinical trials, and regulatory affairs. Example : Windlas Biotech, Mankind Pharma, Ind Swift laboratories Ltd., Lupin biotech, Zelle biotechnology, Biocon, Panacea Biotech

ii. Biotech Startups:

Many startups are founded with the aim of developing innovative biotechnologies.

These companies often focus on areas such as personalized medicine, gene editing, or synthetic biology. Example: **XCode Life Sciences, Sea6 Energy, Bharat Biotech**

iii. Agricultural Biotechnology Companies:

Companies in this sector use biotechnology to develop genetically modified crops, improve agricultural practices, and enhance crop yields. **Example: Sowbhagya Biotech, Advanta**

India, DuPont India, Godrej Agrovet, Maxeema Biotech, National Agro Foundation, Poabs Biotech, Poseidon Biotech, Rise n' Shine Biotech Pvt. Ltd

iv. **Biomanufacturing Companies:**

Biomanufacturing companies produce biopharmaceuticals, vaccines, and other biologics using living organisms or biological systems.

Biotechnologists in these companies are involved in process development, production, and quality control. Example: Biocon, Jubilant Pharmova, Serum Institute of India, Shubham Biotechnology

v. **Environmental Biotechnology Companies:** These companies focus on developing biotechnological solutions for environmental remediation, waste treatment, and renewable energy production. Example: **Elies Biotech Private Limited, Aavanira Biotech Pvt. (L)**

vi. **Diagnostic and Medical Device Companies:** Biotechnology professionals work in companies that develop diagnostic tests, medical devices, and equipment used in healthcare settings. Example: Transasia Bio-Medicals Ltd, Medtronic India Pvt. Ltd, Johnson & Johnson

Job availability

- Clinical Research Associate
- Medical Transcriptionist
- Medical writer
- Biotechnology Instructor
- Food safety officer
- Quality control officer

Government sector jobs: Candidates have good probability to crack various central and state-level examinations for securing a job in the government sector. A candidate with a bachelor's degree in Biotechnology can apply to different government sector jobs through tests held by these public sector ventures

- UPSC (Union Public Service Commission)
- State PSC (Public Service Commission)
- SSC (Staff Selection Commission)
- IFS (Indian Forest Services)
- Public sector banks
- Indian railways

Advanced Studies: Some popular entrance exams that candidates can take to gain admission into reputed colleges include

- AIIMS Biotechnology entrance test
- GAT B
- Delhi University Biotechnology entrance test

- CUET
- GATE
- ICAR/CSIR/DBT/UGC NET exam

Programme Objectives:

- To build careers for the students in Biotechnology wherein they apply their academic knowledge and experimental skills and make them more efficient for the job prospects offered by the Biotech industry and research.
- **Problem-Solving Abilities:** Develop critical thinking and problem-solving skills necessary to tackle complex biological problems and innovate new biotechnological solutions. So that the student can become a critical thinker, problem solver and solution provider to the society.
- **Preparation for Careers and Further Education:** Prepare students for a wide range of career opportunities in research, development, manufacturing, quality control, sales, and entrepreneurship within the biotechnology industry, as well as for further education in graduate or professional programs.

Programme out comes:

The NEP 2020 has placed significant emphasis on outcome-based education, which highlights the importance of specific learning outcomes for each course. For the FYUGP in Biotechnology, NEP 2020 has set forth a set of programme learning outcomes as below:

Type of learning outcomes	The Learning outcomes descriptors
Generic learning outcomes:	Complex problem-solving: Biotechnology graduates will have the ability to apply their knowledge of Biotechnology to analyse and resolve problems in various settings, using appropriate practical tools, experimental methods, and computational techniques
	Critical thinking: Biotechnology graduates will be able to analyze and evaluate information, identify and define problems, develop and implement solutions, and make evidence-based decisions.
	Creativity: Biotechnology graduates will able to design solutions for complex scientific problems and execute them by considering the environmental, societal and public safety aspects appropriately.
	Communication Skills: Biotechnology graduates will demonstrate written and oral communication skills in communicating Biotechnology-related topics.
	Analytical reasoning/thinking: Biotechnology graduates will have the ability to apply their Biotechnology knowledge to analyze and resolve problems in various settings, using appropriate practical tools, experimental methods, and computational techniques.

	Research-related skills: Biotechnology graduates will get academic exposure through the various Internships offered by reputed National Research Institutes during their UG tenure. They will be able to utilize the small summer/ winter recesses through their involvement in small projects under careful guidance of reputed faculties and may get the flavor of the current trend of research.
	Coordinating/collaborating with others: Biotechnology graduates will be able to collaborate effectively with others, including peers, colleagues, and interdisciplinary teams, to achieve common goals.
	Leadership readiness/qualities: Biotechnology graduates will have an ability to develop the quality of leadership which will help them to be a part of any organization as well as create a positive energy in their work field to achieve any assigned target.
	‘Learning how to learn skills: Biotechnology graduates will have a curiosity-driven and self-directed approach to learning, as well as the ability to ask insightful questions and explore new areas of knowledge.
	Digital and technological skills: Biotechnology graduates should be proficient in the use of digital tools and information and communication technologies (ICT), including programming languages, simulation software, and data analysis tools.
	Multicultural competence and inclusive spirit: Biotechnology Graduates will have acquisition of knowledge of the values and beliefs of multiple cultures and a global perspective to honour diversity
	Value inculcation: Biotechnology graduates will be aware of the global and national issues related to science and technology, as well as their roles and responsibilities as Indian and global citizens as well.
	Autonomy, responsibility and accountability: Biotechnology graduates should exercise responsibility and demonstrate accountability in applying knowledge ensuring safety and security at workplaces.
	Environmental awareness and action: Biotechnology graduates should have a strong ethical and environmental awareness and the ability to apply ethical reasoning in decision-making, including consideration of social, cultural, and environmental impacts.
	Community engagement and service: The Biotechnology graduates should be able to demonstrate the capability to participate in community-engaged services and activities for promoting the well-being of society through the scientific approach.
	Empathy: The Biotechnology graduates will be able to demonstrate the ability to give regard to points of view of another individual or group, and to identify and understand other people’s emotions.

Curriculum Structure

Semester-wise and Broad course category-wise Credit distribution of 4 years UG programme of Biotechnology

Semester	Major Courses – Core (MCC)	Minor course (MC) /vocational courses (VC)	Multidisciplinary courses (MD)	Skill Enhancement course (SEC)	Ability Enhancement courses (AEC)	Value Addition Courses (VAC)	Total credits acquired	Total credits required
I	Analytical techniques in Biology (5)	Choose from DIBNS Pool (5)	Choose from DIBNS Pool (3)	Choose from DIBNS Pool (3)	Choose from DIBNS Pool (2)	Choose from DIBNS Pool (2)	20	20
II	Biomolecules (5)	Choose from DIBNS Pool (5)	Choose from DIBNS Pool (3)	Choose from DIBNS Pool (3)	Choose from DIBNS Pool (2)	Choose from DIBNS Pool (2)	20	20
							40	40
<p>Students who opt to exit after completion of the first year and have secured 40 credits will be awarded a UG certificate in Biotechnology if, in addition, they complete one vocational course of 4 credits during the summer vacation of the first year or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester</p>								
III	I. Cell biology (5) II. Genetics (5)	Choose from DIBNS Pool (5)	Choose from DIBNS Pool (3)		Choose from DIBNS Pool (2)		20	20
IV	I. Biotechnology in human welfare (5) II. Molecular Biology (5)	Choose from DIBNS Pool (5)		Choose from DIBNS Pool (3)	MOOCS/SWAYA M/NPTEL (2)	Choose from DIBNS Pool (2)	22	20

								82	80
	Students who opt to exit after completion of the second year and have secured 82 credits will be awarded the UG diploma in Biotechnology if, in addition, they complete one vocational course of 4 credits during the summer vacation of the second year.								
V	I. Recombinant DNA Technology(5) II. Plant Biotechnology (5) III. Enzymology (5)	<i>choose any one course from identified minor disciplines (i.e. Botany, Zoology, Chemistry, Microbiology, Food Technology) (5)</i>	-	-	-	-	-	20	20
VI	I. Introduction to Fermentation Technology (5) II. Animal Biotechnology (5) III. Environmental Biotechnology (5)	<i>choose any one course from identified minor disciplines (i.e. Botany, Zoology, Chemistry, Microbiology, Food Technology) (5)</i>	-	Internship (2)	-	-	-	22	20
	60	30 (24)						124	120
	Students who wish to undergo a 3-year UG programme will be awarded UG Degree in the Biotechnology after successful completion of three years, securing 124 credits								
VII	I. Immunology (5) II. Biostatistics (5) III. Scientific writing & Communication Skills (5)	<i>choose any one course from identified minor disciplines (i.e. Botany, Zoology, Chemistry, Microbiology, Food</i>	-	-	-	-	-	20	20

		Technology) (5)						
VIII	I. Research Methodology (5)	<i>choose any one course from identified minor disciplines (i.e. Botany, Zoology, Chemistry, Microbiology, Food Technology) (5)</i>	-	Dissertation/ Research presentation (12)	-	-	22	20
	80	40 (32)	9	9+2int+12dis	8	6	166	160
Students will be awarded UG Degree (Honours with Research) in the Biotechnology if, they secure 166 credits								
	Microbial Biotechnology (5) IPRs (5) Bioethics and Biosafety (5)	<i>choose any one choose any one course from identified minor disciplines (i.e. Botany, Zoology, Chemistry, Microbiology, Food Technology) (5)</i>			MOOCS/SWAYA M/NPTEL (2)		22	20
Students will be awarded UG Degree (Honours) in the Biotechnology if, they secure 166 credits								

Courses:

Major Discipline: The major discipline refers to the primary subject of study, and the degree will be granted in that specific field. Biotechnology students are required to earn 50% of the total credits through Biotechnology Major (core) courses within the major discipline (Biotechnology)

MAJOR COURSES**For 3 years-60 credits****For 4 years-80 credits****Offered by the Biotechnology Department for Biotechnology Majoring Students****List of Core papers semester wise for B.Sc. Biotechnology Hons. MJB Major Disciplinary courses**

Semester	Subject name	Subject Code	Credits	Teaching Hours per week
I	Analytical techniques in Biology	MJB 101	5 (3+1+1)	6 hours
II	Biomolecules	MJB 102	5 (3+1+1)	6 hours
III	Cell biology	MJB 201	5 (3+1+1)	6 hours
	Genetics	MJB 202	5 (3+1+1)	6 hours
IV	Biotechnology in human welfare	MJB 203	5 (4+1)	5 hours
	Molecular Biology	MJB 204	5 (3+1+1)	6 hours
V	Recombinant DNA Technology	MJB 301	5 (3+1+1)	6 hours
	Plant Biotechnology	MJB 302	5 (3+1+1)	6 hours
	Enzymology	MJB 303	5 (4+1)	5 hours
VI	Introduction to Fermentation Technology	MJB 304	5 (3+1+1)	6 hours
	Animal Biotechnology	MJB 305	5 (4+1)	5 hours
	Environmental Biotechnology	MJB 306	5 (3+1+1)	6 hours

VII	Immunology	MJB 401	5 (4+1)	5 hours
	Biostatistics	MJB 402	5 (3+1+1)	6 hours
	Scientific writing & Communication	MJB 403	5 (4+1)	5 hours
VIII Honors with Research	Research Methodology	MJB 404	5 (4+1)	5 hours
VIII Honors	Microbial Biotechnology	MJB 405	4 (3+1)	4 hours
	IPRs	MJB 406	4 (3+1)	4 hours
	Bioethics and Bio safety	MJB 407	4 (3+1)	4 hours

MINOR COURSES
For 3 years-30 credits
For 4 years-40 credits

Minor discipline helps a student to gain a broader understanding beyond the major discipline.

Semester	Zoology (20 credits) OR	Botany (20 credits) OR	Chemistry (20 credits) OR	Microbiology (20 credits) OR	Food Technology and (20 credits)	Vocational courses (20 credits)
I	NA	NA	NA	NA	NA	Choose from DIBNS Pool (5)
II	NA	NA	NA	NA	NA	Choose from DIBNS Pool (5)
III	NA	NA	NA	NA	NA	Choose from DIBNS Pool (5)
IV	NA	NA	NA	NA	NA	Choose from DIBNS Pool (5)
V	Apiculture	Plant Diversity and Human Welfare	Basic Chemistry	General Microbiology		NA
VI	Sericulture	Plant Resources and IPR	Fundamental of Analytical Chemistry	Food Microbiology		NA

VII	Assisted Reproductive Technology	Environmental Pollution and Management	Green Chemistry	Industrial Microbiology		NA
VIII	Wildlife management	Medicinal and Aromatic Plants	Pesticide Chemistry	Soil and Agricultural Microbiology		NA

Key points:

- *Biotechnology majoring students can also choose their minor courses of the study from identified minor disciplines i.e. **Botany, Zoology, Chemistry, Microbiology, Food Technology**) or any **Vocational courses** in the place of Minor.*
- *A **50%** of the total credits from minors may be secured in any of the relevant discipline i.e. **Botany, Zoology, Chemistry, Microbiology, Food Technology**) and another **50%** of the total credits can be earned from vocational as per students' choice.*
- ***Vocational courses as Minor:** A minimum of **20 credits** will be allotted as the 'Minor' stream relating to **Vocational Education and Training** and these can be related to the major or minor discipline or choice of the student. These courses will be useful to find a job for those students who exit before completing the programme.*
- ***Minor discipline** helps a student to gain a broader understanding beyond the major discipline. For instance, if a student pursuing **Biotechnology major** obtains a minimum of **20 credits** from a bunch of courses in **Food Technology**, then the student will be awarded **B.Sc. degree in Biotechnology** with a Minor in **Food Technology***
- *Students are advised to choose Minor discipline from other relevant subjects in such a way that the knowledge gained from the Minor papers enriches the study of the Core Major course of the student*
- *The minor discipline selected in the fourth semester will be maintained throughout the duration of the program.*
- *For optimal academic performance, students **are encouraged to seek guidance** from faculty members within their major discipline prior to selecting minor courses.*

DIBNS MULTIDISCIPLINARY COURSES POOL

Total credits- 9 credits

*These courses are intended to broaden the intellectual experience and form part of liberal arts and science education. Students **are not allowed** to choose or repeat courses already undergone at the **higher secondary level (12th class)** in the proposed major and minor stream under this category*

1. Fascinating world of microbes
2. General Microbiology
3. Food Microbiology
4. Industrial Microbiology
5. Microbial Diversity
6. Physics of Life
7. General Astronomy
8. Biotechnology for human welfare
9. IPRs
10. Plant Biotechnology
11. Genetics
12. Chemistry Essentials for Everyday Life
13. Environmental Chemistry-Pollution Control Strategies
14. Elements and Compounds
15. Library and information services
16. Technical writing and communication skill
17. Intellectual property and its management in agriculture
18. Basic concepts in lab techniques
19. Agriculture research ethics and rural development programme
20. Disaster management
21. Fundamentals of Accounting
22. Introduction to Management
23. Fundamentals of Marketing
24. Web Designing
25. Programming in Python
26. DBMS and MySql
27. Ecommerce
28. Cyber law and Security
29. Ergonomical Education
30. Preventive and social medicine

DIBNS ABILITY ENHANCEMENT COURSES (AEC) POOL

Total credits-8 credits

The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity

1. English Language-I
2. English Language-I
3. French Language -I
4. French Language -II
5. German Language-I
6. German Language-II
7. Sanskrit Language-I
8. Sanskrit Language-II
9. Professional Communication Skills
10. Value Education
11. Personality Development and Soft Skills
12. The Constitution, Human Rights, and the Law
13. ICT integrated presentation skills

NB: In the place of these courses, students may select MOOCs courses from the SWAYAM/NPTEL upto the permissible limit.

DIBNS SKILL ENHANCEMENT COURSES (SEC) POOL

Total credits-9 credits

These courses are aimed at imparting practical skills and hands-on training to enhance the employability of students. The DIBNS has designed these courses as per the industry needs

1. Skills in Entrepreneurship, sales and distribution
2. Fermented foods & dairy products
3. Microbial Products for Agriculture Application (Biofertilizers, biopesticides)
4. Quality Control and Regulatory Affairs in Food
5. Bioethics & Biosafety
6. Management of Microbial diseases
7. Microbiological hazards and food safety
8. Epidemiology and public health
9. Basics of Instrumentation
10. Electrical Circuit network Skill
11. Sensors and Detectors Technology
12. Radiation Safety
13. Weather forecasting
14. Introduction to SCI-LAB Programming
15. Computational Physics Skills
- 16. Regulatory Affairs in Biotechnology**
- 17. Entrepreneurship and Innovation**
- 18. Data Science for Biotechnology**
- 19. Bioethics and Biotechnology Policy**
- 20. Biotechnology Marketing and Sales**
- 21. Biostatistics and Experimental Design**
- 22. Medical transcription**
23. Medical writing
24. Soil and Water Analysis
25. Aromatherapy & Essential Oils
26. Herbal Drug Formulations
27. Mushroom Production Technology
28. Basics of Internet
29. Basics of Computer Hardware
30. MS Office
31. Stress Management
32. Personality Development
33. Tally Accounting (With GST)
34. Photography and Editing
35. Office Management
36. HR Analytics

37. Organic Farming
38. Portfolio Manager
39. Public Speaking
40. Social and Life Skills
41. Beautician
42. Fashion Designing
43. Digital Marketing
44. Game Designing
45. Web design and Development
46. Social Media Marketing
47. Graphics Designing and Animation
48. Entrepreneurship Skills
49. Tourism Management
50. Life Skills Education
51. Personal Financial Planning
52. Cyber Security

NB: In the place of these courses, students may select MOOCs courses from the SWAYAM/NPTEL upto the permissible limit.

**Value Added Courses:
Total credits-6 credits**

The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of **constitution of India** and **environment** in its totality. The focus over the **sports and fitness** of students and cutting-edge areas that are fast gaining prominences, such as Artificial Intelligence (AI), 3-D machining, big data analysis, **digital learning**, for enhancing the employability of the students.

1. Health and Wellness
2. Yoga Education
3. Sports and Fitness
4. Understanding and connecting with environment
5. Understanding India/Digital and Technological Solutions
6. Physical Education
7. Life Skills and personality development
8. Moral values in modern Education
9. Human and Professional Ethics
10. History of Science
11. Solar PB Panel and Installation Maintenance
12. Nondestructive Testing
13. Environmental Physics
14. Environmental studies
15. Indian Knowledge System
16. Financial Literacy
17. Computer Applications
18. Artificial Intelligence Basics and applications in Daily Life
19. Cloud Computing
20. First aid, bls and emergency care
21. Nutrition health & fitness

NB: In the place of these courses, students may select MOOCs courses from the SWAYAM/NPTEL upto the permissible limit.

Summer Internship /Apprenticeship:

Total credits: 2 credits

A key aspect of the internship is induction into actual work situations. Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning. Biotechnology students will have an opportunity to gain valuable, real-world experience in a chosen area of interest through internships programme in industry, academia, or any national laboratories. Our Biotechnology students are required to earn 2 credits through internship.

Project/Dissertation work:

Total credits: 12 credits

Students choosing a 4-Year Bachelor's degree (Honours with Research) in Physics are required to take up research projects under the guidance of a faculty member of department of Biotechnology. The students are expected to complete the Research Project in the eighth semester. The research outcomes of their project work may be published in peer-reviewed journals or may be presented in conferences /seminars or may be patented.

Honours students not undertaking research project will do 3 theory courses* for 15 credits in lieu of a research project / Dissertation

Microbial Biotechnology 5 credits
IPRs 5 credits
Bioethics and Bio safety 5 credits

NOTE:

For the course to be opted from the DIBNS pool (skill enhancement/ multidisciplinary/ value added /vocational courses) that Dolphin institute students' advisory board of the concerned department will assist the students to choose from the pool.

Following will be the members of the advisory board:

1. Department Faculty members
2. one Subject Expert outside the college
3. one Expert from concerned industry
4. one Alumni
5. one Counsellor

SWAYAM courses will be incorporated in the curriculum and assignments, assessments or projects into the overall evaluation criteria for the skill enhancement/ multidisciplinary/ value

added /vocational courses ensuring that students are actively participating and benefiting from the online learning experience.

Department will monitor the students' progress and engagement in SWAYAM courses throughout the semester.

MOOCS/SWAYAM/NPTEL

SWAYAM (Study Webs of Active learning for Young Aspiring Minds) is an online portal to provide best teaching-learning experience. SWAYAM is an initiative of Govt of India to promote access for open-learning. Any Students can register to this portal for online courses. SWAYAM is an instrument for a self-actualization providing opportunities for life-long learning. Dolphin PG Institute has taken a step forward towards establishing an SWAYAM- NPTEL local Chapter under the National Programme on Technology Enhanced Learning (NPTEL). The primary aim of this Chapter is to facilitate our students in acquiring knowledge through enriched NPTEL video lectures and obtaining NPTEL certificates for the courses they undertake. This initiative also aims to enhance our students' employability in the industry or prepare them for further higher education in various fields. Dr. Aasheesh Raturi, faculty member of the Physics department, has been appointed as the Single Point of Contact (SPOC) for the NPTEL DIBNS Local Chapter and officially recognized by IITM. The responsibilities of the SPOC is to identify mentors from different departments who will encourage students to enrol in relevant NPTEL courses, oversee their progress on a weekly basis, motivate them to complete assignments, register for NPTEL exams, and guide them towards successfully completing the NPTEL courses.

1. MOOCs Courses - [Click here](#)
2. SWAYAM Courses – [Click here](#)
3. NPTEL Courses- [Click here](#)

Dolphin PG Institute of Biomedical and Natural Science, Dehradun

(An Autonomous College)

Department of Biotechnology: Composition of Board of Studies

S. No.	Category	Name	Signature
1.	Head of the Department- Chairperson	Dr. Shalini Singh	
2.	All Faculty members of Department	Ms. Deepti Gulati Dr. Sachin Singh Ms. Tripti Garg	
3.	Two subject experts from outsidethe parent University nominated by the academic council.	Dr. Santan Barthwal Scientist G and Head, Division, Genetics and Tree Improvement, Forest Research Institute, Dehradun Dr. Nishesh Sharma, Head, Department of Biotechnology, School of Applied and Life Sciences, Uttaranchal University, Dehradun	
4.	One expert nominated by the Vice-chancellor	Dr. Gopal Joshi, Professor, Department of Biotechnology, HNBGU, Garhwal, Uttarakhand.	
5.	One representative from industry nominated by the principal	Dr. Virender Bhardwaj GM, Quality and Standards, Kala Amb, HP	
6.	One member of the college alumni nominated by the principal	Dr. Manisha Nanda, Associate Prof., Department of Microbiology, Graphic Era Deemed to be University, Dehradun	