BHARATHIAR UNIVERSITY

COIMBATORE 641046

Department of Biotechnology

DBT Sponsored M. Sc. Medical Biotechnology Programme

(2020-2021 onwards)

NUMBER OF SEATS ALLOTTED BY DBT, NEW DELHI: 10

ELIGIBILITY CRITERIA

Bachelor's degree in any discipline of Life Sciences/Biological Sciences (Botany, Zoology, Biotechnology, Biochemistry, Microbiology, Genetics, Biomedical Genetics etc.); Bachelor's degree in Technology (Biotechnology/Biomedical Engineering); M.B.B.S./B.D.S./B.V.Sc./B. Pharm. from recognized institutions.

ADMISSION

Admission is through GAT-B (Graduate Aptitude Test for Biotechnology), conducted by the Regional Centre for Biotechnology, Faridabad, through online test held across the country at various centres. For further details of GAT-B entrance exam visit www.rcb.res.in. Students should apply online to Bharathiar University for admission with GAT-B scores and for details visit www.b-u.ac.in.

DURATION OF THE PROGRAMME

The duration of the M. Sc. Medical Biotechnology programme is two years, which comprises four semesters. A candidate who has been admitted to the course shall appear in all the four semester examinations during the course of study. On successful completion of all the examinations, he/she shall qualify himself/herself for the award of the degree M. Sc. in Medical Biotechnology.

FELLOWSHIP SUPPORT

All the selected students will get a fellowship of Rs. 5000/- per month from DBT, Government of India

NEED FOR THE PROGRAMME

- Indian Biotech industry is growing at the rate of 30% in which healthcare industries including pharma and diagnostics accounts for more than 60%. This is expected to be a $100 bn industry by 2025.
- There are more than 600 core biotechnology companies, about 2600+ biotech start-ups, 41 BIRAC-supported incubators and more than 523 USFDA approved drug manufacturing facilities.
- To cater to this fast growing industry there is not enough skilled manpower and it is the absolute need of the hour to train students so as to be employable in this industry.

ABOUT THE PROGRAMME

DBT sponsored M.Sc. Medical Biotechnology is a unique programme offered at the Department of Biotechnology, Bharathiar University, Coimbatore, Tamil Nadu, India. The University offers an ideal ambience for the students to take-up and undergo highly productive academic activities in its serene campus. This programme has been designed to reduce the gap between the 'knowledge' gained by students and appropriate skill components required for technology development and implementation. To achieve this, Bharathiar University has roped in leading hospitals and biomedical industries as collaborators. The course is intended to provide an in-depth understanding and knowledge of the modern concepts along with the enrichment of practical skills in the field of medical biotechnology, molecular diagnostics and pharmaceutical sectors, etc. The students will be trained to handle sophisticated instruments so as to analyze, evaluate and report the generated data in the arena of the medical biotechnology.

- This curriculum has been designed based on the DBT's model curriculum, framed by panel of eminent scientists that comprises scintillating theory, extensive and exhaustive practical and technology-based electives. Intensive interdisciplinary research project/dissertation will be carried out as joint projects with industries/other participating departments.
- Each course has its own well-tailored learning objectives and student learning outcome with specific course plan (number of lectures per unit) and with appropriately provided resources/reference text books by renowned authors in the relevant areas of the curriculum.
- The theory and practical courses include relevant examples, case studies highlighting current scenarios and tutorials for inculcating critical thinking by introducing the concept of Education 4.0 and 5.0, which will make students ready for Industry 4.0 and 5.0 innovations.

- The curriculum includes specialized course modules, such as,
    - ✓ Developmental Biology and Human Physiology,
    - ✓ Biostatistics,
    - ✓ Biophysical Principles and Analytical Techniques,
    - ✓ Medical Microbiology and Infection Biology,
    - ✓ Genetic Engineering and Genome Editing Technologies,
    - ✓ OMICS: Genomics, Transcriptomics, Proteomics and Metabolomics,
    - ✓ Clinical Biochemistry and Disease Metabolism,
    - ✓ Tissue Engineering and Stem Cell Technology,
    - ✓ Molecular Diagnostics and Therapeutics,
    - ✓ Bioinformatics,
    - ✓ Medical Devices,
    - ✓ Plant Molecular Pharming,
    - ✓ Alternative Medicines,
    - ✓ Nanobiotechnology
    - ✓ Pharmacogenomics

  for interdisciplinary understanding and subsequent applications of the acquired knowledge and training in modern medical biotechnology by working with the hospitals and biomedical industries.
- Two value added courses has been added in the curriculum as per the newly framed rules of Bharathiar University, which will focus on to improve the oral and written communication skills by inviting external experts and through classroom and journal club seminars.
- Two job-oriented courses with the industry has been added in the curriculum as per the newly framed rules of Bharathiar University,
    - ✓ Lead Molecule Discovery and Preclinical Development
    - ✓ Clinical Trials Management
- To facilitate the interdisciplinary research, the student projects have to be designed, developed and proposed in collaboration with hospitals or biomedical industries located far and near the institution. Additional weightage has been given to identify and develop a research proposal in the 3rd semester itself in order to inculcate research thinking while undergoing the curriculum, which is also stipulated to carry marks and credits.

- Intellectual Property Rights, Biosafety and Bioethics has been included as a separate course in order to understand and manage the bio-safety issues as per the norms of regulatory bodies including legal, ethical and cultural aspects.
- Dispensing diverse knowledge with in-built provision of relevant skill-sets for the current industry needs (4.0 and 5.0), this course will be an ideal platform for the students to kick start their career in biomedical sectors.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

The programme aims to generate highly skilled human resources with the ability to comprehend and analyze biological problems paramount to human health and contribute to the development of updated, contemporary and appropriate solutions. The specific programme objectives are to develop post-graduates with the following competencies,

1. Contribute to problem identification and development and offering of solutions relevant and pertaining to human health by associating with biomedical industries, laboratories, non-profit organizations or in pursuit of doctoral studies at National/International level.
2. Effectively communicate the technical developments in biotechnology in order to become a successful entrepreneur in one's own caliber and expertise
3. Develop their knowledge and skills throughout their careers as an ongoing and ever-growing enterprise.

PROGRAMME OUTCOMES (POs)

On completion of the M. Sc. Medical Biotechnology programme, the students will be able to,

1. Independently carry out research to identify, formulate and solve problems in the field of biotechnology in general and medical biotechnology in particular
2. Demonstrate ethical behavior and follow time-tested and valid biosafety norms
3. Articulate facts and ideas through reports and documents
4. Adapt to changing professional requirements

PROGRAMME SPECIFIC OUTCOMES (PSOs)

The specific outcomes that the students will demonstrate at the exit point of the programme are,

1. An ability to analyze and formulate solutions to existing and emerging issues related to human health

2. An ability to effectively use computational biology and other advanced techniques in order to understand the intricacies of the life process and functions at systems level and to design & develop therapeutics and diagnostics which have immense relevance in human healthcare

3. An ability to contribute in an interdisciplinary team to develop and offer solutions to complex human health problems

UNIVERSITY DEPARTMENTS INVOLVED

Core Department: Biotechnology

S. No.	Faculty Details (Name and Designation)
1.	Dr. V. Vijayapadma, Professor and Head
2.	**Dr. R. Sathishkumar, Professor and Programme Coordinator**
3.	Dr. S. Girija, Associate Professor
4.	Dr. P. Ekambaram, Associate Professor
5.	Dr. S. R. Prabagaran, Associate Professor
6.	Dr. V. Thirunavukkarasu, Associate Professor
7.	Dr. S. Velayuthaprabhu, Assistant Professor
8.	Dr. M. Arun, Assistant Professor

Collaborating Departments

Name of the Department	Head of the Department	Faculty involved
Bioinformatics	Dr. N. Jeyakumar	1. Dr. N. Jeyakumar Professor and Head
		2. Dr. P. Shanmughavel Professor
Microbial Biotechnology	Dr. J. Angayarkanni	3. Dr. J. Angayarkanni Assoc. Prof. and Head
		4. Dr. V. Brindha Priyadarshni Assistant Professor
Nanoscience and Technology	Dr. N. Ponpandian	5. Dr. N. Ponpandian Professor and Head
		6. Dr. C. Viswanathan, Associate Professor
Statistics	Dr. R. Vijayaraghavan	7. Dr. R. Vijayaraghavan Professor and Head
		8. Dr. R. Jaisankar Professor
		9. Dr. R. Muthukrishnan Professor

INDUSTRY PARTNERS

S. No.	Collaborating Hospitals and Biomedical Industries
1	Ganga Hospitals, Coimbatore
2	PSG Institute of Medical Sciences and Research (PSGIMSR), Coimbatore
3	Kovai Medical Center and Hospital (KMCH), Coimbatore
4	Arvind Eye Hospitals, Coimbatore
4	Bharat Biotech, Hyderabad
5	GVK Bio, Hyderabad
6	Genotypic, Bengaluru
7	Green Chem, Bengaluru
8	String Bio, Bengaluru
9	AVN Ayurveda Formulations, Madurai
10	Cellzyme Biotech, Coimbatore
11	Micro Lab, Coimbatore
12	Texcity Biosciences, Coimbatore
13	Syngenome, Coimbatore

For any query contact, Dr. R. Sathishkumar, Professor and Program Coordinator,
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