PhD Biotechnology

Program Overview:

The program of PhD in Biotechnology intends to provide quality education focus on research and to equip students with the art of living as productive members of society, contributing to the socio-economic uplift of Pakistan in general, and Balochistan in particular.

Biotechnology is high and is expected to continue to grow as the science tech age is accelerating Since biotechnology has transformed almost all disciplines, many of our graduates use their scientific skills (and the analytical skills it instils) to prepare them for a career in other disciplines such as medicine, bioethics, education, physical and life sciences.

The program aims to provide standard and quality education to all the students to build brief concepts of the subject with a focus on laboratory and research work along with the usage of modern technology to use different types of web-based tools and software, contributing to the socio-economic uplift of Pakistan in general, and Balochistan in particular.

PhD program in Biotechnology at BUITEMS is one of the most rigorous programs in Pakistan and particularly in Balochistan. The program offers advanced teaching and quality research in life sciences for the profitable scientific developments of society and to bridge the gap between academia and industry.

The objectives of the Program are:

1. Study of cellular, molecular and chemical mechanisms of life.
2. Learning the unanimity of diversified life at chemical, molecular and cellular levels and understanding the mechanisms contributing to diversity in structures and functions in organisms.
3. Application of the acquired knowledge of technological procedures in agriculture, health, industry & environment.
4. Skills in understanding, sorting and identifying the massive chemical and molecular information of living organisms obtained through researches.
5. Understanding the concepts in the use of bioinformatics for biotechnological procedures in agriculture, health, industry and environment.
6. Know how to use the global network of biotechnology and bioinformatics.
7. To adopt a multidisciplinary approach to equip the students with multidisciplinary career opportunities.

Main Areas of Research:

- Animal Biotechnology
- Agriculture Biotechnology
- Human Genetics
- Bioinformatics
- Genetic Engineering
- Plant Biotechnology
- Plant Microbial interaction
- Plant pathology

For more information, please refer to the list of faculty members for their research field on the Department website.

Admission Requirement:

MS/MPhil in Biotechnology (after 16 years of education) or equivalent degree in Life Sciences discipline from HEC recognized university with minimum 30 credit hours (24 credit hour graduate-level courses + 6 credit hours thesis) with CGPA 3 out of 4.

GRE (International) subject test with 60 percentile score or GAT subject test with 60 % marks.

Program Requirement:

The minimum and maximum duration of the PhD program is 3 to 8 years. Students must meet the following requirements for graduation:

- Confirmation of PhD candidature
- Positive examiners, reports / addressal of reviewers comments
- Successful public defense and viva
- Publication of at least one paper in a journal as per HEC policy before the award of the PhD degree.

Program Structure:

#	Course Codes	Course Title	Credit Hours
FIRST SEMESTER			
1	BIOTECH-713/ BIOTECH-701	Plant and Agriculture Biotechnology Or Aniamal and Bioemdical Biotechnology	3 + 0
2	GENOMICS-701	Functional Genomics	3 + 0
3	METHOD-701	Experimental Design & Analysis	3+0
SECOND SEMESTER			
1	BIOTECH-807	Research Specialization –I	3 + 0
2	BIOTECH-808	Research Specialization –II	3 + 0
3	BIOTECH-809	Research Specialization –III	3 + 0
THIRD SEMESTER			
1	DSS-990	Doctoral Dissertation	
		Total Courses	**18**
		Total Credit Hours	**18**

* **Thesis**: Students will have to carry out research work for a minimum period of two years.

List of Elective courses

No	Course Code	Course Titles	Credit Hours
1		Research Methodology	3+0
2		Biostatistics	3+0
3	BIOINFO-702	Agriculture Bioinformatics	3+0
4	EPIDEMO-701	Epidemiology	3+0
5	BIOTECH-704	Biofuel and Biorefinery	3+0

6	BIOL-701	Radiobiology	3+0
7	BIOTECH-705	Biomaterial	3+0
8	BIOINFO-801	Current Trends in Bioinformatics	3+0
9	BIOTECH-706	Diagnostics	3+0
10	BIOTECH-707	Fungal Biotechnology	3+0
11	BIOTECH-708	Industrial Biotechnology	3+0
12	BIOTECH-709	Marine Biotechnology	3+0
13	BIOTECH-710	Pharmaceutical Biotechnology	3+0
14	BIOINFO-802	Biomedical Informatics	3+0
15	BIOTECH-711	Waste Management	3+0
16	NUTR-802	Edible Oil Seed & Health Nutrition	3+0
17	GENOMICS-801	Gene Microarray	3+0
18	BIOTECH-712	Water and Waste Water Treatment	3+0
19	BIOTECH-802	Nanobiotechnology	3+0
20	BIOTECH-807	Bioremediation	3+0
21	GENOMICS-702	Microarray Technology	3+0
22	MICRBIOL-801	Microbial Genetics	3+0
23	BIOTECH-808	Plant Biotechnology	3+0
24	GENOMICS-703	Nutrigenomics	3+0
25	BIOTECH-810	Contemporary Plant Biotechnology	3+0
26	BIOTECH-811	Contemporary Animal Biotechnology	3+0
27	BIOTECH-812	Contemporary Agriculture Biotechnology	3+0
28	GENET-802	Protein Microarray	3+0
29	BIOL-801	Biology of Oil Seeds & Nutrition	3+0
30	BIOTECH-813	Contemporary Health Biotechnolog	3+0
31	BIOTECH-814	Advance Research Reading-III	3+0
32	BIOTECH-807	Research Specialization-I	3+0
33	BIOTECH-808	Research Specialization-II	3+0
34	GENET-803	Transcriptomics	3+0
35	MOLBIOL-701	Transgenicity & Applications	3+0
36	BIOTECH-809	Research Specialization-III	3+0

37	ELE-731	Bioelectronics & Biosensor	3+0
38	EPIDEOM-801	Molecular Epidemiology of Hepatitis	3+0
39	GENET-804	Gene Expression and Replication of Hepatitis Virus	3+0
40	GENET-805	Genetics Diversity of Hepatitis Virus	3+0
41		Stem cell Biology	3+0
42		Genetic Disorders	3+0
43		Cancer Biology	3+0
44		Antisense RNA technology	3+0
45		Epigenetics	3+0
46		Computational Biology	3+0
47		Pathology	3+0
48		Animal Physiology	3+0
49		Plant Physiology	3+0
50		Animal Pathology	3+0
51		Plant Pathology	3+0
52		Plant Microb Interaction	3+0
53		Drug Development	3+0
54		Drug Metabolism	3+0

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