

**BACHLOR OF SCIENCE(BS) IN  
MOLECULAR BIOLOGY & GENETICS  
4 YEARS PROGRAM**

**SESSION 2023-2024**

**DEPARTMENT OF  
MOLECULAR BIOLOGY & GENETICS  
LIAQUAT UNIVERSITY OF  
MEDICAL & HEALTH SCIENCES  
JAMSHORO**



## **Introduction**

Molecular biology & Genetics is a rapidly developing field of biological sciences that involves the study of organisms on a cellular and molecular level. It has many important applications such as biomedical sciences, molecular medicine, disease prevention and treatment, generation of new protein products, and manipulation of plants and animals for desired phenotypic traits. The study of living things at molecular and genetic levels have undergone tremendous development and expansion in the last two-three decades, and as a result undergraduate education in topics such as molecular cell biology, molecular genetics and genomics are becoming of higher interest.

Genetics and Molecular Biology program at LUMHS offers a Bachelor of Science degree upon completion of a 4-year curriculum taught in English. Students will be mainly educated in molecular biology and various fields of genetics that are designed to train students for post graduates studies in the related fields. In addition, optional courses include other fields of biology such as immunology, Physiology, Microbiology, Pharmacology, Epidemiology and Bioinformatics.



**Goal:**

Students will be introduced to general and foundation courses of Genetics and Molecular biology. The specialized courses provide in-depth knowledge in various aspects of genetics and molecular biology, both in theory and in practice through laboratory experience. Students will also be offered several elective options in order to further develop themselves according to their own interests, such as in fields of Stem cells, Gene Therapy, Forensic Biology and Endocrinology.

Students of the Genetics and Molecular Biology program will benefit from the state of the art laboratories of LUMHS, computer and audio-visual technology facilities, University library to follow the latest developments in the biological sciences and other relevant fields. Students of the program will be offered the opportunity to take part in projects carried out by the department academic staff. This will enhance their ability to understand the genomics revolution that is changing the face of all biological and biomedical areas of the science.

**Objectives:**

The objectives of 4 year BS in Genetics and Molecular Biology are:

- To provide students with a solid foundation through coursework and practical training.
- To develop skilled human resource with basic understanding of the subject of molecular biology and fundamentals of classical as well as modern molecular genetics.

**Career Opportunities**

Following the successful completion of the 4-year undergraduate studies, program graduates will receive a Bachelor of Science (B.S.) degree in Genetic and Molecular Biology. Upon receiving this degree, graduates will have the necessary foundation for further education in post-graduate programs. In addition graduates will have the opportunity to find employment in variety of fields including teaching, clinical genetics, bioinformatics, pharmaceutical and biotechnology industries, private diagnostic laboratories and research institutes.

## Lead Faculty



**Prof. Dr. Ali Muhammad Waryah (M.phil, PhD)**  
Professor / Head of Department  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



**Dr. Shakeel Ahmed Shaikh (MBBS, PhD)**  
Associate Professor  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



**Dr. Feriha Fatima Khidri (MBBS, PhD)**  
Associate Professor  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



**Dr. Suleman Peerzado (MBBS, PhD)**  
Assistant Professor  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



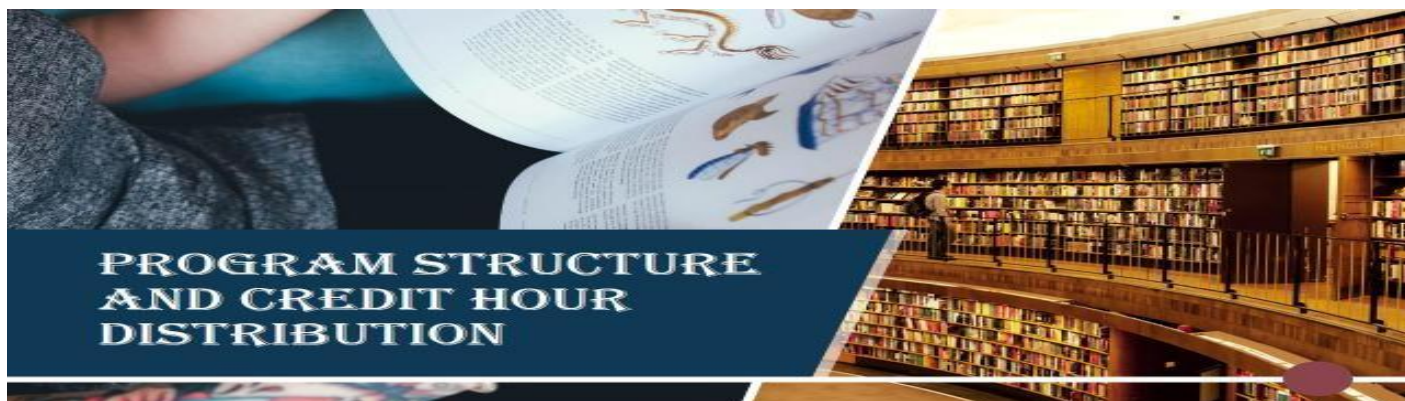
**Dr. Mahesh Kumar (MBBS, PhD)**  
Assistant Professor  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



**Dr. Ali Raza Rao, PhD**  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences,  
Jamshoro



**Dr. Hina Shaikh, PhD**  
Department of Molecular Biology & Genetics  
Liaquat University of Medical & Health Sciences  
Jamshoro



Sr.	Courses	No of courses	Cr. Hr.
1	Compulsory courses	09	25
2	General courses	09	27
3	Discipline specifies courses	10	30
4	Major courses	13	42
5	Elective within the Major	04	12
	<b>Total</b>	<b>45</b>	<b>136</b>

**(iv) Scheme of Studies for BS Molecular Biology & Genetics (4 Years Programme)**

Semester /		Subject Credits			
year		Course	code		
First		Compulsory-I	MBG101	English-I (Functional English)	03
		Compulsory-II	MBG102	Pakistan Studies	02
		Compulsory-III	MBG103	Mathematics	03
		General I	MBG104	Biochemistry-I	2+1
		General II	MBG105	Human Physiology-I	2+1
		Foundation-I	MBG106	Molecular Biology-I	2+1
					17

<b>Second</b>	<b>Compulsory IV</b>	<b>MBG201</b>	<b>English-II (communication English)</b>	<b>03</b>
	Compulsory V	MBG202	Islamic Studies	02
	Compulsory VI	MBG203	Biostatistics	03
	General III	MBG204	Biochemistry-II	2+1
	General-IV	MBG205	Human Physiology-II	03
	Foundation-II	MBG206	Molecular Biology II	03
				<b>17</b>
<b>Third</b>	Compulsory VII	MBG301	Introduction to Computer Sciences	03
	Compulsory VIII	MBG302	English-III (Technical Writing and Presentation Skills)	03
	General-V	MBG303	Cell Biology	2+1
	General-VI	MBG304	Basic Microbiology	2+1
	Foundation-III	MBG305	Essentials of Genetics	2+1
	Foundation-IV	MBG306	Biotechnology	2+1
				<b>18</b>
<b>Fourth</b>	Compulsory XI	MBG401	English-IV/Foreign Language Univ. Optional	2+1
	General-VII	MBG402	Basic Immunology	2+1
	General-VIII	MBG403	Basic Epidemiology	2+1
	Foundation-V	MBG404	Human Genetics and Chromosomal Disorders	2+1
	Foundation-VI	MBG405	DNA Damage and Repair	2+1
	Foundation-VII	MBG406	Biosafety and Risk Management	2+1
				<b>18</b>
<b>Fifth</b>	General-XI	MBG501	Molecular Pharmacology	2+1
	Foundation-VIII	MBG502	Cancer Biology	2+1
	Foundation-IX	MBG503	Cell & Tissue Culture	2+1
	Major- I	MBG504	Epigenetics	2+1
	Major- II	MBG505	Cell Signaling	3+0
	Major- III	MBG506	Immunogenetics	2+1
				<b>18</b>
<b>Sixth</b>	Foundation- X	MBG601	Bioinformatics	1+2
	Major- IV	MBG602	Genomics	2+1
	Major- V	MBG603	Molecular Virology	2+1
	Major- VI	MBG604	Bio Molecule Diagnostics	1+2
	Major- VII	MBG605	Molecular to the Market	3.0
	Major-VIII	MBG606	Recombinant DNA Technology	2+1
				<b>18</b>

<b>Seventh</b>	Major- IX	MBG701	Genetically Modified Organisms	2+1
	Major- X	MBG702	Proteomics	2+1
	MajorXIII	MBG703	Bionanotechnology	2+1
	Elective-I	MBG704	Molecular Toxicology	2+1
	Elective-II	MBG705	Vaccinology	2+1
				<b>15</b>
<b>Eighth</b>	Major- XI	MBG801	Stem Cell and Gene Therapy	2+1
	Major-XII	MBG802	Transcriptomics	2+1
	Elective-III	MBG803	Forensic Biology	03
	Elective-IV	MBG804	Plant Molecular Genetics	2+1
	MajorXIII	MBG805	Research Project / Internship	2+1
				<b>15</b>
	<b>Total</b>	<b>Credit Hours</b>		<b>136</b>



## Fees Structure

### Fees Structure for Merit

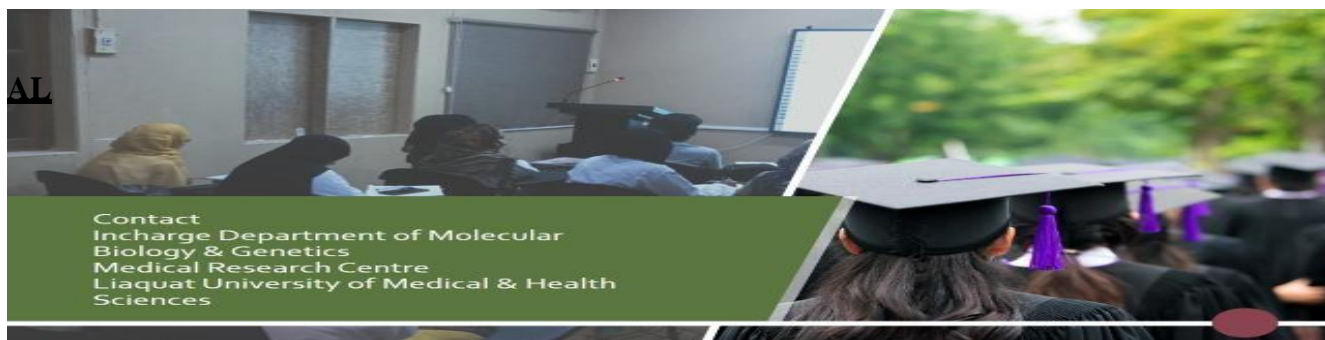
Year	Semester	Admission Fee	Tuition Fee	Transport fee	Sports Fee	Total Per Year
1 <sup>st</sup>	1 <sup>st</sup>	16,000	50000	10000	2000	128,000
	2 <sup>nd</sup>	-	50000			
2 <sup>nd</sup>	3 <sup>rd</sup>	-	50000	10000	1000	112,000
	4 <sup>th</sup>	-	50000			
3 <sup>rd</sup>	5 <sup>th</sup>	-	50000	10000	1000	112,000
	6 <sup>th</sup>	-	50000			
4 <sup>th</sup>	7 <sup>th</sup>	-	50000	10000	1000	112,000
	8 <sup>th</sup>	-	50000			

### Fees Structure for UEAP/ Self Finance

Year	Semester	Admission Fee	Tuition Fee	Transport fee	Sports Fee	Total Per Year
1 <sup>st</sup>	1 <sup>st</sup>	16,000	75,000	10000	2000	178,000
	2 <sup>nd</sup>	-	75,000			
2 <sup>nd</sup>	3 <sup>rd</sup>	-	75,000	10000	1000	162,000
	4 <sup>th</sup>	-	75,000			
3 <sup>rd</sup>	5 <sup>th</sup>	-	75,000	10000	1000	162,000
	6 <sup>th</sup>	-	75,000			
4 <sup>th</sup>	7 <sup>th</sup>	-	75,000	10000	1000	162,000
	8 <sup>th</sup>	-	75,000			

#### Note:

- I. 5% Advanced Tax will be applicable as per Govt. Rules only for( self &UDP)
- II. Security Deposit (Refundable) Rs.15,000 will be charged (Once only) at the time admission in first year in allprograms
- III. Document Verification Fees Rs.1500 will be applicable (Once only) at the time of admission in first year in allprograms.
- IV. RFID charges Rs.1,000 will be applicable (Once only) at the time of admission.



**LOCATION OF ADMISSIONS SEATS**

S #:	NAME OF DISTRICT	ADMISSIONS CATEGORIES			TOTAL SEATS
		DISTRICT MERIT	SELF-FINANCE	OVERSEAS	
1.	Badin	01			
2.	Dadu	01			
3.	Ghotki	01			
4.	Hyderabad	02			
5.	Jacobabad	01			
6.	Jamshoro	02			
7.	Karachi	02			
8.	Kashmore @ Kandhkot	01			
9.	Khairpur Mirs	02			
10.	Larkana	02			
11.	Matiari	01			
12.	Mirpurkhas	01			
13.	Naushahro Feroz	01			
14.	Qamber @ Shahdadkot	01			
15.	Sanghar	01			
16.	Shaheed Benazirabad	02			
17.	Shikarpur	01			
18.	Sujawal	01			
19.	Sukkur	01			
20.	Tando Allahyar	01			
21.	Tando Mohammad Khan	01			
22.	Tharparkar	01			
23.	Thatta	01			
24.	Umerkot	01			
<b>TOTAL</b>		<b>30</b>	<b>18</b>	<b>02</b>	<b>Fifty(50) Seats</b>

**NOTE: UNIVERSITY RESERVES THE RIGHTS TO CHANGE ALLOCATED SEATS**