

## BS Microbiology and Molecular Genetics

Course Title	Course Code	Course Type	Credit Hour
<b>Semester 1</b>			
<u>GEN(NS)</u>		General	<u>3</u>
Functional English	GENG-101	General	<u>3</u>
Civics and Community Engagement	GCCE-101	General	<u>2</u>
Islamic Studies / Ethics (for Non-Muslims)	GISL-101 / GETH-101	General	<u>2</u>
Fundamentals of Microbiology	MMG-101	Major	<u>3</u>
General Genetics	MMG-102	Major	<u>3</u>
Tarjuma-e-Quran	HQ-001	Compulsory	<u>0</u>
			<b>Total Credit Hours 16</b>
<b>Semester 2</b>			
<u>GEN(AH)</u>		General	<u>2</u>
Quantitative Reasoning (I)	GQR-101	General	<u>3</u>
Entrepreneurship	GENT-101	General	<u>2</u>
Ideology and Constitution of Pakistan	GICP-101	General	<u>2</u>
Microbial Diversity and Systematics	MMG-103	Major	<u>3</u>
Microbial Genetics	MMG-104	Major	<u>3</u>
Tarjuma-e-Quran	HQ-002	Compulsory	<u>1</u>
Principles of Biochemistry	MMG-105	Interdisciplinary	<u>3</u>
			<b>Total Credit Hours 19</b>
<b>Semester 3</b>			
Applications of Information and Communication Technologies	GICT-201	General	<u>3</u>
Expository Writing	GENG-201	General	<u>3</u>
Ecosystem	MMG-201	Interdisciplinary	<u>3</u>
Microbial Physiology and Metabolism	MMG-202	Major	<u>3</u>
Cell Biology	MMG-203	Major	<u>3</u>
Tarjuma-e-Quran	HQ-003	Compulsory	<u>0</u>
Biosafety, Biosecurity and Bioethics	MMG-204	Interdisciplinary	<u>2</u>
			<b>Total Credit Hours 17</b>
<b>Semester 4</b>			
<u>GEN(SS)</u>		General	<u>2</u>
Quantitative Reasoning (II)	GQR-202	General	<u>3</u>
Soil, Agriculture and Environmental Microbiology	MMG-207	Major	<u>3</u>
Mycology	MMG-204	Major	<u>3</u>
Aquatic Microbiology	MMG-205	Major	<u>3</u>
Tarjuma-e-Quran	HQ-004	Compulsory	<u>1</u>
Biodiversity of Plants and Animals	GNMMG206	Major	<u>3</u>
			<b>Total Credit Hours 18</b>
<b>Semester 5</b>			
Sustainable Development Goals	MMG-306	Interdisciplinary	<u>3</u>
Medical Microbiology	MMG-305	Major	<u>3</u>
Human Genetics	MMG-303	Major	<u>3</u>
Virology	MMG-302	Major	<u>3</u>
Food Microbiology	MMG-301	Major	<u>3</u>
Tarjuma-e-Quran	HQ-005	Compulsory	<u>0</u>
Immunology	MMG-304	Major	<u>3</u>
			<b>Total Credit Hours 18</b>
<b>Semester 6</b>			
Elective-I**	MMG-312	Major	<u>3</u>
Scientific Inquiry and Research Methods	MMG-311	Interdisciplinary	<u>3</u>
Industrial Microbiology	MMG-309	Major	<u>3</u>
Molecular Biology	MMG-308	Major	<u>3</u>
Epidemiology and Public Health	MMG-307	Major	<u>3</u>
Tarjuma-e-Quran	HQ-006	Compulsory	<u>1</u>
Diagnostic Microbiology	MMG-310	Major	<u>3</u>
			<b>Total Credit Hours 19</b>
<b>Semester 7</b>			
Fieldwork / Internship		Major	<u>3</u>
Elective-III**	MMG-407	Major	<u>3</u>
Elective-II**	MMG-404	Major	<u>3</u>
Antimicrobial Agents and Resistance	MMG-402	Major	<u>3</u>
Microbial Biotechnology	MMG-401	Major	<u>3</u>
Tarjuma-e-Quran	HQ-007	Compulsory	<u>0</u>
Biostatistics	MMG-403	Interdisciplinary	<u>3</u>
			<b>Total Credit Hours 18</b>
<b>Semester 8</b>			
Capstone Project		Major	<u>3</u>
Elective-IV**	MMG-417	Major	<u>3</u>
Artificial Intelligence in Microbiology and Molecular Genetics	MMG-412	Interdisciplinary	<u>3</u>
Vaccinology	MMG-411	Major	<u>3</u>
Bioinformatics	MMG-410	Major	<u>3</u>
Tarjuma-e-Quran	HQ-008	Compulsory	<u>1</u>
			<b>Total Credit Hours 16</b>

Signature