

<b>BACHELOR OF SCIENCE IN MICROBIOLOGY AND MOLECULAR GENETICS ACADEMIC SESSION 2021/2022 (133 CREDITS)</b>			
<b>UNIVERSITY COURSES (14 CREDITS)</b>			
<b>Course Code</b>	<b>Course Name</b>	<b>Credits</b>	
GIG1012 / GIG1017*	Philosophy and Current Issues (local students) / Basic Malay Language (*only for international students)	2	
GIG1013	Appreciation of Ethics and Civilisations	2	
GIG1003	Basic Entrepreneurship Enculturation	2	
GKA/GKI/GKK/ GKP/GKS/GKU	Co-curriculum	4	
GLTxxxx	English Course (subject to MUET bands)	4	
<b>CORE COURSES (73 CREDITS)</b>			
<b>Course Code</b>	<b>Course Name</b>	<b>Pre-Requisites</b>	<b>Credits</b>
<b>LEVEL 1 (24 Credits)</b>			
SIX1015	Science, Technology and Society		2
SIX1016	Statistics		3
SIC1001	Principles of Chemistry		2
SIE1002	Bioethics and Safety		2
SIJ1004	Introduction to Computational Biology		3
SIR1001	Fundamental Microbiology		3
SIR1002	Fundamental Genetics		2
SIR1003	Biochemistry		2
SIR1004	Concepts of Genetic Engineering		2
SIR1005	Genetics and Molecular Biology Practical I		3
<b>LEVEL 2 (23 Credits)</b>			
SIR2011	Bacteriology		2
SIR2012	Immunology	SIR1001	2
SIR2013	Virology	SIR1001	2
SIR2014	Microbiology Practical	SIR1001	3
SIR2015	Microbial Physiology	SIR1001	2
SIR2016	Eukaryotic Microorganisms	SIR1001	3
SIR2017	Microbial Ecology	SIR1001	2
SIR2018	Molecular Genetics	SIR1002	2
SIR2019	Genomes	SIR1002	2
SIR2020	Genetics and Molecular Biology Practical II	SIR1002	3

<b>LEVEL 3 and 4 (26 Credits)</b>			
SIR3018	Biosafety and Biosecurity		2
SIR3019	Human Molecular Genetics	SIR2018	3
SIR4001	Research Project	SIR3018	10
SIR4002	Industrial Training	SIR2014 & SIR2020	8
SIR4003	Science Communication		3
<b>ELECTIVE COURSES (46 CREDITS)</b>			
<b>(I) PROGRAMME ELECTIVE COURSES (38 CREDITS)</b>			
Choose from all elective courses that are offered			
<b>Course Code</b>	<b>Course Name</b>	<b>Pre-Requisites</b>	<b>Credits</b>
SIE2004	Mycology		3
SIE2006	Phycology		3
SIE3012	Parasitology		3
SIH3027	Green Agriculture		3
SIM1001	Basic Mathematics		4
SIM1002	Calculus I		4
SIO1003	Bioinformatics Concepts		2
SIO1004	Introduction to Computer Programming in Bioinformatics		2
SIO2012	Bioinformatics Data Management	SIO1003	2
SIO3016	Biological Data Analytics	SIO1004	2
SIO3023	Plant Genetics and Breeding		2
SIO4005	Microbial Technologies for Soil and Plant Health		2
SIR2031	Food Microbiology	SIR1001	2
SIR2041	Population Genetics		3
SIR3020	Public Health Microbiology	SIR1001	3
SIR3021	Diagnostic Microbiology	SIR2014	2
SIR3022	Advanced Immunology	SIR2012	3
SIR3023	Advanced Virology	SIR2013	3
SIR3024	Microbial Pathogenesis	SIR1001	2
SIR3025	Cytogenetics		3
SIR3026	Developmental Genetics	SIR2018	2
SIR3027	Epigenetics and Gene Regulation	SIR2018	3
SIR3028	Eukaryotic Cell Signalling	SIR2018	3
SIR3029	Genetic Basis of Cancer	SIR2018	3
SIR3031	Advanced Food Microbiology	SIR2031 & SIX1016	3
SIR3032	Agricultural Microbiology	SIR1001	3
SIR3033	Applied and Environmental Microbiology	SIR1001	3
SIR3034	Applied Genomics in Animal Breeding		3
SIR3035	Animal Genetics and Gene Manipulation	SIR1004	3
SIR3036	Fermentation Technology	SIR1001	3

SIR3037	Pharmaceutical Microbiology	SIR2011 & SIR2012	3
SIR3041	Marine and Estuarine Microbiology	SIR2017	3
SIR3042	Plant Molecular and Cellular Biology	SIR1002	2
SIR3043	Conservation Genetics	SIR2019	3
SIR3044	Molecular Evolution and Phylogenetics	SIR1002	3
SIR3045	Advanced Mycology	SIR2016	2
<b>(II) ELECTIVE UNIVERSITY COURSES (8 CREDITS)</b>			
<b>Student Holistic Empowerment [SHE]</b>			
Choose one course from each cluster			
<b>Cluster</b>	<b>Cluster Title</b>	<b>Credits</b>	
Cluster 1	Thinking Matters: Mind and Intellect	2	
Cluster 2	Emotional, Physical and Spiritual Intelligence: Heart, Body and Soul	2	
Cluster 3	Technology/Artificial Intelligence and Data Analytics: I-Techie	2	
Cluster 4	Global Issues and Community Sustainability: Making The World A Better Place	2	

**LIST OF COURSES ACCORDING TO SEMESTER,  
(PLANNING OF COURSES)  
BACHELOR OF SCIENCE IN MICROBIOLOGY AND MOLECULAR GENETICS**

COMPONENT	YEAR 1				TOTAL CREDITS
	SEMESTER 1		SEMESTER 2		
	COURSE	CREDIT	COURSE	CREDIT	
University Courses	GIG1012 / GLT1017*	2	GIG1013	2	14
	GLTxxxx	2	GLTxxxx	2	
	GKA/GKI/ GKK/GKP/ GKS/GKU 1001	2	GKA/GKI/ GKK/GKP/ GKS/GKU 1001	2	
	GIG1003	2			
Core Courses	SIX1016	3	SIC1001	2	24
	SIE1002	2	SIR1001	3	
	SIJ1004	3	SIR1003	2	
	SIR1002	2	SIR1005	3	
	SIR1004	2	SIX1015	2	
<b>TOTAL CREDITS</b>		<b>20</b>		<b>18</b>	<b>38</b>

\*only for international students

COMPONENT	YEAR 2				TOTAL CREDITS	
	SEMESTER 1		SEMESTER 2			
	COURSE	CREDIT	COURSE	CREDIT		
Core Courses	SIR2011	2	SIR2012	2	25	
	SIR2013	2	SIR2014	3		
	SIR2015	2	SIR2017	2		
	SIR2016	3	SIR2019	2		
	SIR2018	2	SIR2020	3		
			SIR3018	2		
Elective Courses	Program (EP)	SIE2006/ SIM1001/ SIO1003/ SIR2031/ SIR2041/ SIR3025	6	SIE2004/ SIE3012/ SIM1002/ SIO1004/ SIR3031/ SIR3044	3	9
		Student Holistic Empowerment (SHE)	SHE Cluster 3	2	SHE Cluster 2	2
<b>TOTAL CREDITS</b>		<b>19</b>		<b>19</b>	<b>38</b>	

COMPONENT		YEAR 3				TOTAL CREDITS
		SEMESTER 1		SEMESTER 2		
		COURSE	CREDIT	COURSE	CREDIT	
Core Courses		SIR4001	5	SIR4001	5	10
Elective Courses	Program (EP)	SIO2012/ SIR3020/ SIR3021/ SIR3022/ SIR3028/ SIR3033/ SIR3034/ SIR3042/ SIR3043	11	SIO3023/ SIR3023/ SIR3024/ SIR3026/ SIR3027/ SIR3032/ SIR3035/ SIR3041/ SIR3045	11	22
<b>TOTAL CREDITS</b>			<b>16</b>		<b>16</b>	<b>32</b>

COMPONENT		YEAR 4				TOTAL CREDITS
		SEMESTER 1		SEMESTER 2		
		COURSE	CREDIT	COURSE	CREDIT	
Core Courses		SIR4003	3	SIR4002	8	14
		SIR3019	3			
Elective Courses	Program (EP)	SIH3027/ SIO3016/ SIO4005/ SIR3029/ SIR3036/ SIR3037	7			11
	Student Holistic Empowerment (SHE)	SHE Clusters 1, 4	4			
<b>TOTAL CREDITS</b>			<b>17</b>		<b>8</b>	<b>25</b>

**MINIMUM CREDITS FOR GRADUATION: 133**