BACHELOR OF SCIENCE IN BIOTECHNOLOGY ACADEMIC SESSION 2021/2022 (133 CREDITS)			
UNIVERSITY COURSES (14 CREDITS)			
Course Code	**Course Name**		**Credits**
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
CORE COURSES (87 CREDITS)			
Course Code	**Course Name**	**Pre-Requisites**	**Credits**
LEVEL 1 (22 Credits)			
SIX1015	Science, Technology and Society		2
SIX1016	Statistics		3
SIE1003	Cell Biology		2
SIJ1002	Fundamentals of Chemistry		3
SIJ1003	Biochemistry of Cells		3
SIO1001	Basic Physics		2
SIO1002	Fundamental Techniques in Biological Sciences		3
SIO1003	Bioinformatics Concepts		2
SIO1004	Introduction to Computer Programming in Bioinformatics		2
LEVEL 2 (35 Credits)			
SIJ2002	Structure and Function of Biomolecules	SIJ1002	3
SIJ2007	Enzymes: Mechanism and Control	SIJ1002, SIJ1003	2
SIJ2012	Nutritional Biochemistry		3
SIO2001	Applied Microbiology	SIJ1003, SIO1002	3
SIO2002	Animal Biotechnology	SIE1003, SIJ1003	3
SIO2003	Higher Plant Physiology	SIJ1002, SIJ1003	3
SIO2012	Bioinformatics Data Management	SIO1003	2
SIO2013	Bioprocess Design Principles	SIO1001, SIJ1002	3
SIO2014	Public Speaking and Oral Communication	SIO1002	3
SIO2015	Plant Biotechnology	SIE1003, SIJ1003	3

SIO2016	Plant Cell and Tissue Culture	SIJ1003	3
SIO2017	Scientific Writing	SIO1002	2
SIR1004	Concepts of Genetic Engineering		2
LEVEL 3 (13 Credits)			
SIO3016	Biological Data Analytics	SIO1004	2
SIO3017	Food Biotechnology	SIO2001, SIJ2012	3
SIO3018	Research Project in Biotechnology	SIO2001, SIO2002, SIO2015, SIO2017	8
LEVEL 4 (17 Credits)			
SIJ3009	Design Thinking and Knowledge Transfer		3
SIO4001	Bioproduct Business and Supply Chain	SIO3017	2
SIO4003	Industrial Training in Biotechnology	SIO3018	12
ELECTIVE COURSES (32 CREDITS)			
(I) PROGRAMME ELECTIVE COURSES (24 CREDITS) Choose from all elective courses that are offered			
Course Code	**Course Name**	**Pre-Requisites**	**Credits**
Innovative Bioprocessing Module Take minimum 8 credits			
SIO3021	Fermentation and Product Recovery	SIO2001, SIO2013	3
SIO3022	Marine Biotechnology	SIO1002	2
SIO3024	Postharvest Process Engineering and Technology	SIO2003	3
SIO4002	Environmental Biotechnology	SIO2001, SIO2003	2
SIO4004	Enzyme Technology	SIO2013, SIJ2007	3
Biotechnology for Agriculture and Future Crop Module Take minimum 8 credits			
SIE2017	Animal Physiology	SIE1003	3
SIJ3005	Cellular and Molecular Immunology	SIJ1003	3
SIO3019	Animal Nutrition and Feed Technology	SIJ2012	3
SIO3020	Aquaculture Biotechnology		2
SIO3023	Plant Genetics and Breeding		2
SIO3025	Secondary Metabolites and Metabolomics	SIJ2002	2
SIO3026	Sustainable Food Systems		2
SIO3027	Animal Cell and Tissue Culture	SIO2002	2
SIO4005	Microbial Technologies for Soil and Plant Health		2
SIR3034	Applied Genomics in Animal Breeding	SIE1003	3

(II) ELECTIVE UNIVERSITY COURSES (8 CREDITS) Student Holistic Empowerment [SHE] Choose one course from each cluster		
Cluster	**Cluster Title**	**Credits**
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 BIOTECHNOLOGY

COMPONENT	YEAR 1				TOTAL CREDITS
	SEMESTER 1		SEMESTER 2		
	COURSE	CREDIT	COURSE	CREDIT	
University Courses	GIG1003	2	GIG1013	2	14
	GLTxxxx	2	GLTxxxx	2	
	GIG1012 / GLT1017*	2	GKA1001/ GKI1001/ GKK1001/ GKP1001/ GKS1001/ GKU1001	2	
			GKA1001/ GKI1001/ GKK1001/ GKP1001/ GKS1001/ GKU1001	2	
Core Courses	SIX1015	2	SIX1016	3	22
	SIE1003	2	SIJ1002	3	
	SIJ1003	3	SIO1001	2	
	SIO1002	3	SIO1004	2	
	SIO1003	2			
TOTAL CREDITS		**18**		**18**	**36**

*only for international students

COMPONENT		YEAR 2				TOTAL CREDITS
		SEMESTER 1		SEMESTER 2		
		COURSE	CREDIT	COURSE	CREDIT	
Core Courses		SIJ2002	3	SIJ2007	2	25
		SIJ2012	3	SIO2013	3	
		SIO2001	3	SIO2015	3	
		SIO2002	3	SIO2016	3	
		SIO2003	3	SIO2017	2	
		SIO2012	2	SIR1004	2	
		SIO2014	3			
Elective Courses	Student Holistic Empowerment (SHE)			SHE Cluster 1	2	2
TOTAL CREDITS			20		17	37

COMPONENT		YEAR 3				TOTAL CREDITS
		SEMESTER 1		SEMESTER 2		
		COURSE	CREDIT	COURSE	CREDIT	
Core Courses		SIO3016	2	SIO 3017	3	13
		SIO3018	4	SIO 3018	4	
Elective Courses	Program (EP)	*Choose from:* SIJ3005 (3) SIO3019 (3) SIO3021 (3) SIO3022 (2) SIO3023 (2) SIO3025 (2)	8/9	*Choose from:* SIO3020 (2) SIO3024 (3) SIO3026 (2) SIO3027 (2) SIO4004 (3)	8/9	16-18
	Student Holistic Empowerment (SHE)	SHE Cluster 2	2	SHE Cluster 3	2	4
TOTAL CREDITS			16-17		17-18	33-35

COMPONENT	YEAR 4						TOTAL CREDITS
	SEMESTER 1		SEMESTER 2		SPECIAL SEMESTER		
	COURSE	CREDIT	COURSE	CREDIT	COURSE	CREDIT	
Core Courses	SIJ3009	3	SIO4003	8	SIO4003	4	17
	SIO4001	2					
Elective Courses – Program (EP)	*Choose from:* SIE2017 (3) SIR3034 (3) SIO4002 (2) SIO4005 (2)	8					8
Elective Courses – Student Holistic Empower-ment (SHE)	SHE Cluster 4	2					2
TOTAL CREDITS		**15**		**8**		**4**	**27**

MINIMUM CREDITS FOR GRADUATION: 133