

**Bachelor of Engineering (Materials Engineering)
Second Major in Medical Biology (AY2021-22)**

Updated: 1-Sep-21

Academic Unit (AU) Required for graduation

Year of Study	Core	MPE	CC	FC	BDE	Total AU
1	22 / 23 ⁺	-	9	-	9	40 / 41 ⁺
2	19	-	8	3	9	39
3	16	-	-	12	3	31
4	18	9	-	-	9	36
	75 / 76 ⁺	9	17	15	30	146 / 147 ⁺

⁺Students without H2 Level Physics will take PH1012 (4 AU)

Year 1 - Semester 1

Course Code and Title	Course Type	AU	Pre-Req	Co-Req
CC0003 Ethics & Civics in a Multi-Cultural World	CC	2		
CC0005 Healthy Living & Wellbeing	CC	3		
PH1011 Physics ^{**}	Core	3		
MH1810 Mathematics I ⁺	Core	3		
MS1013 Materials Chemistry I ⁺	Core	2		
MS1008 Introduction to Computational Thinking	Core	3		
MS1017 Introduction to Materials Science	Core	2		
BS1001 Introductory Biology	BDE	3		
Total		21		

* Students who obtained at least 3 'A's in H2 level subjects and at least grade 'E' or 'C6' in General Paper (GP) or Knowledge Inquiry (KI) will be eligible for exemption if a grade 'A' is obtained in the corresponding subject at H2 level.

** Students without H2 Level Physics will take PH1012 Physics A (4 AU)

Year 1 - Semester 2

Course Code and Title	Course Type	AU	Pre-Req	Co-Req
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2		
CC0002 Navigating the Digital World	CC	2		
EG1001 Engineer & Society	Core	2		
MS1014 Materials Chemistry II	Core	2		
MS1018 Properties of Materials	Core	2		
MS1016 Thermodynamics of Materials	Core	3		MS1017
BS1005 Biochemistry I	BDE	3		
BS1007 Molecular and Cell Biology I	BDE	3		
Total		19		

Year 2 - Semester 1

Course Code and Title	Course Type	AU	Pre-Req	Co-Req
CC0007 Science & Technology for Humanity	CC	3		
MH2811 Mathematics II	Core	3		MH1810
MS2013 Introduction to Polymer Science	Core	3		MS1014/MS1016
MS2014 Materials Structure and Defects	Core	3	MS1017	MS1018
MS2016 Phase Transformation and Kinetics	Core	3		MS1016
BS1002 Biophysical Chemistry	BDE	3		
Total		18		

Year 2 - Semester 2		
Course Code and Title	Course Type	AU
ML0004 Career and Entrepreneurial Development for the Future World	CC	2
CC0006 Sustainability: Society, Economy & Environment	CC	3
MS0003 Introduction to Data Science and Artificial Intelligence	FC	3
MS2083 Polymer Lab	Core	1
MS2012 Introduction to Manufacturing Processes	Core	3
MS2015 Mechanical Behaviour of Materials	Core	3
BS2004 Molecular and Cell Biology II	BDE	3
BS3109 Fundamentals of Immunology	BDE	3
Total		21

Pre-Req

Co-Req

MS1008
MS2013

Year 3 - Semester 1		
Course Code and Title	Course Type	AU
HW0288 Effective Communication 2	FC	2
MS2018 Electronic & Magnetic Properties of Materials	Core	3
MS3011 Metallic & Ceramic Materials	Core	3
MS3012 Micro/Nanoelectronic Materials Processing	Core	3
MS3082 Design Lab	Core	1
MS3013 Corrosion of Materials	Core	3
MS3014 Analysis of Materials	Core	3
BS2001 Physiology	BDE	3
Total		21

Pre-Req

Co-Req

MS2016

MS2013/MS3011

Year 3 - Semester 2		
Course Code and Title	Course Type	AU
MS3099 Professional Internship	FC	10
Total		10

Pre-Req

Co-Req

Year 4 - Semester 1		
Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS3015 Materials Aspects in Design	Core	3
MS4012 Quality Control	Core	3
MS4013 Biomaterials	Core	2
MPE1	MPE	3
BSxxxx PE1	BDE	3
Total		18

Pre-Req
Year 4 Standing
MS3082

Co-Req
MS2013/MS3011
MS2013
MS3011

Year 4 - Semester 2		
Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4014 Nanomaterials: Fundamentals And Applications	Core	2
MPE2	MPE	3
MPE3	MPE	3
BSxxxx PE2	BDE	3
BSxxxx PE3	BDE	3
Total		18

Pre-Req
Year 4 Standing
MS2018/MS3012/MS3013

Students have a choice of 3 BSxxxx electives (9AU) from the following list:

Course Code	Course Title	AUs	Semester
BS2003	Biochemistry II	3	1
BS2010	Bioimaging	3	2
BS3006	Bioentrepreneurship	3	2
BS3013	Drug Discovery and Development, Biotechnology	3	2
BS3332	Undergraduate Advanced Experimental Biology (UAEB) Workshop (Series I) - Methods in Histology	3	2
BS3335	Undergraduate Advanced Experimental Biology (UAEB) Workshop (Series I) - Protein Behaviour in Health and Disease - Biophysical Tools	3	2
BS4010	Synthetic Biology	3	1

Student must meet all requirements of the principal Bachelor of Materials Engineering programme and fulfill the following conditions:

1) Complete a Biomaterials-related Final Year Project

2) Choose at least 2 Major Prescribed Electives from the following list:

- MS4610 Advanced Biomaterials
- MS4611 Biomedical Devices
- MS4612 Drug Delivery and Tissue Engineering
- MS4640 Advanced Analysis of Materials