

**Bachelor of Engineering (Materials Engineering)
University Scholars Programme (AY2020-21)**

Academic Unit (AU) Required for graduation

Year of Study	Core	Major Prescribed Electives	GER-Core	USP Core	USP PE	Unrestricted Electives	Total AU
1	24/25*	-	6	12		-	42/43*
2	26	-	4	-	9	-	39
3	26	-	-		3	-	29
4	17	9	-		3	3	32
							142/143*

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

Description of Abbreviation

BM – Business & Management

LA – Liberal Arts

STS – Science, Technology & Society

Year 1 - Semester 1

Course Code and Title	Course Type	AU
HW0001 Introduction to Academic Communication		0
GC0001 Introduction to Sustainability: Multidisciplinary Approaches and Solutions	GER-Core	1
HY0001 Ethics and Moral Reasoning	GER-Core	1
ET0001 Enterprise and Innovation	GER-Core	1
MH1810 Mathematics I*	Core	3
PH1011 Physics ^{*/**}	Core	3
MS1008 Introduction to Computational Thinking	Core	3
MS1013 Materials Chemistry (EF1)	Core	3
SP0001 Writing and Reasoning	USP Core	3
SP0005 Quantitative Reasoning	USP Core	3
Total		21

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

* 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.

Year 1 - Semester 2

Course Code and Title	Course Type	AU
MS1012 Materials Physics	Core	3
MS1014 Materials Chemistry II	Core	3

MS1015 Materials Science	Core	3
EG0001 Engineers & Society	GER-Core	3
Engineering Fundamentals (EF 2)	Core	3
SP0002 Ethics	USP Core	3
SP0007 Fieldwork and Documentation	USP Core	3
Total		21

Year 2 - Semester 1		
Course Code and Title	Course Type	AU
MS1016 Thermodynamics of Materials	Core	3
MH2811 Mathematics II	Core	3
MS2014 Materials Structure and Defects	Core	3
MS2016 Phase Transformation and Kinetics	Core	3
MS2082 Laboratory IIB	Core	1
SP00xx	USP PE	3
SP00xx	USP PE	3
Total		19

Year 2 - Semester 2		
Course Code and Title	Course Type	AU
MS2012 Introduction to Manufacturing Processes	Core	3
MS2013 Polymers and Composites	Core	3
MS2015 Mechanical Behaviour of Materials	Core	3
MS2018 Electronic & Magnetic Properties of Materials	Core	3
MS2081 Laboratory IIA	Core	1
MS0003 Introduction to Data Science and Artificial Intelligence	GER-Core	3
ML0003 Kickstart your Career Success	GER-Core	1
SP00xx	USP PE	3
Total		20

Year 3 - Semester 1		
Course Code and Title	Course Type	AU
MS3011 Metallic & Ceramic Materials	Core	3
MS3012 Micro/Nanoelectronic Materials Processing	Core	3
MS3013 Environmental Effects on Materials	Core	3
MS3014 Analysis of Materials	Core	3
MS3015 Materials Aspects in Design	Core	3
MS3081 Laboratory III	Core	1
SP00xx	USP PE	3
Total		19

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

Year 4 - Semester 1		
Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4012 Quality Control	Core	3
MS4013 Biomaterials	Core	3
Major Prescribed Elective 1	Major Prescribed Electives	3
Major Prescribed Elective 2	Major Prescribed Electives	3
Total		16

Year 4 - Semester 2		
Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4014 Nanomaterials: fundamentals and applications	Core	3
Major Prescribed Elective 3	Major Prescribed Electives	3
UE 1	Unrestricted Electives	3
SP00xx	USP PE	3
Total		16