

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

Updated: 1-Sep-21

**Academic Unit (AU) Required for graduation**

Year of Study	Core	MPE	CC	FC	BDE	Total AU
1	25 / 26 <sup>+</sup>	-	9	-	3	37 / 38 <sup>+</sup>
2	20	-	8	3	9	40
3	15	-	-	12	6	33
4	15	9	-	-	12	36
	75 / 76 <sup>+</sup>	9	17	15	30	146 / 147 <sup>+</sup>

<sup>+</sup>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 <sup>**</sup>	Core	3		
MH1810 Mathematics I <sup>*</sup>	Core	3		
MS1013 Materials Chemistry I <sup>*</sup>	Core	2		
MS1008 Introduction to Computational Thinking	Core	3		
MS1017 Introduction to Materials Science	Core	2		
<b>Total</b>		<b>18</b>		

*\* 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
MS2013 Introduction to Polymer Science	Core	3		MS1014/MS1016
CH1104 Materials & Energy Balance	BDE	3		
<b>Total</b>		<b>19</b>		

**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
MS2012 Introduction to Manufacturing Processes	Core	3		
MS2014 Materials Structure and Defects	Core	3	MS1017	MS1018
MS2015 Mechanical Behaviour of Materials	Core	3		
MS2016 Phase Transformation and Kinetics	Core	3		MS1016
MS2083 Polymer Lab	Core	1	MS2013	
<b>Total</b>		<b>19</b>		

Year 2 - Semester 2			Pre-Req	Co-Req
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	MS1008	
MS2018 Electronic & Magnetic Properties of Materials	Core	3		
MS3082 Design Lab	Core	1		
CH2112 Chemical Reaction Engineering	BDE	3		
CH2114 Heat & Mass Transfer	BDE	3		
CH2151 Unit Operations A	BDE	3		
<b>Total</b>		<b>21</b>		

Year 3 - Semester 1			Pre-Req	Co-Req
Course Code and Title	Course Type	AU		
HW0288 Effective Communication 2	FC	2		
MS3011 Metallic & Ceramic Materials	Core	3		MS2016
MS3012 Micro/Nanoelectronic Materials Processing	Core	3		
MS3013 Corrosion of Materials	Core	3		MS2013/MS3011
MS3014 Analysis of Materials	Core	3		
MS3015 Materials Aspects in Design	Core	3	MS3082	MS2013/MS3011
CH3111 Process Control and Dynamics	BDE	3		
CH3802 Chem Eng Lab	BDE	3		
<b>Total</b>		<b>23</b>		

Year 3 - Semester 2			Pre-Req	Co-Req
Course Code and Title	Course Type	AU		
MS3099 Professional Internship	FC	10		
<b>Total</b>		<b>10</b>		

Year 4 - Semester 1			Pre-Req	Co-Req
Course Code and Title	Course Type	AU		
MS4089 Final Year Project	Core	4	Year 4 Standing	
MS4012 Quality Control	Core	3		
MS4013 Biomaterials	Core	2	MS2013	MS3011
MPE1	MPE	3		
CH4106 Formulation of Active Pharmaceutical Ingredients Dosage Forms	BDE	3		
CH4306 Bioanalytical Techniques	BDE	3		
<b>Total</b>		<b>18</b>		

Year 4 - Semester 2			Pre-Req	Co-Req
Course Code and Title	Course Type	AU		
MS4089 Final Year Project	Core	4	Year 4 Standing	
MS4014 Nanomaterials: Fundamentals And Applications	Core	2	MS2018/MS3012/MS3013	
CH4213 Pharmacokinetics & Biopharmaceutics	BDE	3		
CH4303 Bioseparations	BDE	3		
MPE2	MPE	3		
MPE3	MPE	3		

<b>Total</b>	<b>18</b>
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