

**Bachelor of Engineering (Materials Engineering)
Second Major in Data Analytics (AY2023-24)**

Last Update: 30-Oct-23

Academic Unit (AU) Required for graduation

Year of Study	Core	MPE	CC	FC	BDE	Total AU
1	25 / 26 ⁺	-	9	-	3	34 / 35 ⁺
2	16	-	8	3	7	34
3	19	-	-	7	7	33
4	15	11	-	-	6	32
	75 / 76 ⁺	11	17	10	23	136 / 137 ⁺

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

Year 1 (AY2023-24) - Semester 1

Course Code and Title	Course Type	AU
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
MS1016 Thermodynamics of Materials	Core	3
MS1017 Introduction to Materials Science	Core	2
Total		18

** 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 (AY2023-24) - Semester 2

Course Code and Title	Course Type	AU
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
EG1001 Engineer & Society	Core	2
MS1008 Introduction to Computational Thinking	Core	3
MS1014 Materials Chemistry II	Core	2
MS1018 Properties of Materials	Core	2
MS2013 Introduction to Polymer Science	Core	3
Total		16

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Year 2 (AY2024-25) - Semester 1

Course Code and Title	Course Type	AU
CC0007 Science & Technology for Humanity	CC	3
MS2012 Introduction to Manufacturing Processes	Core	3
MS2016 Introduction to Metallurgy	Core	2
BC 2406 Analytics I: Visual and Predictive Techniques - Knowledge Area 7	BDE	4
BDE - 2nd Major Elective	BDE	3
Total		15

Year 2 (AY2024-25) - 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
MH2811 Mathematics II - Knowledge Area 2	Core	3
MS0003 Introduction to Data Science and Artificial Intelligence^	FC	3
MS2014 Materials Structure and Defects	Core	3
MS2083 Laboratory on Structure-Property Relationship in Polymers	Core	1
MS2084 Phase Transformations and Kinetics in Steels	Core	1
BDE - 2nd Major Elective	BDE	3
Total		19

^pre-requisite for EE4483 Artificial Intelligence & Data Mining (3AU)

Year 3 (AY2025-26) - Semester 1

Course Code and Title	Course Type	AU
MS2015 Mechanical Behaviour of Materials	Core	3
MS3011 Metallic & Ceramic Materials	Core	3
MS3012 Micro/Nanoelectronic Materials Processing	Core	3
MS3082 Design Lab	Core	1
EE/IM2007/EE2107 Engineering Mathematics^	BDE	3
BDE1	BDE	1
Total		14

^pre-requisite for EE4483 Artificial Intelligence & Data Mining (3AU)

Year 3 (AY2025-26) - Semester 2

Course Code and Title	Course Type	AU
HW0288 Effective Communication	FC	2

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MS2018 Electronic & Magnetic Properties of Materials	Core	3
MS3013 Electrochemical Corrosion	Core	3
MS3014 Analysis of Materials	Core	3
MS3015 Industrial Design	Core	3
BDE - 2nd Major Elective	BDE	3
Total		17

Year 3 (AY2025-26) - Special Term

Course Code and Title	Course Type	AU
MS3096 Professional Attachment	FC	5
Total		5

Year 4 (AY2026-27) - Semester 1

Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4012 Quality Control - Knowledge Area 1	Core	3
MS4013 Biomaterials	Core	2
EE4483 Artificial Intelligence & Data Mining - Knowledge Area 6	BDE	3
MPE1	MPE	3
Total		15

Year 4 (AY2026-27) - Semester 2

Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4014 Nanomaterials: Fundamentals and Applications	Core	2
MS4671 Introduction to Materials Simulation - Knowledge Area 4	MPE	3
EE4791 Database Systems (3AU) - Knowledge Area 5	BDE	3
MPE3	MPE	3
^MPE4	MPE	2
Total		17

Total AU for Graduation	136
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^Students can take 3 AU MPE to clear this requirement

Recommended electives (no pre-req):

Course Code	Course Title	AUs
MA4829	Machine Intelligence	3
MA4830	Real Time Software for Mechatronics System	3
MA4832	Microprocessor System	3

[The complete list of elective available on COE Website: Second Major in Data Analytics](#)