

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

Last Update: 13-Oct-23

Academic Unit (AU) Required for graduation

Year of Study	Core	MPE	CC	FC	BDE	Total AU
1	25 / 26 ⁺	-	9	-	6	40 / 41 ⁺
2	20	-	8	3	9	40
3	15	-	-	12	3	30
4	15	11	-	-	6	32
	75 / 76 ⁺	11	17	15	24	142 / 143 ⁺

⁺ 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
[#] ES5005 Environmental Earth System Science	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 (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
MS1014 Materials Chemistry II	Core	2

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MS1018 Properties of Materials	Core	2
MS1008 Introduction to Computational Thinking	Core	3
MS2013 Introduction to Polymer Science	Core	3
#ES5006 Environmental Sustainability	BDE	3
Total		19

Year 2 (AY2024-25) - Semester 1

Course Code and Title	Course Type	AU
CC0007 Science & Technology for Humanity	CC	3
MH2811 Mathematics II	Core	3
MS2012 Introduction to Manufacturing Processes	Core	3
MS2015 Mechanical Behaviour of Materials	Core	3
MS2016 Introduction to Metallurgy	Core	2
MS2083 Laboratory on Structure-Property Relationship in Polymers	Core	1
#AB0603 Social Entrepreneurship	BDE	3
#HU1002 Introduction to Urban Planning	BDE	3
Total		21

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
MS0003 Introduction to Data Science and Artificial Intelligence	FC	3
MS2014 Materials Structure and Defects	Core	3
MS2018 Electronic & Magnetic Properties of Materials	Core	3
MS2084 Phase Transformations and Kinetics in Steels	Core	1
MS3082 Design Lab	Core	1
SN Elective 1	BDE	3
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Year 3 (AY2025-26) - Semester 1

Course Code and Title	Course Type	AU
HW0288 Effective Communication	FC	2
MS3011 Metallic & Ceramic Materials	Core	3
MS3012 Micro/Nanoelectronic Materials Processing	Core	3
MS3013 Electrochemical Corrosion	Core	3
MS3014 Analysis of Materials	Core	3
MS3015 Industrial Design	Core	3
SN Elective 2	BDE	3
Total		20

Year 3 (AY2025-26) - Semester 2

Course Code and Title	Course Type	AU
***MS3099 Professional Internship	FC	10
Total		10

****The school will assign students for Professional Internship in Year 3, either Semester 1 or 2.*

Year 4 (AY2026-27) - Semester 1

Course Code and Title	Course Type	AU
MS4089 Final Year Project	Core	4
MS4012 Quality Control	Core	3
MS4013 Biomaterials	Core	2
^MPE1: MS4664 Environmental Sustainability and Materials	MPE&BDE	3
MPE2	MPE	3
SN Elective 3	BDE	3
Total		18

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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
SN Interdisciplinary Project	BDE	3
^MPE3: MS4666 Environmental Degradation of Plastics	MPE&BDE	1
MPE4	MPE	2
MPE5	MPE	2
Total		14
	Total AU for Graduation	142

[^]Double-counted towards both programs

[#]Or other SN Core Courses

Requirements for Second Major in Sustainability:

Students need to fulfil a minimum total of 30 AU (compulsory courses + electives + interdisciplinary project)

1. 5 compulsory courses, 1 course in each knowledge area (People, Planet, Profit, Practice, and Policy)
2. Elective Courses
3. Interdisciplinary Project (3 AU)

[The complete list of elective available on ASE Website: Second Major in Sustainability](#)