

**AY2024-25 CURRICULUM FOR BACHELOR OF ENGINEERING (MATERIALS ENGINEERING)  
WITH CN YANG SCHOLARS PROGRAMME  
SECOND MAJOR IN SUSTAINABILITY (MTSN)  
(FIRST YEAR ADMISSION)**

Last Updated : 31-Jan-24

SUMMARY OF ACADEMIC UNIT REQUIREMENT							
Year of Study	School Core	CNYS- Core	MPE	CC	FC	BDE	Total AU
1	9	27	0	5	0	3	44
2	14	10	0	8	3	6	41
3	31	0	3	0	5	6	45
4	10	0	6	0	0	6	22
<b>Total</b>	<b>64</b>	<b>37</b>	<b>9</b>	<b>13</b>	<b>8</b>	<b>21</b>	<b>152</b>

YEAR 1 SEMESTER 1					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY1001	Cell	CNY-Core	3	CNYS- Courses	
CY1101	Molecule	CNY-Core	4		
CY1308	Physics	CNY-Core	3		
CY1500	Introduction to Research	CNY-Core	2		
CY1601	Mathematics I	CNY-Core	4		
CC0005	Healthy Living & Wellbeing	CC	3		
			<b>19</b>		

YEAR 1 SEMESTER 2					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY1007^	Climate Change	CNY-Core	3	Double-counted as Planet Core	
CY1602	Mathematics II	CNY-Core	4	CNYS- Course	
MS1014	Materials Chemistry II	C	2		
MS1018	Properties of Materials	C	2		
EG1001^	Engineers in Society	C	2	Double-counted as Practice Core	
MS1008	Introduction to Computational Thinking	C	3		
CC0002	Navigating the Digital World	CC	2		
ES5006	Environmental Sustainability	BDE	3	People Core	
			<b>21</b>		

YEAR 1 SPECIAL SEMESTER					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY2003	Research Attachment 3	CNY-Core	4	CNYS- Course	
	Overseas Learning Trip				
			<b>4</b>		

YEAR 2 SEMESTER 1					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYS- Course	
MS1016	Thermodynamics of Materials	C	3	MS1017 (co-req)	
MS1017	Introduction to Materials Science	C	2		
SP0061	Science & Technology for Humanity	CC	3		
AB0603	Social Entrepreneurship	BDE	3	Profit Core	
HU1002	Introduction to Urban Planning	BDE	3	Policy Core	
MS2012	Introduction to Manufacturing Processes	C	3		
			<b>20</b>		

YEAR 2 SEMESTER 2					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0002	Ethics	CNY-Core	3	CNYS- Course	
CY2001	Research Attachment 1	CNY-Core	4	CNYS- Course 2-semester long, course registered only in Sem 2 (similar to URECA)	
MS2013	Introduction to Polymer Science	C	3	MS1014 & MS1016	
MS2014	Materials Structure and Defects	C	3	MS1017 + MS1018 (co-req)	
ML0004	Career and Entrepreneurial Development for the Future World	CC	2		
MS0003	Introduction to Data Science and Artificial Intelligence	FC	3		
CC0006	Sustainability: Society, Economy & Environment	CC	3		
			<b>21</b>		

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MS2015	Mechanical Behaviour of Materials	C	3	
MS2016	Introduction to Metallurgy	C	2	MS1016 (co-req)
MS3011	Metallic & Ceramic Materials	C	3	MS2016 (co-req)
MS4012	Quality Control	C	3	
MS4013	Biomaterials	C	2	MS2013 & MS3011 (co-req)
MS2083	Laboratory on Structure-Property Relationship in Polymers	C	1	MS2013 (co-requisite)
MS3082	Design Lab	C	1	
	SN Elective 1	BDE	3	<a href="#">Please see attached list of electives to choose from</a>
			<b>18</b>	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MS2018	Electronic & Magnetic Properties of Materials	C	3	MS1017 & MS1018 (co-reqs)
MS3012	Micro/Nanoelectronic Materials Processing	C	3	
MS3013	Electrochemical Corrosion	C	3	MS2013 + MS3011
MS3014	Analysis of Materials	C	3	
MS3015	Industrial Design	C	3	MS1015 + MS2013 + MS3011 (co-req)/ MS1017 + MS1018 + MS2013 + MS2083 + MS3011 (co-req) + MS3082 (co-req)
MS2084	Phase Transformations and Kinetics in Steels	C	1	
MS4664^	Environmental Sustainability and Materials	MPE	3	Double-counted as SN Elective
	SN Elective 3	BDE	3	<a href="#">Please see attached list of electives to choose from</a>
			<b>22</b>	

YEAR 3 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MS3910	Professional Attachment	FC	5	
			<b>5</b>	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MS4211	CNYSP Overseas Final Year Project	C	8	CNYSP Course
			<b>8</b>	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MS4014	Nanomaterials: Fundamentals and Applications	C	2	MS2018 & MS3012 & MS3013
MS4666^	Environmental Degradation of Plastics	MPE	1	Double-counted as SN Elective
XXXXXX	Major PE 3	MPE	3	
XXXXXX	Major PE 4	MPE	2	
	SN Elective 5	BDE	3	<a href="#">Please see attached list of electives to choose from</a>
	Second Major Interdisciplinary Project	BDE	3	
			<b>14</b>	

Total AU for Graduation: **152**

^ These courses are double-counted towards both MAT as well as the Second Major in Sustainability.

**Compulsory Courses and Electives for Second Major in Sustainability**  
[https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in-sustainability#Content\\_C002\\_Col00](https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in-sustainability#Content_C002_Col00)