

**CURRICULUM FOR BACHELOR OF ENGINEERING (BIOENGINEERING)**  
**WITH CN YANG SCHOLARS PROGRAMME**  
**SECOND MAJOR IN SUSTAINABILITY (BESN)**  
**(FIRST YEAR ADMISSION)**  
**AY2025 Intake Onwards**

SUMMARY OF ACADEMIC UNIT REQUIREMENT								
Year of Study	Major Requirements			Interdisciplinary Collaborative Core			BDE	Total AU
	School Core	CNYSP-Core	MPE	CC	Professional Series	Care, Serve, Learn		
1	6 [2]	27 [3]	0	2	0	0	3	38 [5]
2	27	6	0	8	0	3	4	48
3	21	0	0	0	6	0	6	33
4	9	0	6	0	3	0	16	34
<b>Total</b>	<b>63 [2]</b>	<b>33 [3]</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>3</b>	<b>29</b>	<b>153 [5]</b>

[ ] AU of courses that could be used to fulfil Core requirement and second major requirement concurrently

YEAR 1 SEMESTER 1					
Course Code	Course Title		Type	AU	Pre-Requisite/Remarks
CY1001	Cell		CNY-Core	3	CNYSP Courses
CY1101		Molecule	CNY-Core	4	
CY1308		Physics	CNY-Core	3	
CY1500		Introduction to Research	CNY-Core	2	
CY1601		Mathematics I	CNY-Core	4	
CB1102		Introduction to Chemical and Biomedical Engineering	C	1	
BG1141		Fundamental Biology for Bioengineers	C	3	
				<b>20</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	CNYSP Course
EG1001^	Engineers in Society		C	2	Double-counted as Practice Core
CC0015	Health & Wellbeing		CC	2	
XXXXXX	SN Compulsory 3		BDE	3	<a href="#">Please see attached list of core courses to choose from</a>
				<b>14</b>	

YEAR 1 SPECIAL SEMESTER					
Course Code	Course Title		Type	AU	Pre-Requisite/Remarks
CY2003	Research Attachment 3		CNY-Core	4	CNYSP 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	CNYSP Course
BG5915	Undergraduate Research		BDE	IP	Course will be registered in Semester 2. Grades will be recorded at the end of Semester 2
BG2119	Anatomy and Physiology		C	3	
BG2131	Biomaterials		C	3	<b>BG1105</b>
BG2142	Biological Thermodynamics		C	3	<b>BG1103</b>
BG2211	Introduction to Computational Thinking		C	3	<b>CY1601</b>
BG2801	Bioengineering Lab 2A		C	1	
CC0006	Sustainability: Society, Economy & Environment		CC	3	
ML0004	Career Design & Workplace Readiness in the V.U.C.A World		CC	2	
	Tech-For-Good (T4G)		CSL	3	
				<b>24</b>	

**YEAR 2 SEMESTER 2**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0002	Ethics	CNY-Core	3	CNYSP Course
BG5915	Undergraduate Research	BDE	4	2 semester long, course registered only in Sem 2
BG2103	Signal Processing in Biosystems	C	3	
BG2104	Electronics for Biomedical Engineering	C	3	
BG2110	Bioelectricity	C	3	<b>BG1131</b>
BG2209	Mechanics for Bioengineers	C	3	<b>BG1131 &amp; CB1105</b>
BG2802	Bioengineering Lab 2B	C	1	
CB2002	Introduction to Chemical and Biological Safety	C	1	
SP0061	Science & Technology for Humanity	CC	3	
			<b>24</b>	

#### YEAR 3 SEMESTER 1

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG3102	Control in Biosystems	C	3	<b>BG1117 &amp; CY1601</b>
BG3104	Biomedical Imaging	C	3	
BG3105	Biomedical Instrumentation	C	3	
BG3112	Biofluid Mechanics and Medical Devices	C	3	
BG3801	Bioengineering Lab 3	C	1	
MLXXXX	Professional Preparation	PS	1	
XXXXXX	SN Compulsory 4	BDE	3	<a href="#">Please see attached list of core courses to choose from</a>
XXXXXX	SN Compulsory 5	BDE	3	
			<b>20</b>	

#### YEAR 3 SEMESTER 2

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4211	CNYSP Overseas Final Year Project	C	8	
			<b>8</b>	

#### YEAR 3 SPECIAL SEMESTER

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG3910	Professional Attachment	PS	5	
			<b>5</b>	

#### YEAR 4 SEMESTER 1

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4104	Machine Learning & Optimization for Bioengineers	C	3	
BG4122	Medical Device Design	C	3	
	BIE PE 1	MPE	3	
	SN Elective 1	BDE	3	<a href="#">Please see attached list of electives to choose from</a>
	SN Elective 2	BDE	3	
	Second Major Interdisciplinary Project	BDE	3	
			<b>18</b>	

#### YEAR 4 SEMESTER 2

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4122	Medical Device Design	C	3	
CB0494	Introduction to Data Science and Artificial Intelligence	PS	3	
	BIE PE 2	MPE	3	
	SN Elective 3	BDE	3	<a href="#">Please see attached list of electives to choose from</a>
	SN Elective 4	BDE	4	
			<b>16</b>	
	<b>Total AU for Graduation:</b>			<b>153</b>

*<sup>^</sup> These courses are double-counted towards both BIE as well as the Second Major in Sustainability.*

Compulsory Courses and Electives for Second Major in Sustainability
<a href="https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in-sustainability/">https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in-sustainability/</a>