

**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	CNYSB-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
Total	63 [2]	33 [3]	6	10	9	3	29	153 [5]

[] 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	CNYSB 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	
			20	

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	CNYSB Course
EG1001^	Engineers in Society	C	2	Double-counted as Practice Core
CC0015	Health & Wellbeing	CC	2	
XXXXXX	SN Compulsory 3	BDE	3	Please see attached list of core courses to choose from
			14	

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

YEAR 2 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYSB Course
CB5915	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	BG1105
BG2142	Biological Thermodynamics	C	3	BG1103
BG2211	Introduction to Computational Thinking	C	3	CY1601
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	
			24	

YEAR 2 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0002	Ethics	CNY-Core	3	CNYS Course
CB5915	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	BG1131
BG2209	Mechanics for Bioengineers	C	3	BG1131 & CB1105
BG2802	Bioengineering Lab 2B	C	1	
CB2002	Introduction to Chemical and Biological Safety	C	1	
SP0061	Science & Technology for Humanity	CC	3	
			24	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG3102	Control in Biosystems	C	3	BG1117 & CY1601
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	Please see attached list of core courses to choose from
XXXXXX	SN Compulsory 5	BDE	3	
			20	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4211	CNYS Overseas Final Year Project	C	8	
			8	

YEAR 3 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG3910	Professional Attachment	PS	5	
			5	

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	Please see attached list of electives to choose from
	SN Elective 2	BDE	3	
	Second Major Interdisciplinary Project	BDE	3	
			18	

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	Please see attached list of electives to choose from
	SN Elective 4	BDE	4	
			16	

Total AU for Graduation: **153**

[^] 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

<https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in->