

**AY2023-24 CURRICULUM FOR BACHELOR OF ENGINEERING
(CHEMICAL AND BIOMOLECULAR ENGINEERING)
WITH CN YANG SCHOLARS PROGRAMME
SECOND MAJOR IN DATA ANALYTICS (CBDA)
(FIRST YEAR ADMISSION)**

Last updated: 19-Apr-23

SUMMARY OF ACADEMIC UNIT REQUIREMENT							
Year of Study	School Core	CNYS Core	MPE	CC	FC	BDE	Total AU
1	16	23	0	5	0	0	44
2	26	10	0	8	3	0	47
3	25	0	0	0	5	3	33
4	8	0	6	0	0	19	33
Total	75	33	6	13	8	22	157

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		
CB1102	Introduction to Chemical and Biomedical Engineering	C	1		
CB1131	Introduction to Biomolecular Engineering	C	3		
CC0002	Navigating the Digital World	CC	2		
			22		

YEAR 1 SEMESTER 2					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY1007	Climate Change	CNY-Core	3	CNYS Course	
CB1117^	Engineering Mathematics	C	4	CY1601	
CB1103	Organic Chemistry For Engineers	C	3		
CH1104	Materials & Energy Balance	C	3		
EG1001	Engineers in Society	C	2		
CC0005	Healthy Living & Mental Wellbeing in an Aging Society	CC	3		
			18		

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				
			4		

YEAR 2 SEMESTER 1					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0002	Ethics	CNY-Core	3	CNYS Course	
CH2010^	Engineering Statistics	C	3	CY1601	
CH2103	Fluid Systems	C	3	CB1117 & CH1104	
CH2107^	Introduction to Computational Thinking	C	3	CB1117	
CH2108	Biological Thermodynamics	C	3	CH1104	
CC0006	Sustainability: Society, Economy & Environment	CC	3		
ML0004	Career and Entrepreneurial Development for the Future World	CC	2		
			20		

YEAR 2 SEMESTER 2					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0001	Writing Across the Disciplines	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)	

CH2112	Chemical Reaction Engineering	C	3	CH1104 & CH2108 & CH2123
CH2114	Heat & Mass Transfer in Chemical and Biological Systems	C	3	BG1131
CH2123	Chemical Thermodynamics	C	3	CH1104 & CB1117 & CH2108
CH2151	Unit Operations A	C	3	
CH2802	Chemical & Biomolecular Engineering Laboratory 2B	C	2	
CB0494	Introduction to Data Science and Artificial Intelligence	FC	3	
SP0061	Science & Technology for Humanity	CC	3	
			27	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CH3104	Biochemical Engineering	C	3	CH1104 & CB1131 & CH2114 & CH2112
CH3109	Decision Tools for Business & Engineering	C	3	
CH3111	Process Control and Dynamics	C	3	CH1104 & BG2142 & CH2112 & CH2114 & CY1601
CH3121	Chemical, Biological & Plant Safety	C	2	
CH3140	Unit Operations: Fluid-Fluid Separation	C	3	CH1104 & CH2108 & CH2123
CH3802	Chemical & Biomolecular Engineering Laboratory 5	C	3	
XXXXXX	DA Elective 2	BDE	3	
			20	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CH4211	CNYSF Overseas Final Year Project	C	8	
			8	

YEAR 3 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CH3885	Professional Attachment	FC	5	
			5	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CH4801	Final Year Design Project	C	4	
XXXXXX	CBE PE 1	MPE	3	
EE4483	Artificial Intelligence & Data Mining	BDE	3	
BC2406	Analytics I: Visual and Predictive Techniques	BDE	4	
CH4244	Numerical Methods and Data Analytics	BDE	3	CH2107
			17	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CH4801	Final Year Design Project	C	4	
MH1403	Algorithms & Computing	BDE	3	
EE4791	Database Systems	BDE	3	
XXXXXX	CBE PE 2	MPE	3	
XXXXXX	DA Elective 3	BDE	3	
			16	

Total AU for Graduation: **157**

^ These courses are double-counted towards both CBE as well as the Second Major in Data Analytics.

Compulsory Courses for Second Major in Data Analytics

Course Type	Course Code	Course Title	AU	Offering Sem	Pre-req
Core	CH2010	Engineering Statistics	3	1	CY1601
Core	CB1117	Engineering Mathematics	4	2	CY1601
MPE	CH2107	Introduction to Computational Thinking	3	1	CY1601
BDE	MH1403	Algorithms and Computing	3	2	BG2211 & CB0494 (co-req)
BDE	EE4791	Database Systems	3	2	-
BDE	EE4483	Artificial Intelligence & Data Mining	3	1	CB1117 & CB0494
BDE	BC2406	Analytics I: Visual and Predictive Techniques	4	1	

Electives for Second Major in Data Analytics					
Course Type	Course Code	Course Title	AU	Offering Sem	Pre-req
BDE	CH4244	Numerical Methods and Data Analytics	3	1	CH2107/BG2111
BDE	XXXXXX	DA Elective 2	3 or 4		-
BDE	XXXXXX	DA Elective 3	3 or 4		-

List of Eligible Electives can be found at the following link: <https://www.ntu.edu.sg/engineering/admissions/ug/allprogrammes/highlights/da>