

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

Last Updated : 19-Apr-23

SUMMARY OF ACADEMIC UNIT REQUIREMENT							
Year of Study	School Core	CNYSP-Core	MPE	CC	FC	BDE	Total AU
1	10	23	0	5	0	0	38
2	26	10	0	8	0	0	44
3	21	0	0	0	5	3	29
4	9	0	6	0	3	19	37
Total	66	33	6	13	8	22	148

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		
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	CNYSP Course	
CB1117^	Engineering Mathematics	C	4	CY1601	
EG1001	Engineers in Society	C	2		
CC0005	Healthy Living & Mental Wellbeing in an Aging Society	CC	3		
			12		

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				
			4		

YEAR 2 SEMESTER 1					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0002	Ethics	CNY-Core	3	CNYSP Course	
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 and Entrepreneurial Development for the Future	CC	2		
			21		

YEAR 2 SEMESTER 2					
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks	
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYSP Course	
CY2001	Research Attachment 1	CNY-Core	4	CNYSP Course 2-semester long, course registered only in Sem 2 (similar to URECA)	
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	
SP0061	Science & Technology for Humanity	CC	3	
			23	

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	
XXXXXX	DA Elective 2	BDE	3	
			16	

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

YEAR 3 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG3885	Professional Attachment	FC	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	
CH2010^	Engineering Statistics	MPE	3	
CH4244	Numerical Methods and Data Analytics	BDE	3	BG2211
EE4483	Artificial Intelligence & Data Mining	BDE	3	
BC2406	Analytics I: Visual and Predictive Techniques	BDE	4	
			19	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4122	Medical Device Design	C	3	
MH1403	Algorithms & Computing	BDE	3	
EE4791	Database Systems	BDE	3	
CB0494	Introduction to Data Science and Artificial Intelligence	FC	3	
XXXXXX	BIE PE 2	MPE	3	
XXXXXX	DA Elective 3	BDE	3	
			18	
Total AU for Graduation:			148	

^ These courses are double-counted towards both BIE 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	BG2211	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 Cod	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>