

**CURRICULUM FOR BACHELOR OF ENGINEERING (BIOENGINEERING)
WITH CN YANG SCHOLARS PROGRAMME
SECOND MAJOR IN DATA ANALYTICS (BEDA)
(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	10 [4]	23	0	2	0	0	0	35 [4]
2	27 [3]	6	0	8	0	3	4	48 [3]
3	21	0	0	0	6	0	3	30
4	9	0	6 [3]	0	3	0	19	37 [3]
Total	67 [7]	29	6 [3]	10	9	3	26	150 [10]

[] AU of courses that could be used to fulfill Core/MPE 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	CNYSB Course
CB1117^	Engineering Mathematics	C	4	CY1601
EG1001	Engineers in Society	C	2	
CC0015	Healthy & Wellbeing	CC	2	
			11	

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 Courses
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	
BG2142	Biological Thermodynamics	C	3	
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	CNYSPP Courses
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	
BG2209	Mechanics for Bioengineers	C	3	
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	
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	
	DA Elective 1	BDE	3	
			17	

YEAR 3 SEMESTER 2

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
BG4211	CNYSPP Overseas Final Year Project	C	8	CNYSPP Course
			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 and 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
IE4483	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	
CB0494	Introduction to Data Science and Artificial Intelligence	PS	3	
	BIE PE 2	MPE	3	

MH1403	Algorithms & Computing	BDE	3	
EE4791	Database Systems	BDE	3	
CB4246	Optimisation Using Artificial Intelligence	BDE	3	
			18	
Total AU for Graduation :			150	

^ 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
Core	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	IE4483	Artificial Intelligence & Data Mining	3	1	CB1117 & CB0494
BDE	BC2406	Analytics I: Visual and Predictive Techniques	4	1	Year 2 standing

Electives for Second Major in Data Analytics					
Course Type	Course Code	Course Title	AU	Offering Sem	Pre-req
BDE	XXXXXX	DA Elective 1	3 or 4		-
BDE	CH4244	Numerical Methods and Data Analytics	3	1	CH2107/BG2111
BDE	CB4246	Optimisation Using Artificial Intelligence	3	2	-