

**CURRICULUM FOR COMPUTER ENGINEERING
WITH CN YANG SCHOLARS PROGRAMME
SECOND MAJOR IN DATA ANALYTICS (CEDA)
(FIRST YEAR ADMISSION)
AY2025 Intake**

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	16 [6]	23	0	2	3 [3]	0	0	44 [9]
2	21 [3]	6	0	8	0	3	4	42 [3]
3	18	0	6	0	6	0	12	42
4	8	0	9	0	0	0	6	23
Total	63 [9]	29	15	10	9 [3]	3	22	151 [12]

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

YEAR 1 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
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	
SC1003^	Introduction to Computational Thinking and Programming	PS	3	Nil
CC0015	Healthy Living & Wellbeing	CC	2	Nil
			21	

YEAR 1 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
CY1007	Climate Change	CNY-Core	3	CNYSP Courses
SC1004^	Linear Algebra for Computing	C	4	MH1810, SC1003
SC1005	Digital Logic	C	3	Nil
SC1006	Computer Organisation & Architecture	C	3	SC1005 (co-req)
SC1007^	Data Structures and Algorithms	C	3	SC1003
SC1008	C and C++ Programming	C	3	SC1003
			19	

YEAR 1 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite
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
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYSP Course
SC5915	Undergraduate Research	BDE	IP	Course will be registered in Semester 2. Grades will be recorded at the end of Semester 2
SC2000^	Probability and Statistics for Computing	C	3	MH1810
SC2104	Sensors, Interfacing & Digital Control	C	3	SC1006
SC2107	Microprocessor System Design and Development	C	3	SC1006
MH1812	Discrete Mathematics	C	3	Nil
SP0061	Science & Technology for Humanity	CC	3	Only for Premier Scholars Programme Students
NH0001	Tech-For-Good (T4G)	CSL	3	Nil
			21	

YEAR 2 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
CY0002	Ethics	CNY-Core	3	CNYSP Course
SC5915	Undergraduate Research	BDE	4	2-semester long, course registered only in Sem 2
SC2001	Algorithm Design and Analysis	C	3	SC1007, MH1812
SC2002	Object Oriented Design & Programming	C	3	SC1003
SC2103	Digital System Design	C	3	SC1005
CC0006	Sustainability: Society, Economy & Environment	CC	3	Nil
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2	Nil
			21	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
EG1001	Engineers in Society	C	2	Nil
SC2006	Software Engineering	C	3	SC2002
SC2207	Introduction to Database	BDE	3	SC2001
SC4020	Data Analytics and Mining	BDE	3	SC2001
SC4024	Data Visualization	BDE	3	SC1003, SC2000

SC3XXX/SC4XXX	Major Prescribed Elective (Choose within SC3XXX/SC4XXX)	MPE	3	
MLXXX	Profession Preparation	PS	1	
			18	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
SC2005	Operating Systems	C	3	SC1006, SC1007
SC2008	Computer Networks	C	3	CY1602, SC2000
SC2079	Multidisciplinary Design Project	C	4	SC2001 & SC2006
SC3102	Signal, Systems and Transform	C	3	CY1602
SC4XXX	Major Prescribed Elective (Choose within SC4XXX)	MPE	3	
XXXXXX	DA Elective 1	BDE	3	
			19	

YEAR 3 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite
SC3910	Professional Attachment	PS	5	Year 3 Standing
			5	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite
SC4211	CNYSO Overseas Final Year Project	C	8	CNYSO Course
			8	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite
XXXXXX	DA Elective 2	BDE	3	
XXXXXX	DA Elective 3	BDE	3	
SC4XXX	Major Prescribed Elective (Choose within SC4XXX)	MPE	3	
SC4XXX	Major Prescribed Elective (Choose within SC4XXX)	MPE	3	
SC4XXX	Major Prescribed Elective (Choose within SC4XXX)	MPE	3	
			15	

Total AU for Graduation: **151**

^ These courses can be double-counted towards both CE as well as the Second Major in Data Analytics, up to max of 12AUs.

Important Note:

1. Students are required to complete 5 Major Prescribed Electives (MPE) courses, of which at least 4 must be at the SC4xxx level.

MPE Structure for Computer Engineering			
Course Code	Type	AU	Remarks
SC3xxx/SC4xxx	MPE-1	3	Any MPE (Choose within SC3xxx/SC4xxx)
SC4xxx	MPE-2	3	Choose within SC4xxx
SC4xxx	MPE-3	3	Choose within SC4xxx
SC4xxx	MPE-4	3	Choose within SC4xxx
SC4xxx	MPE-5	3	Choose within SC4xxx
	Total	15	

[Please refer to the CE MPE Courses and Elective Focus Areas on CCDS intranet.](#)

Data Analytics Course Listing				
Course Code	Course Title	Type	AU	Knowledge Area
SC1003	Introduction to Computational Thinking & Programming	F-Core/DANA-C	3	Data Analysis / Computing
SC1004	Linear Algebra for Computing	Core/DANA-C	*4	Linear Algebra
SC1007	Data Structures & Algorithms	Core/DANA-C	3	Algorithms
SC2000	Probability & Statistics for Computing	Core/DANA-C	3	Probability and Statistics
SC2207	Introduction to Databases	DANA-C (BDE)	3	Database
SC4020	Data Analytics and Mining	DANA-C (BDE)	3	Data Mining
**SC4023 / SC4024	Big Data Management / Data Visualisation	DANA-C (BDE)	3	Data Visualisation / Management
	2nd Major Elective	DANA-E (BDE)	3	Refer to the Electives List
	2nd Major Elective	DANA-E (BDE)	3	Refer to the Electives List
	2nd Major Elective	DANA-E (BDE)	3	Refer to the Electives List
TOTAL			30	

*Only 3 AU will be double counted to 2nd Major in DANA

**SC4023 is only offered in Sem 2, SC4024 is only offered in Sem 1

List of Electives for Second Major in Data Analytics Course Listing (Choose 3 from the list below)		
Course Code	Course Title	AU
SC3020	Database System Principle	3
SC4001	Neural Network and Deep Learning	3
SC4002	Natural Language Processing	3
SC4021	Information Retrieval	3
SC4022	Network Science	3
BC2407	Analytics II: Advanced Predictive Techniques	4
BS3008	Computer Aided Drug Discovery	3
BS4017	High-Throughput Bioinformatics	3
CB4246	Optimisation Using Artificial Intelligence	3
CB4247	Statistics & Computational Inference to Big Data	3
CH4244	Numerical Method & Data Analytics	3
CM4043	Molecular Modelling: Principles and Applications	3

CM4044	Artificial Intelligence in Chemistry	3
ES2001	Computational Earth Systems Science	4
IE4424	Machine Learning Design & Application	3
IE4497	Pattern Recognition & Machine Learning	3
MA4829	Machine Intelligence	3
MA4830	Realtime Software for Mechatronics System	3
MA4832	Microprocessor System	3
MH3400	Algorithms for the Real World	4
MH3500	Statistics	4
MH3510	Regression Analysis	4
MH3511	Data Analysis with Computer	3
MH3701	Basic Optimization	4
MH4302	Theory of Computing	4
MH4320	Computational Economics	4
MH4500	Time Series Analysis	4
MH4511	Sampling and Survey	4
MH4512	Clinical Trials	4
MH4513	Survival Analysis	4
MH4702	Probabilistic Methods in Operations Research	4
MS4671	Introduction to Materials Simulation	3
Refer to Class Schedule for the latest course offering information and its prerequisites		