CURRICULUM FOR BACHELOR OF ENGINEERING (ROBOTICS)
CN YANG SCHOLARS PROGRAMME - SECOND MAJOR IN DATA ANALYTICS
(FIRST YEAR ADMISSION)
AY2025 Intake Onwards

	SUMMARY OF ACADEMIC UNIT REQUIREMENT							
	Major Requirements			**Interdisciplinary Collaborative Core**			**Broadening & Deepening Electives (BDE)**	**Total AU**
Year of Study	**Core (C)**	**CNYSP-Core (CNYSP-C)**	**Major Prescribed Electives (MPE)**	**Common Core (CC)**	**Professional Series (PS)**	**Care, Serve, Learn (CSL)**		
1	22 [3]	23	0	0	3	0	3	**51 [3]**
2	26 [6]	10	0	10	0	3	3	**52 [6]**
3	13	0	6 [3]	0	6	0	3	**28 [3]**
4	8	0	0	0	0	0	9	**17**
Total	**69 [9]**	**33**	**6 [3]**	**10**	**9**	**3**	**18**	**148 [12]**

YEAR 1 SEMESTER 1				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
CY1001	Cell	CNYSP-C	3	
CY1101	Molecule	CNYSP-C	4	
CY1308	Physics	CNYSP-C	3	
CY1500	Introduction to Research	CNYSP-C	2	
CY1601	Mathematics I	CNYSP-C	4	
MA1008~	Introduction to Computational Thinking	C	3	
MA2009	Introduction to Electrical & Electronic Devices	C	3	
MA1601^	Introduction to Robotics	C	2	
			24	

YEAR 1 SEMESTER 2				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
CY1007	Climate Change	CNYSP-C	3	
MA1001	Dynamics	C	3	
MA2001	Mechanics of Materials	C	3	
MA1602^	Robotics Programming Fundamentals	C	3	
MA1603*	Mechatronics System Interfacing & Design	C	3	
MA0218	Introduction to Data Science and Artificial Intelligence	PS	3	
EG1001	Engineers in Society	C	2	
MH1403	Algorithms and Computing	BDE	3	PS0001/MA1008
			23	

YEAR 1 SPECIAL TERM				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
CY2003	Research Attachment 3 (Making and Tinkering)	CNYSP-C	4	
	Overseas Learning Trip			
			4	

YEAR 2 SEMESTER 1				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
CY0001	Writing Across The Disciplines	CNYSP-C	3	
MA2002	Theory of Mechanism	C	3	
MA2005	Engineering Graphics	C	3	
MA2006~	Engineering Mathematics	C	3	
MA2601*	Sensing and Sensors	C	3	
CC0015	Health & Wellbeing	CC	2	
SP0061	Science & Technology for Humanity	CC	3	
SC2207	Introduction to Database	BDE	3	MH1403
	Tech-For-Good (T4G)	CSL	3	Pass/Fail course. Course can be from the pool offered by central CSL office, or can be designed by school.
			26	

YEAR 2 SEMESTER 2				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
CY0002	Ethics	CNYSP-C	3	
CY2001	Research Attachment 1	CNYSP-C	4	
MA2079	Engineering Innovation and Design	C	2	
MA2603*	Mechanics and Modelling of Robot Manipulators	C	3	
MA2604*	Control Theory and Applications	C	3	
MA2602~	Machine Intelligence for Robotics	C	3	was MA4829
MA3001	Machine Element Design	C	3	
CC0006	Sustainability: Human, Social, Economic & Environment	CC	3	
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2	AY27 cohort to read in Year 1 Semester 2
			26	

YEAR 3 SEMESTER 1				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
MA3601^	Linear Systems & Control	C	3	
MA3602^	Mobile Robot Navigation & Motion Planning	C	3	
MA3604^	Robot Vision	C	3	
MA4849	Operations Reasearch	BDE	3	
MLXXXX	Profession Preparation	PS	1	
			13	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Remarks
MA4601*	Robotic Engineering Design	C	4	
MA48XX	MPE1	MPE	3	
MA4861~	Realtime Software for Mechatronic Systems	MPE	3	was MA4830
			10	

YEAR 3 SPECIAL TERM				
Course Code	Course Title	Type	AU	Remarks
MA3910	Professional Attachment	PS	5	
			5	

YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Remarks
MA4832	Microprocessor System	BDE	3	
SC4020	Data Analytics and Mining	BDE	3	MH1403
SC4024	Data Visualization	BDE	3	MA1008 & MA4849
			9	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Remarks
MA4211	CNYSP Overseas Final Year Project	C	8	Year 4 standing
			8	
		Total AUs for Graduation:	148	

YEAR 4 MPE/BDE				
Course Code	Course Title	Type	AU	Remarks
MA4853	Manufacturing Systems	MPE/BDE	3	
MA4861^	Real-time Operating System for Robotics	MPE/BDE	3	
MA4862^	Human-Robot Interaction	MPE/BDE	3	
MA4863^	Robotics Competition	MPE/BDE	3	
EE4285@	Computational Intelligence	MPE/BDE	3	
IE4476@	Image Processing & Computer Vision	MPE/BDE	3	
EE4273@	Digital Control Systems	MPE/BDE	3	
SC4002@	Natural Language Processing	MPE/BDE	3	
SC4020@	Data Analytics & Mining	MPE/BDE	3	
SC4060@	Virtual & Augmented Reality	MPE/BDE	3	

* Existing courses with modification in course title and course contents.

^ New courses to be developed.

@ Courses offered by other Schools.

~ These courses are double-counted towards both ROBO 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
BDE	MA4849	Operations Research	3	1	-
Core	MA2006	Engineering Mathematics	3	1 & 2	CY1602
Core	MA1008	Introduction to Computational Thinking	3	1	-
BDE	MH1403	Algorithms and Computing	3	2	MA1008
BDE	SC2207	Introduction to Database	3	1 & 2	MH1403
BDE	SC4020	Data Analytics and Mining	3	1	MH1403
BDE	SC4024	Data Visualization	3	1	MA1008 & MA4849

Suggested Electives for Second Major in Data Analytics					
Course Type	Course Code	Course Title	AU	Offering Sem	Pre-req
Core	MA2602	Machine Intelligence for Robotics	3	2	-
MPE	MA4861	Realtime Software for Mechatronic Systems	3	1	-
BDE	MA4832	Microprocessor System	3	1	-