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

SUMMARY OF ACADEMIC UNIT REQUIREMENT								
Year of Study	Major Requirements			Interdisciplinary Collaborative Core			Broadening & Deepening Electives (BDE)	Total AU
	Core (C)	CNYSP-Core (CNYSP-C)	Major Prescribed Electives (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve, Learn (CSL)		
1	20	27 [3]	0	0	3	0	0	**50 [3]**
2	28 [2]	10	0	10	0	3	0	**51 [2]**
3	13	0	0	0	6	0	19	**38**
4	8	0	6	0	0	0	6	**20**
Total	**69 [2]**	**37 [3]**	**6**	**10**	**9**	**3**	**25**	**159 [5]**

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	Double-counted as Planet Core
CY1602	Mathematics II	CNYSP-C	4	
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	
			22	

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	
EG1001~	Engineers in Society	C	2	Double-counted as Practice Core
CC0015	Health & Wellbeing	CC	2	
SP0061	Science & Technology for Humanity	CC	3	
	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.
			25	

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	
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	
	Policy Core	BDE	3	Please see attached list of core courses to choose from
	Elective 1	BDE	3	Please see attached list of electives to

	Elective 2	BDE	3	choose from
MLXXXX	Profession Preparation	PS	1	
			19	

YEAR 3 SEMESTER 2				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
MA4601*	Robotic Engineering Design	C	4	
	People Core	BDE	3	Please see attached list of core courses to choose from
	Elective 3	BDE	3	Please see attached list of electives to choose from
	Elective 4	BDE	4	
			14	

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**
MA48XX	MPE1	MPE	3	
MA48XX	MPE2	MPE	3	
	Profit Core	BDE	3	Please see attached list of core courses to choose from
	Interdisciplinary project	BDE	3	Cross-school group work project, selected from a list of competitions and initiatives
			12	

YEAR 4 SEMESTER 2				
Course Code	**Course Title**	**Type**	**AU**	**Remarks**
MA4211	CNYSP Overseas Final Year Project	C	8	
			8	
		Total AUs for Graduation:	**159**	

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 Sustainability

Compulsory Courses and Electives for Second Major in Sustainability
https://www.ntu.edu.sg/ase/admissions/undergraduate-programmes/second-major-in-sustainability#Content_C002_Col00