

**AY2023-24 CURRICULUM FOR MATHEMATICAL SCIENCES  
WITH CN YANG SCHOLARS PROGRAMME\_Internship  
SECOND MAJOR IN DATA ANALYTICS (MADA)  
(FIRST YEAR ADMISSION)**

Last Updated : 19-Apr-23

**SUMMARY OF ACADEMIC UNIT REQUIREMENT**

Year of Study	School Core	CNYS Core	MPE	CC	FC	BDE	Total AU
1	13	27	0	5	0	0	45
2	12	10	0	8	3	9	42
3	0	0	19	0	0	13	32
4	12	0	0	0	10	0	22
<b>Total</b>	<b>37</b>	<b>37</b>	<b>19</b>	<b>13</b>	<b>13</b>	<b>22</b>	<b>141</b>

**YEAR 1 SEMESTER 1**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY1001	Cell	CNY-Core	3	CNYS Courses
CY1101	Molecule	CNY-Core	4	
CY1308	Physics	CNY-Core	3	
CY1500	Introduction to Research	CNY-Core	2	
CY1601	Mathematics I	CNY-Core	4	
PS0001	Introduction to Computational Thinking	C	3	
CC0002	Navigating the Digital World	CC	2	
			<b>21</b>	

**YEAR 1 SEMESTER 2**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY1007	Climate Change	CNY-Core	3	CNYS Courses
CY1602^	Mathematics II	CNY-Core	4	
MH1301	Discrete Mathematics	C	3	
MH1403^	Algorithms and Computing	C	3	PS0001
MH3100	Real Analysis I	C	4	CY1601
CC0005	Healthy Living & Mental Wellbeing in an Aging Society	CC	3	
			<b>20</b>	

**YEAR 1 SPECIAL SEMESTER**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY2003	Research Attachment 3	CNY-Core	4	CNYS Course
	Overseas Learning Trip			
			<b>4</b>	

**YEAR 2 SEMESTER 1**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0002	Ethics	CNY-Core	3	CNYS Course
MH1300	Foundations of Mathematics	C	4	
MH2500^	Probability and Introduction to Statistics	C	4	CY1601
SC2207	Introduction to Database	BDE	3	MH1403
CC0006	Sustainability: Society, Economy & Environment	CC	3	
ML0004	Career and Entrepreneurial Development for the Future World	CC	2	
			<b>19</b>	

**YEAR 2 SEMESTER 2**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYS Course
CY2001	Research Attachment 1	CNY-Core	4	CNYS Course
MH3110	Ordinary Differential Equations	C	4	CY1602
MH3511	Data Analysis with Computer	BDE	3	MH2500
XXXXXX	DA Elective 1	BDE	3	
PS0002	Introduction to Data Science and Artificial Intelligence	FC	3	
CC0007	Science & Technology for Humanity	CC	3	
			<b>23</b>	

**YEAR 3 SEMESTER 1**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
XXXXXX	School Major PE	MPE	4	
XXXXXX	School Major PE	MPE	4	
XXXXXX	School Major PE	MPE	4	
XXXXXX	DA Elective 2	BDE	3	
SC4020	Data Analytics & Mining	BDE	3	MH1403
SC4024	Data Visualization	BDE	3	PS0001 + MH2500
			<b>21</b>	

**YEAR 3 SEMESTER 2**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
XXXXXX	School Major PE	MPE	3	
XXXXXX	School Major PE	MPE	4	
XXXXXX	DA Elective 3	BDE	4	
			<b>11</b>	

**YEAR 3 SPECIAL SEMESTER & YEAR 4 SEMESTER 1**

Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MH4111	Overseas Final Year Project	C	12	CNYS Course

			<b>12</b>	
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YEAR 4 SEMESTER 2				
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Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
MH4912	Professional Internship	FC	10	
			<b>10</b>	

Total AU for Graduation : **141**

^ These courses are double-counted towards both MATH 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	MH2500	Probability & Introduction to Statistics	4	1	CY1601
Core	CY1602	Mathematics II	4	2	CY1601
BDE	MH3511	Data Analysis with Computer	3	2	MH2500
Core	MH1403	Algorithms and Computing	3	2	PS0001
BDE	SC2207	Introduction to Database	3	1,2	MH1403
BDE	SC4020	Data Analytics and Mining	3	1	MH1403
BDE	SC4024	Data Visualization	3	1	PS0001 & MH2500

Electives for Second Major in Data Analytics (choose at least 3)					
Course Type	Course Code	Course Title	AU	Offering Sem	Pre-req
BDE	SC4002	Natural Language Processing	3	1	MH1403
BDE	SC4021	Information Retrieval	3	2	MH1403
BDE	SC4022	Network Science	3	2	MH1403
BDE	MH3400	Algorithms for the Real World	4	2	MH1201 + MH1301 + MH1403 + MH2500
BDE	MH3500	Statistics	4	2	MH2500
BDE	MH3510	Regression Analysis	4	1	MH2500 + MH3500
BDE	MH3701	Basic Optimization	4	2	MH1201/MH2800/ MH2802
BDE	MH4302	Theory of Computing	4	1,2	MH1300 + MH1301 + MH1403
BDE	MH4500	Time Series Analysis	4	2	MH2500 + MH3500 + MH3510
BDE	MH4511	Sampling & Survey	4	1	MH2500 + MH3500
BDE	MH4512	Clinical Trials	4	2	MH3500 + MH3510
BDE	MH4513	Survival Analysis	4	1	MH2500 + MH3500 + MH3510
BDE	MH4702	Probabilistic Methods in OR	4	1	MH2500 + MH3701 + MH3512

List of Eligible Electives can be found at the following link: <https://www.ntu.edu.sg/engineering/admissions/ug/allprogrammes/highlights/da>