

**AY2023-24 CURRICULUM FOR PHYSICS AND APPLIED PHYSICS
WITH CN YANG SCHOLARS PROGRAMME_Internship
SECOND MAJOR IN DATA ANALYTICS (PHDA)
(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	7	27	0	5	0	3	42
2	21	13	0	8	0	4	46
3	13	0	9	0	3	21	46
4	12	0	0	0	10	0	22
Total	53	40	9	13	13	28	156

YEAR 1 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY1001	Cell	CNY-Core	3	CNYS Core 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	
PH1198	Physics Laboratory Ia	C	2	
CC0002	Navigating the Digital World	CC	2	
			23	

YEAR 1 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY1007	Climate Change	CNY-Core	3	CNYS Core Courses
CY1602^	Mathematics II	CNY-Core	4	
PH1199	Physics Laboratory Ib	C	2	
MH1403	Algorithms and Computing	BDE	3	PS0001
CC0005	Healthy Living & Mental Wellbeing in an Aging Society	CC	3	
			15	

YEAR 1 SPECIAL SEMESTER				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY2003	Research Attachment 3	CNY-Core	4	CNYS Core Course
	Overseas Learning Trip			
			4	

YEAR 2 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0002	Ethics	CNY-Core	3	CNYS Core Course
CY1307	Quantum	CNY-Core	3	Core for CNYS-PHY as it is a pre-req for advanced courses
PH2102	Electromagnetism	C	4	CY1308 + CY1601 + CY1602
PH2103	Thermal Physics	C	4	CY1308 + CY1601 + CY1602
PH2198	Physics Lab IIa	C	2	PH1198
PH1105	Optics, Vibrations and Waves	C	3	
MH2500	Probability & Introduction to Statistics	BDE	4	CY1601
ML0004	Career and Entrepreneurial Development for the Future World	CC	2	
			25	

YEAR 2 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
CY0001	Writing Across the Disciplines	CNY-Core	3	CNYS Core Course
CY2001	Research Attachment 1	CNY-Core	4	CNYS Core Course 2-semester long, course registered only in Sem 2 (similar to URECA)
PH2101	Quantum Mechanics I	C	3	CY1307 + CY1601 + CY1602
PH2199	Physics Lab IIb	C	2	PH1199
MH2801	Complex Methods for the Sciences	C	3	CY1601 + CY1602
CC0006	Sustainability: Society, Economy & Environment	CC	3	
SP0061	Science & Technology for Humanity	CC	3	
			21	

YEAR 3 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
PH2104	Analytical Mechanics	C	4	CY1308 + CY1601 + CY1602
PH3101	Quantum Mechanics II	C	4	PH2101 + MH2801
PH3103	Technological Applications of Quantum Mechanics	C	3	
PH4XXX	School Major PE	MPE	3	
SC4020	Data Analytics & Mining	BDE	3	MH1403

SC4024	Data Visualization	BDE	3	PS0001 + MH2500
XXXXXX	DA Elective 1	BDE	3	
			23	

YEAR 3 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
PH3199	Physics Laboratory IIIa	C	2	PH2198 + PH2199
PH4XXX	School Major PE	MPE	3	
PH4XXX	School Major PE	MPE	3	
PS0002	Introduction to Data Science and Artificial Intelligence	FC	3	PS0001
MH3511	Data Analysis with Computer	BDE	3	MH2500
SC2207	Introduction to Database	BDE	3	MH1403
XXXXXX	DA Elective 2	BDE	3	
XXXXXX	DA Elective 3	BDE	3	
			23	

YEAR 3 SPECIAL SEMESTER & YEAR 4 SEMESTER 1				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
PH4111	Overseas Final Year Project	C	12	CNYSF Course
			12	

YEAR 4 SEMESTER 2				
Course Code	Course Title	Type	AU	Pre-Requisite/Remarks
PH4420	Professional Internship	FC	10	
			10	

Total AU for Graduation : **156**

^ These courses are double-counted towards both PHY 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	MH2500	Probability & Introduction to Statistics	4	1	CY1601
Core	CY1602	Mathematics II	4	1	CY1601
BDE	MH3511	Data Analysis with Computer	3	2	MH2500
BDE	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

Suggested Electives for Second Major in Data Analytics					
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

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