

**CURRICULUM FOR BACHELOR OF ENGINEERING (INFORMATION ENGINEERING & MEDIA)
WITH CN YANG SCHOLARS PROGRAMME
SECOND MAJOR IN DATA ANALYTICS (IEDA)
(FIRST YEAR ADMISSION)
AY2025 Intake Onwards**

| SUMMARY OF ACADEMIC UNIT REQUIREMENT | | | | | | | | |
|--------------------------------------|--------------------|------------|-----------|--------------------------------------|--------------------------|--------------------|-----------|-----------------|
| Year of Study | Major Requirements | | | Interdisciplinary Collaborative Core | | | BDE | Total AU |
| | School Core | CNYSP-Core | MPE | CC | Professional Series (PS) | Care, Serve, Learn | | |
| 1 | 14 [3] | 23 | 0 | 2 | 3 | 0 | 0 | 42 [3] |
| 2 | 14 [9] | 6 | 0 | 8 | 0 | 3 | 4 | 35 [9] |
| 3 | 24 | 0 | 6 | 0 | 6 | 0 | 12 | 48 |
| 4 | 8 | 0 | 12 | 0 | 0 | 0 | 6 | 26 |
| Total | 60 [12] | 29 | 18 | 10 | 9 | 3 | 22 | 151 [12] |

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

| YEAR 1 SEMESTER 1 | | | | | |
|-------------------|--|----------|-----------|-----------------------|--|
| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks | |
| 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 | | |
| EG1001 | Engineers in Society | C | 2 | | |
| IE1005^ | From Computational Thinking to Programming | C | 3 | | |
| | | | 21 | | |

| YEAR 1 SEMESTER 2 | | | | | |
|-------------------|--|----------|-----------|-----------------------|--|
| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks | |
| CY1007 | Climate Change | CNY-Core | 3 | CNYSP Course | |
| IE2104 | Digital Electronics | C | 3 | | |
| IM1002 | Analog Electronics | C | 3 | | |
| IM1003 | Object-Oriented Programming | C | 3 | | |
| CC0015 | Health & Wellbeing | CC | 2 | | |
| IE0005 | Introduction to Data Science and Artificial Intelligence | PS | 3 | IE1005 | |
| | | | 17 | | |

| YEAR 1 SPECIAL SEMESTER | | | | | |
|-------------------------|------------------------|----------|----------|-----------------------|--|
| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks | |
| 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/Remarks | |
| CY0001 | Writing Across the Disciplines | CNY-Core | 3 | CNYSP Course | |
| IE5915 | Undergraduate Research | BDE | IP | Course will be registered in Semester 2. Grades will be recorded at the end of Semester 2 | |
| DA1000 | Thinking and Communicating Visually I | C | 3 | | |
| IE2106^ | Engineering Mathematics I | C | 3 | CY1602 | |
| CC0006 | Sustainability: Society, Economy & Environment | CC | 3 | | |
| ML0004 | Career Design & Workplace Readiness in the V.U.C.A. World | CC | 2 | | |
| | Tech-For-Good (T4G) | CSL | 3 | Replaces Care, Serve, Learn | |
| | | | 17 | | |

| YEAR 2 SEMESTER 2 | | | | | |
|-------------------|--|----------|----|--|--|
| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks | |
| CY0002 | Ethics | CNY-Core | 3 | CNYSP Course | |
| IE5915 | Undergraduate Research | BDE | 4 | 2-semester long, course registered only in Sem 2 | |
| IE2107^ | Engineering Mathematics II | C | 3 | CY1602 | |
| IE2108^ | Data Structure and Algorithm in Python | C | 3 | | |
| IM2073 | Introduction to Design & Project | C | 2 | | |
| SP0061 | Science & Technology for Humanity | CC | 3 | | |

| | | | |
|--|--|----|--|
| | | 18 | |
|--|--|----|--|

YEAR 3 SEMESTER 1

| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks |
|-------------|--|------|----|------------------------|
| DA2002 | Thinking and Communicating Visually II | C | 3 | DA1000 |
| IE2110 | Signals and Systems | C | 3 | CY1601+CY1602 |
| IE3017 | Computer Communications | C | 3 | IE2106 |
| IE4758 | Information Security | C | 3 | |
| | Profession Preparation | PS | 1 | |
| IE4483 | Artificial Intelligence & Data Mining | BDE | 3 | IE2107 & IE0005 |
| SC4024 | Data Visualization | BDE | 3 | IE1005 & IE2106/IE4491 |
| | Data Analytics Core | BDE | 3 | Knowledge Area 5 |
| | | | 22 | |

YEAR 3 SEMESTER 2

| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks |
|-------------|---|------|----|-----------------------|
| DA3000 | Thinking and Communicating Visually III | C | 3 | DA1000 |
| IE3012 | Communication Principles | C | 3 | |
| IE4001 | Software Engineering | C | 3 | |
| IM3180 | Design & Innovation Project | C | 3 | IM2073^ |
| | Third-Year Technical Elective | MPE | 3 | |
| | Final Year Major Prescribed Elective 1 | MPE | 3 | |
| | Data Analytics Elective 1 | BDE | 3 | |
| | | | 21 | |

YEAR 3 SPECIAL SEMESTER

| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks |
|-------------|-------------------------|------|----|-----------------------|
| IM3910 | Professional Attachment | PS | 5 | |
| | | | 5 | |

YEAR 4 SEMESTER 1

| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks |
|-------------|-----------------------------------|------|----|-----------------------|
| IM4081 | CNYSP Overseas Final Year Project | C | 8 | CNYSP Course |
| | | | 8 | |

YEAR 4 SEMESTER 2

| Course Code | Course Title | Type | AU | Pre-Requisite/Remarks |
|-------------|--|------|-----|-----------------------|
| | Final Year Major Prescribed Elective 2 | MPE | 3 | |
| | Final Year Major Prescribed Elective 3 | MPE | 3 | |
| | Final Year Major Prescribed Elective 4 | MPE | 3 | |
| | Final Year Major Prescribed Elective 5 | MPE | 3 | |
| | Data Analytics Elective 2 | BDE | 3 | |
| | Data Analytics Elective 3 | BDE | 3 | |
| | | | 18 | |
| | Total AU for Graduation: | | 151 | |

[^] These courses are double-counted towards both IEM 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/Remarks |
|-------------|-------------|--|----|--------------|--------------------------------|
| Core | IE2106 | Engineering Mathematics I | 3 | 1 | CY1602 |
| Core | IE2107 | Engineering Mathematics II | 3 | 2 | CY1602 |
| Core | IE1005 | From Computational Thinking to Programming | 3 | 1 | - |
| Core | IE2108 | Data Structures & Algorithms | 3 | 1 | - |
| BDE | BC2402 | Designing & Developing Databases | 4 | 1 | Suggested for Knowledge Area 5 |
| BDE | IE4483 | Artificial Intelligence & Data Mining | 3 | 1 | EE2107 & IE0005 |
| BDE | SC4024 | Data Visualization | 3 | 1 | IE1005 & IE2106/IE4491 |

Suggested Electives for Second Major in Data Analytics

<https://www.ntu.edu.sg/engineering/admissions/ug/allprogrammes/highlights/da>