

**CURRICULUM FOR BACHELOR OF SCIENCE (MATHEMATICAL SCIENCES)  
WITH SECOND MAJOR IN DATA ANALYTICS  
CN YANG SCHOLARS PROGRAMME  
(FIRST YEAR ADMISSION)  
AY2025 Intake Onwards**

| SUMMARY OF ACADEMIC UNIT REQUIREMENT |               |               |           |           |                     |                     |           |                 |
|--------------------------------------|---------------|---------------|-----------|-----------|---------------------|---------------------|-----------|-----------------|
| Year of Study                        | Core          | CNYSP-Core    | MPE       | CC        | Professional Series | Care, Serve & Learn | BDE       | Total AU        |
| 1                                    | 13 [3]        | 27 [4]        | 0         | 2         | 0                   | 0                   | 0         | 42 [7]          |
| 2                                    | 12 [4]        | 6             | 0         | 8         | 3                   | 3                   | 13        | 45 [4]          |
| 3                                    | 0             | 0             | 19        | 0         | 1                   | 0                   | 13        | 33              |
| 4                                    | 12            | 0             | 0         | 0         | 10                  | 0                   | 0         | 22              |
| <b>Total</b>                         | <b>37 [7]</b> | <b>33 [4]</b> | <b>19</b> | <b>10</b> | <b>14</b>           | <b>3</b>            | <b>26</b> | <b>142 [11]</b> |

[ ] 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        | Remarks |
| CY1001            | Cell                                   |  | CNYSP-Core | 3         |         |
| CY1101            | Molecule                               |  | CNYSP-Core | 4         |         |
| CY1308            | Physics                                |  | CNYSP-Core | 3         |         |
| CY1500            | Introduction to Research               |  | CNYSP-Core | 2         |         |
| CY1601            | Mathematics I                          |  | CNYSP-Core | 4         |         |
| PS0001            | Introduction to Computational Thinking |  | C          | 3         |         |
|                   |  |  |            | <b>19</b> |         |

| YEAR 1 SEMESTER 2 |                          |  |            |           |         |
|-------------------|--------------------------|--|------------|-----------|---------|
| Course Code       | Course Title             |  | Type       | AU        | Remarks |
| CY1007            | Climate Change           |  | CNYSP-Core | 3         |         |
| CY1602^           | Mathematics II           |  | CNYSP-Core | 4         |         |
| MH1301            | Discrete Mathematics     |  | C          | 3         |         |
| MH1403^           | Algorithms and Computing |  | C          | 3         | PS0001  |
| MH3100            | Real Analysis I          |  | C          | 4         | CY1601  |
| CC0015            | Health & Wellbeing       |  | CC         | 2         |         |
|                   |                          |  |            | <b>19</b> |         |

| YEAR 1 SPECIAL TERM |  |  |            |          |         |
|---------------------|--|--|------------|----------|---------|
| Course Code         | Course Title                                 |  | Type       | AU       | Remarks |
| CY2003              | Research Attachment 3 (Making and Tinkering) |  | CNYSP-Core | 4        |         |
|                     | Overseas Learning Trip                       |  |            |          |         |
|                     |  |  |            | <b>4</b> |         |

| YEAR 2 SEMESTER 1 |  |  |            |           |  |
|-------------------|--|--|------------|-----------|--|
| Course Code       | Course Title   |  | Type       | AU        | Remarks  |
| CY0001            | Writing Across The Disciplines                           |  | CNYSP-Core | 3         |  |
| MH5915            | Undergraduate Research                                   |  | BDE        | IP        | Course will be registered in Semester 2.<br>Grades will be recorded at the end of Semester 2 |
| MH1300            | Foundations of Mathematics                               |  | C          | 4         |  |
| MH2500^           | Probability and Introduction to Statistics               |  | C          | 4         | CY1601   |
| SC2207            | Introduction to Database                                 |  | BDE        | 3         | MH1403   |
|                   | Tech-For-Good  |  | CSL        | 3         |  |
| CC0006            | Sustainability: Society, Economy & Environment           |  | CC         | 3         |  |
| ML0004            | Career Design & Workplace Readiness in the V.U.C.A World |  | CC         | 2         |  |
|                   |  |  |            | <b>22</b> |  |

| YEAR 2 SEMESTER 2 |  |  |            |           |  |
|-------------------|--|--|------------|-----------|--|
| Course Code       | Course Title   |  | Type       | AU        | Remarks  |
| CY0002            | Ethics   |  | CNYSP-Core | 3         |  |
| MH5915            | Undergraduate Research                                   |  | BDE        | 4         | 2-semester long, course registered only in Sem 2 |
| 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 |  | PS         | 3         |  |
| SP0061            | Science & Technology for Humanity                        |  | CC         | 3         |  |
|                   |  |  |            | <b>23</b> |  |

| YEAR 3 SEMESTER 1 |                          |      |    |                 |
|-------------------|--------------------------|------|----|-----------------|
| Course Code       | Course Title             | Type | AU | 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 |
| MLXXXX            | Professional Preparation | PS   | 1  |                 |
|                   |                          |      | 22 |                 |

| YEAR 3 SEMESTER 2 |                 |      |    |         |
|-------------------|-----------------|------|----|---------|
| Course Code       | Course Title    | Type | AU | Remarks |
| XXXXXX            | School Major PE | MPE  | 3  |         |
| XXXXXX            | School Major PE | MPE  | 4  |         |
| XXXXXX            | DA Elective 3   | BDE  | 4  |         |
|                   |                 |      | 11 |         |

| YEAR 3 SPECIAL SEMESTER & YEAR 4 SEMESTER 1 |                             |      |    |         |
|---|-----------------------------|------|----|---------|
| Course Code                                 | Course Title                | Type | AU | Remarks |
| MH4111                                      | Overseas Final Year Project | C    | 12 |         |
|   |                             |      | 12 |         |

| YEAR 4 SEMESTER 2                  |                         |      |    |         |
|------------------------------------|-------------------------|------|----|---------|
| Course Code                        | Course Title            | Type | AU | Remarks |
| MH4912                             | Professional Internship | PS   | 10 |         |
|                                    |                         |      | 10 |         |
| Total AUs required for Graduation: |                         | 142  |    |         |

^ 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          |