

## AY2022-2023 Curriculum for Data Science & Artificial Intelligence

| Year of Study | Major     |                             | Interdisciplinary Collaborative Core |                        | Broadening and Deepening Elective | Total AU   |
|---------------|-----------|-----------------------------|--------------------------------------|------------------------|-----------------------------------|------------|
|               | Core      | Prescribed Electives (MPE)# | Common Core (CC)                     | Foundational Core (FC) |                                   |            |
| 1             | 16        | 0                           | 9                                    | 3                      | 6                                 | 34         |
| 2             | 26        | 0                           | 8                                    | 2                      | 0                                 | 36         |
| 3             | 10        | 6                           | 0                                    | 10                     | 3                                 | 29         |
| 4             | 8         | 12                          | 0                                    | 0                      | 12                                | 32         |
| <b>Total</b>  | <b>60</b> | <b>18</b>                   | <b>17</b>                            | <b>15</b>              | <b>21</b>                         | <b>131</b> |

#MPE to fulfill requirement: minimum 6 MPEs and 18AUs

### Suggested Study Plan

#### YEAR 1 SEMESTER 1

| Course Code | Course Title                                            | Type   | AU        | Pre-Requisite |
|-------------|---------------------------------------------------------|--------|-----------|---------------|
| SC1003      | Introduction to Computational Thinking & Programming    | C      | 3         | Nil           |
| MH1805      | Calculus                                                | C      | 4         | Nil           |
| MH1812      | Discrete Mathematics                                    | C      | 3         | Nil           |
| CC0001      | Inquiry and Communication in an Interdisciplinary World | C-Core | 2         | Nil           |
| CC0002      | Navigating the Digital World                            | C-Core | 2         | Nil           |
|             | Broadening & Deepening Elective                         | BDE    | 3         |               |
|             |                                                         |        | <b>17</b> |               |

#### YEAR 1 SEMESTER 2

| Course Code | Course Title                                           | Type   | AU        | Pre-Requisite |
|-------------|--------------------------------------------------------|--------|-----------|---------------|
| SC1007      | Data Structures & Algorithms                           | C      | 3         | SC1003        |
| SC2002      | Object Oriented Design and Programming                 | C      | 3         | SC1003        |
| SC1015      | Introduction to Data Science & AI                      | F-Core | 3         | SC1003        |
| CC0003      | Ethics & Moral Reasoning in a Multi-Cultural World     | C-Core | 2         | Nil           |
| CC0005      | Healthy Living & Mental Well-being in an Aging Society | C-Core | 3         | Nil           |
|             | Broadening & Deepening Elective                        | BDE    | 3         | Nil           |
|             |                                                        |        | <b>17</b> |               |

#### YEAR 2 SEMESTER 1

| Course Code | Course Title                                                | Type   | AU        | Pre-Requisite        |
|-------------|-------------------------------------------------------------|--------|-----------|----------------------|
| SC2001      | Algorithm Design and Analysis                               | C      | 3         | SC1007, MH1812       |
| SC2006      | Software Engineering                                        | C      | 3         | SC2002 (Corequisite) |
| MH2500      | Probability and Introduction to Statistics                  | C      | 4         | MH1805               |
| MH2802      | Linear Algebra for Scientists                               | C      | 3         | Nil                  |
| CC0006      | Sustainability: Society, Economy & Environment              | C-Core | 3         | Nil                  |
| ML0004      | Career and Entrepreneurial Development for the Future World | C-Core | 2         | Nil                  |
|             |                                                             |        | <b>18</b> |                      |

#### YEAR 2 SEMESTER 2

| Course Code | Course Title                      | Type   | AU        | Pre-Requisite          |
|-------------|-----------------------------------|--------|-----------|------------------------|
| SC2207      | Introduction to Database Systems  | C      | 3         | SC2001 (Corequisite)   |
| SC3000      | Artificial Intelligence           | C      | 3         | SC1007, SC1015, MH2500 |
| MH3500      | Statistics                        | C      | 4         | MH2500                 |
| MH3511      | Data Analysis with Computer       | C      | 3         | MH2500                 |
| HW0218      | Communication Across the Sciences | F-Core | 2         | CC0001                 |
| CC0007      | Science & Technology for Humanity | C-Core | 3         | Nil                    |
|             |                                   |        | <b>18</b> |                        |

| YEAR 3 SEMESTER 1 |                                 |      |    |                 |
|-------------------|---------------------------------|------|----|-----------------|
| Course Code       | Course Title                    | Type | AU | Pre-Requisite   |
| SC4000            | Machine Learning                | C    | 3  | SC1007, MH2802  |
| SC4020            | Data Analytics and Mining       | C    | 3  | SC2001          |
| MH2100            | Calculus III                    | C    | 4  | MH1805          |
| MH/SC4xxx         | Major Prescribed Elective       | MPE  | 6  | Year 3 standing |
|                   | Broadening & Deepening Elective | BDE  | 3  | Nil             |
|                   |                                 |      | 19 |                 |

| YEAR 3 SEMESTER 2 |                         |        |    |                 |
|-------------------|-------------------------|--------|----|-----------------|
| Course Code       | Course Title            | Type   | AU | Pre-Requisite   |
| SD3079            | Professional Internship | F-Core | 10 | Year 3 standing |
|                   |                         |        | 10 |                 |

| YEAR 4 SEMESTER 1 |                                 |      |    |                 |
|-------------------|---------------------------------|------|----|-----------------|
| Course Code       | Course Title                    | Type | AU | Pre-Requisite   |
| SC4079            | Final Year Project              | C    | 4  | Year 4 standing |
| MH/SC4xxx         | Major Prescribed Elective       | MPE  | 6  | Year 3 standing |
|                   | Broadening & Deepening Elective | BDE  | 6  |                 |
|                   |                                 |      | 16 |                 |

| YEAR 4 SEMESTER 2 |                                 |      |    |                 |
|-------------------|---------------------------------|------|----|-----------------|
| Course Code       | Course Title                    | Type | AU | Pre-Requisite   |
| SC4079            | Final Year Project              | C    | 4  | Year 4 standing |
| MH/SC4xxx         | Major Prescribed Elective       | MPE  | 6  | Year 3 standing |
|                   | Broadening & Deepening Elective | BDE  | 6  |                 |
|                   |                                 |      | 16 |                 |