

**BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)**

AY2022 - 2023 Intake onwards

with Professional Internship

| Programme                          | Year of Study | Number of Academic Units (AU) |                |                   |                        |  | Total |
|------------------------------------|---------------|-------------------------------|----------------|-------------------|------------------------|--|-------|
|                                    |               | Major Requirement             |                | Interdisciplinary |                        | Broadening and Deepening Electives (BDE) |       |
|                                    |               | Core (C)                      | Major PE (MPE) | Common Core (CC)  | Foundational Core (FC) |  |       |
| Chemistry and Biological Chemistry | 1             | 17                            |                | 9                 |                        | 8  | 34    |
|                                    | 2             | 21                            |                | 8                 | 3                      | 6  | 38    |
|                                    | 3             | 18                            |                |                   | 2                      | 21                                       | 41    |
|                                    | 4             |                               | 12             |                   | 10                     | 6  | 28    |
|                                    | Total         | 56                            | 12             | 17                | 15                     | 41                                       | 141   |

**BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)**

| Category  | AU   | Total AU |    |
|---|--|----------|----|
| Interdisciplinary Collaborative Core (ICC)                      | <b>Common Core (University-level)</b>                              |          |    |
|   | CC0001 Inquiry and Communication in the Interdisciplinary World    | 2        | 17 |
|   | CC0002 Navigating the Digital World                                | 2        |    |
|   | CC0003 Ethics & Civics in a Multi-Cultural World                   | 2        |    |
|   | CC0005 Healthy Living & Wellbeing                                  | 3        |    |
|   | CC0006 Sustainability: Society, Economy & Environment              | 3        |    |
|   | CC0007 Science & Technology for Humanity                           | 3        |    |
|   | ML0004 Career and Entrepreneurial Development for the Future World | 2        |    |
|   | <b>Foundational Core (College-level)</b>                           |          |    |
|   | HW0218 Communication Across the Sciences                           | 2        |    |
| PS0002 Introduction to Data Science and Artificial Intelligence | 3  |          |    |
| CM4081 Professional Internship                                  | 10   |          |    |

| Major Requirement   | AU | Total AU |    |
|---|----|----------|----|
| <b>CHEM Core</b>  |    |          |    |
| CM1001 Foundations of Chemistry I                                 | 4  | 56       |    |
| CM1002 Foundations of Chemistry II                                | 4  |          |    |
| MH1802 Calculus for the Sciences                                  | 4  |          |    |
| MH1804 Mathematics for Chemistry                                  | 2  |          |    |
| PH1801 Foundations of Physics I                                   | 3  |          |    |
| CM2021 Inorganic and Bioinorganic Chemistry                       | 3  |          |    |
| CM2011 Analytical Chemistry                                       | 3  |          |    |
| CM2061 Chemistry & Biological Chemistry Laboratory 1              | 3  |          |    |
| PS0001 Introduction to Computational Thinking                     | 3  |          |    |
| CM2031 Organic and Bioorganic Chemistry                           | 3  |          |    |
| CM2041 Physical and Biophysical Chemistry 1                       | 3  |          |    |
| CM2062 Chemistry & Biological Chemistry Laboratory 2              | 3  |          |    |
| CM3011 <sup>&amp;</sup> Chemical Spectroscopy and Applications    | 3  |          |    |
| CM3041 <sup>&amp;</sup> Physical and Biophysical Chemistry 2      | 3  |          |    |
| CM3062 Chemistry & Biological Chemistry Laboratory 4              | 3  |          |    |
| CM3031 <sup>&amp;</sup> Organic Reaction Mechanisms and Synthesis | 3  |          |    |
| CM3021 <sup>&amp;</sup> Organometallic Chemistry                  | 3  |          |    |
| CM3061 Chemistry & Biological Chemistry Laboratory 3              | 3  |          |    |
| <b>CHEM Major Prescribed Electives (MPE)</b>                      |    |          |    |
| 4 x MPEs  | 12 |          | 12 |

|   |   |   |            |  |
|---|---|---|------------|--|
| 2nd Major in<br>Environmental<br>Science (CHES)                     | <b>Environmental Science Compulsory Courses</b>         |   |            |  |
|   | 1) ES1001 E2S2 Environment and Society                  | 4 | 32         |  |
|   | 2) ES2003 E2S2 Biosphere                                | 4 |            |  |
|   | 3) ES3003 Introduction to Geochemistry                  | 3 |            |  |
|   | 4) ES5001 Natural Hazards, Climate Change and Society   | 3 |            |  |
|   | 5) ES5006 Environmental Sustainability                  | 3 |            |  |
|   | <b>Choose 5 Courses from the following list</b>         |   |            |  |
|   | 1) ES1007 Climate Change                                | 3 |            |  |
|   | 2) ES3801 Biogeochemistry                               | 3 |            |  |
|   | 3) ES3802 The Urban Environment: Issue, Assessment, and | 3 |            |  |
|   | 4) ES5002 Emergent Life                                 | 3 |            |  |
|   | 5) ES5003 Blue Planet: How the Oceans Work              | 3 |            |  |
|   | 6) ES5005 Environmental Earth Systems Science           | 3 |            |  |
|   | 7) ES9003 The Genome and Society                        | 3 |            |  |
| 8) EM5101 Environmental Quality                                     | 3   |   |            |  |
| 9) EM5103 Water Resource Management                                 | 3   |   |            |  |
| 10) EM5104 Air Quality Management                                   | 3   |   |            |  |
| 11) EM5105 Energy Resources Management                              | 3   |   |            |  |
| 12) EM 5107 Environmental Health and Safety Management              | 3   |   |            |  |
| 13) EM5109 Environmental Issues and Sustainability                  | 3   |   |            |  |
| <i>Students are responsible to plan for their 2nd major courses</i> |   |   |            |  |
| BDE   | Any 3 BDE   | 9 | 9          |  |
| <b>Total</b>  |   |   | <b>141</b> |  |

&CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

| <b>BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)</b> |   |      |                          |                         |   |                   |            |
|---|---|------|--------------------------|-------------------------|---|-------------------|------------|
| <b>Suggested Study Plan for AY2022-2023 intake</b>  |   |      |                          |                         |   |                   |            |
| <i>with Professional Internship</i>   |   |      |                          |                         |   |                   |            |
| <b>Year 1 Semester 1</b>  |   |      | <b>Year 1 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM1001  | Foundations of Chemistry I                              | C    | 4                        | CM1002                  | Foundations of Chemistry II                                 | C                 | 4          |
| MH1802  | Calculus for the Sciences                               | C    | 4                        | MH1804                  | Mathematics for Chemistry                                   | C                 | 2          |
| CC0001  | Inquiry and Communication in an interdisciplinary World | CC   | 2                        | PH1801                  | Foundations of Physics I                                    | C                 | 3          |
| CC0002  | Navigating the Digital World                            | CC   | 2                        | CC0003                  | Ethics & Civics in a Multi-Cultural World                   | CC                | 2          |
| ES1001  | E2S2 Environment and Society                            | BDE  | 4                        | CC0005                  | Healthy Living & Wellbeing                                  | CC                | 3          |
| ES2003  | E2S2 Biosphere  | BDE  | 4                        | ES2003                  | E2S2 Biosphere  | BDE               | 4          |
| HW0001  | <i>Introduction to Academic Communication*</i>          |      |                          |                         |   |                   |            |
|   |   |      | <b>16</b>                |                         |   |                   | <b>18</b>  |
| <i>*for students who have not cleared QET</i>   |   |      |                          |                         |   |                   |            |
| <b>Year 2 Semester 1</b>  |   |      | <b>Year 2 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM2011  | Analytical and Bioanalytical Chemistry                  | C    | 3                        | CM2031                  | Organic and Bioorganic Chemistry                            | C                 | 3          |
| CM2021  | Inorganic and Bioinorganic Chemistry                    | C    | 3                        | CM2041                  | Physical and Biophysical Chemistry 1                        | C                 | 3          |
| CM2061  | Chemistry & Biological Chemistry Laboratory 1           | C    | 3                        | CM2062                  | Chemistry & Biological Chemistry Laboratory 2               | C                 | 3          |
| PS0001  | Introduction to Computational Thinking                  | C    | 3                        | PS0002                  | Introduction to Data Science and Artificial Intelligence    | FC                | 3          |
| CC0006  | Sustainability: Society, Economy & Environment          | CC   | 3                        | ML0004                  | Career and Entrepreneurial Development for the Future World | CC                | 2          |
| CC0007  | Science & Technology for Humanity                       | CC   | 3                        | ES5006                  | Environmental Sustainability                                | BDE               | 3          |
| ES5001  | Natural Hazards, Climate Change and Society             | BDE  | 3                        |                         |   |                   |            |
|   |   |      | <b>21</b>                |                         |   |                   | <b>17</b>  |
| <b>Year 3 Semester 1</b>  |   |      | <b>Year 3 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core   | C    | 3                        | CM3xxx <sup>&amp;</sup> | CHEM-Core   | C                 | 3          |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core   | C    | 3                        | CM3xxx <sup>&amp;</sup> | CHEM-Core   | C                 | 3          |
| CM3062  | Chemistry & Biological Chemistry Laboratory 4           | C    | 3                        | CM3061                  | Chemistry & Biological Chemistry Laboratory 3               | C                 | 3          |
| ES3003  | Introduction to Geochemistry                            | BDE  | 3                        |                         | CHES Elective 3   | BDE               | 3          |
|   | CHES Elective 1   | BDE  | 3                        |                         | CHES Elective 4   | BDE               | 3          |
|   | CHES Elective 2   | BDE  | 3                        |                         | CHES Elective 5   | BDE               | 3          |
|   | BDE 1   | BDE  | 3                        | HW0218                  | Communication Across the Sciences                           | FC                | 2          |
|   |   |      | <b>21</b>                |                         |   |                   | <b>20</b>  |
| <b>Year 4 Semester 1</b>  |   |      | <b>Year 4 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM4081  | Professional Internship                                 | FC   | 10                       |                         | CHEM MPE1   | MPE               | 3          |
|   |   |      |                          |                         | CHEM MPE2   | MPE               | 3          |
|   |   |      |                          |                         | CHEM MPE3   | MPE               | 3          |
|   |   |      |                          |                         | CHEM MPE4   | MPE               | 3          |
|   |   |      |                          |                         | BDE 2   | BDE               | 3          |
|   |   |      |                          |                         | BDE 3   | BDE               | 3          |
|   |   |      | <b>10</b>                |                         |   |                   | <b>18</b>  |
|   |   |      |                          |                         |   | <b>Total (AU)</b> | <b>141</b> |

*This study plan is meant as a guide.*

<sup>&</sup> CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters

**BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)**  
 AY2022 - 2023 Intake onwards  
*FYP with Professional Attachment*

| Programme                          | Year of Study | Number of Academic Units (AU) |                |                   |                        |  | Total |
|------------------------------------|---------------|-------------------------------|----------------|-------------------|------------------------|--|-------|
|                                    |               | Major Requirement             |                | Interdisciplinary |                        | Broadening and Deepening Electives (BDE) |       |
|                                    |               | Core (C)                      | Major PE (MPE) | Common Core (CC)  | Foundational Core (FC) |  |       |
| Chemistry and Biological Chemistry | 1             | 17                            |                | 9                 |                        | 8  | 34    |
|                                    | 2             | 21                            |                | 8                 | 3                      | 6  | 38    |
|                                    | 3             | 18                            |                |                   | 7                      | 20                                       | 45    |
|                                    | 4             |                               | 22             |                   |                        | 2  | 24    |
|                                    | Total         | 56                            | 22             | 17                | 10                     | 36                                       | 141   |

**BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)**

| Category  | AU | Total AU |
|---|----|----------|
| <b>Common Core (University-level)</b>                           |    |          |
| CC0001 Inquiry and Communication in the Interdisciplinary World | 2  | 17       |
| CC0002 Navigating the Digital World                             | 2  |          |
| CC0003 Ethics & Civics in a Multi-Cultural World                | 2  |          |
| CC0005 Healthy Living & Wellbeing                               | 3  |          |
| CC0006 Sustainability: Society, Economy & Environment           | 3  |          |
| CC0007 Science & Technology for Humanity                        | 3  |          |
| ML0004 Career and Entrepreneurial Development for the Future    | 2  |          |
| <b>Foundational Core (College-level)</b>                        |    |          |
| HW0218 Communication Across the Sciences                        | 2  | 10       |
| PS0002 Introduction to Data Science and Artificial Intelligence | 3  |          |
| CM4082 Professional Attachment                                  | 5  |          |

| Major Requirement   | AU | Total AU |    |
|---|----|----------|----|
| <b>CHEM Core</b>  |    |          |    |
| CM1001 Foundations of Chemistry I                                 | 4  | 56       |    |
| CM1002 Foundations of Chemistry II                                | 4  |          |    |
| MH1802 Calculus for the Sciences                                  | 4  |          |    |
| MH1804 Mathematics for Chemistry                                  | 2  |          |    |
| PH1801 Foundations of Physics I                                   | 3  |          |    |
| CM2021 Inorganic and Bioinorganic Chemistry                       | 3  |          |    |
| CM2011 Analytical Chemistry                                       | 3  |          |    |
| CM2061 Chemistry & Biological Chemistry Laboratory 1              | 3  |          |    |
| PS0001 Introduction to Computational Thinking                     | 3  |          |    |
| CM2031 Organic and Bioorganic Chemistry                           | 3  |          |    |
| CM2041 Physical and Biophysical Chemistry 1                       | 3  |          |    |
| CM2062 Chemistry & Biological Chemistry Laboratory 2              | 3  |          |    |
| CM3011 <sup>&amp;</sup> Chemical Spectroscopy and Applications    | 3  |          |    |
| CM3041 <sup>&amp;</sup> Physical and Biophysical Chemistry 2      | 3  |          |    |
| CM3062 Chemistry & Biological Chemistry Laboratory 4              | 3  |          |    |
| CM3031 <sup>&amp;</sup> Organic Reaction Mechanisms and Synthesis | 3  |          |    |
| CM3021 <sup>&amp;</sup> Organometallic Chemistry                  | 3  |          |    |
| CM3061 Chemistry & Biological Chemistry Laboratory 3              | 3  |          |    |
| <b>CHEM Major Prescribed Electives (MPE)</b>                      |    |          |    |
| CM4080 Honours Project 1  | 10 |          | 22 |
| 4 x MPEs  | 12 |          |    |

|   |  |   |            |  |
|---|--|---|------------|--|
| 2nd Major in Environmental Science (CHES)                           | <b>Environmental Science Compulsory Courses</b>                    |   |            |  |
|   | 1) ES1001 E2S2 Environment and Society                             | 4 | 32         |  |
|   | 2) ES2003 E2S2 Biosphere   | 4 |            |  |
|   | 3) ES3003 Introduction to Geochemistry                             | 3 |            |  |
|   | 4) ES5001 Natural Hazards, Climate Change and Society              | 3 |            |  |
|   | 5) ES5006 Environmental Sustainability                             | 3 |            |  |
|   | <b>Choose 5 Courses from the following list</b>                    |   |            |  |
|   | 1) ES1007 Climate Change   | 3 |            |  |
|   | 2) ES3801 Biogeochemistry  | 3 |            |  |
|   | 3) ES3802 The Urban Environment: Issue, Assessment, and Management | 3 |            |  |
|   | 4) ES5002 Emergent Life  | 3 |            |  |
|   | 5) ES5003 Blue Planet: How the Oceans Work                         | 3 |            |  |
|   | 6) ES5005 Environmental Earth Systems Science                      | 3 |            |  |
|   | 7) ES9003 The Genome and Society                                   | 3 |            |  |
| 8) EM5101 Environmental Quality                                     | 3  |   |            |  |
| 9) EM5103 Water Resource Management                                 | 3  |   |            |  |
| 10) EM5104 Air Quality Management                                   | 3  |   |            |  |
| 11) EM5105 Energy Resources Management                              | 3  |   |            |  |
| 12) EM 5107 Environmental Health and Safety Management              | 3  |   |            |  |
| 13) EM5109 Environmental Issues and Sustainability                  | 3  |   |            |  |
| <i>Students are responsible to plan for their 2nd major courses</i> |  |   |            |  |
| BDE   | Any 2 BDE  | 4 | 4          |  |
| <b>Total</b>  |  |   | <b>141</b> |  |

&CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

| <b>BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES)</b> |   |      |                          |                         |   |                   |            |
|---|---|------|--------------------------|-------------------------|---|-------------------|------------|
| <b>Suggested Study Plan for AY2022-2023 intake</b>  |   |      |                          |                         |   |                   |            |
| <i>FYP with Professional Attachment Option</i>  |   |      |                          |                         |   |                   |            |
| <b>Year 1 Semester 1</b>  |   |      | <b>Year 1 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM1001  | Foundations of Chemistry I                              | C    | 4                        | CM1002                  | Foundations of Chemistry II                                 | C                 | 4          |
| MH1802  | Calculus for the Sciences                               | C    | 4                        | MH1804                  | Mathematics for Chemistry                                   | C                 | 2          |
| CC0001  | Inquiry and Communication in an interdisciplinary World | CC   | 2                        | PH1801                  | Foundations of Physics I                                    | C                 | 3          |
| CC0002  | Navigating the Digital World                            | CC   | 2                        | CC0003                  | Ethics & Civics in a Multi-Cultural World                   | CC                | 2          |
| ES1001  | E2S2 Environment and Society                            | BDE  | 4                        | CC0005                  | Healthy Living & Wellbeing                                  | CC                | 3          |
|   |   |      |                          | ES2003                  | E2S2 Biosphere  | BDE               | 4          |
| HW0001  | <i>Introduction to Academic Communication*</i>          |      |                          |                         |   |                   |            |
|   |   |      | <b>16</b>                |                         |   |                   | <b>18</b>  |
| <i>*for students who have not cleared QET</i>   |   |      |                          |                         |   |                   |            |
| <b>Year 2 Semester 1</b>  |   |      | <b>Year 2 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM2011  | Analytical and Bioanalytical Chemistry                  | C    | 3                        | CM2031                  | Organic and Bioorganic Chemistry                            | C                 | 3          |
| CM2021  | Inorganic and Bioinorganic Chemistry                    | C    | 3                        | CM2041                  | Physical and Biophysical Chemistry 1                        | C                 | 3          |
| CM2061  | Chemistry & Biological Chemistry Laboratory 1           | C    | 3                        | CM2062                  | Chemistry & Biological Chemistry Laboratory 2               | C                 | 3          |
| PS0001  | Introduction to Computational Thinking                  | C    | 3                        | PS0002                  | Introduction to Data Science and Artificial Intelligence    | FC                | 3          |
| CC0006  | Sustainability: Society, Economy & Environment          | CC   | 3                        | ML0004                  | Career and Entrepreneurial Development for the Future World | CC                | 2          |
| CC0007  | Science & Technology for Humanity                       | CC   | 3                        | ES5006                  | Environmental Sustainability                                | BDE               | 3          |
| ES5001  | Natural Hazards, Climate Change and Society             | BDE  | 3                        |                         |   |                   |            |
|   |   |      | <b>21</b>                |                         |   |                   | <b>17</b>  |
| <b>Year 3 Semester 1</b>  |   |      | <b>Year 3 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core   | C    | 3                        | CM3xxx <sup>&amp;</sup> | CHEM-Core   | C                 | 3          |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core   | C    | 3                        | CM3xxx <sup>&amp;</sup> | CHEM-Core   | C                 | 3          |
| CM3062  | Chemistry & Biological Chemistry Laboratory 4           | C    | 3                        | CM3061                  | Chemistry & Biological Chemistry Laboratory 3               | C                 | 3          |
| ES3003  | Introduction to Geochemistry                            | BDE  | 3                        |                         | CHES Elective 3   | BDE               | 3          |
|   | CHES Elective 1   | BDE  | 3                        |                         | CHES Elective 4   | BDE               | 3          |
|   | CHES Elective 2   | BDE  | 3                        |                         | CHES Elective 5   | BDE               | 3          |
|   | BDE 1   | BDE  | 2                        | HW0218                  | Communication Across the Sciences                           | FC                | 2          |
|   |   |      | <b>20</b>                |                         |   |                   | <b>25</b>  |
| <b>Year 3 Special Sem</b>   |   |      |                          |                         |   |                   |            |
|   |   |      |                          | CM4082                  | Professional Attachment                                     | FC                | 5          |
|   |   |      | <b>20</b>                |                         |   |                   | <b>25</b>  |
| <b>Year 4 Semester 1</b>  |   |      | <b>Year 4 Semester 2</b> |                         |   |                   |            |
| Course  |   | Type | AU                       | Course                  | Type  | AU                |            |
|   | CHEM MPE1   | MPE  | 3                        | CM4080                  | Honours Project 1   | MPE               | 10         |
|   | CHEM MPE2   | MPE  | 3                        |                         | BDE 2   | BDE               | 2          |
|   | CHEM MPE3   | MPE  | 3                        |                         |   |                   |            |
|   | CHEM MPE4   | MPE  | 3                        |                         |   |                   |            |
|   |   |      | <b>12</b>                |                         |   |                   | <b>12</b>  |
|   |   |      |                          |                         |   | <b>Total (AU)</b> | <b>141</b> |

*This study plan is meant as a guide.*

<sup>&</sup> CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters

| <b>BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (CHFS)</b> |  |                               |                |                   |                        |  |          |
|---|--|-------------------------------|----------------|-------------------|------------------------|--|----------|
| AY2022 - 2023 Intake onwards<br>with Professional Internship and FYP                                  |  |                               |                |                   |                        |  |          |
| Programme   | Year of Study  | Number of Academic Units (AU) |                |                   |                        |  | Total    |
|   |  | Major Requirement             |                | Interdisciplinary |                        | Broadening and Deepening Electives (BDE) |          |
|   |  | Core (C)                      | Major PE (MPE) | Common Core (CC)  | Foundational Core (FC) |  |          |
| Chemistry and Biological Chemistry  | 1  | 20                            |                | 11                |                        |  | 31       |
|   | 2  | 18                            |                | 6                 | 3                      | 14                                       | 41       |
|   | 3  | 18                            | 6              |                   | 2                      | 16                                       | 42       |
|   | 4  |                               | 16             |                   | 10                     |  | 26       |
|   | Total  | 56                            | 22             | 17                | 15                     | 30                                       | 140      |
| <b>BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (FST)</b>  |  |                               |                |                   |                        |  |          |
| Category  |  |                               |                |                   |                        | AU                                       | Total AU |
| Interdisciplinary Collaborative Core (ICC)  | <b>Common Core (University-level)</b>                              |                               |                |                   |                        |  |          |
|   | CC0001 Inquiry and Communication in the Interdisciplinary World    |                               |                |                   |                        | 2  | 17       |
|   | CC0002 Navigating the Digital World                                |                               |                |                   |                        | 2  |          |
|   | CC0003 Ethics & Civics in a Multi-Cultural World                   |                               |                |                   |                        | 2  |          |
|   | CC0005 Healthy Living & Wellbeing                                  |                               |                |                   |                        | 3  |          |
|   | CC0006 Sustainability: Society, Economy & Environment              |                               |                |                   |                        | 3  |          |
|   | CC0007 Science & Technology for Humanity                           |                               |                |                   |                        | 3  |          |
|   | ML0004 Career and Entrepreneurial Development for the Future World |                               |                |                   |                        | 2  |          |
|   | <b>Foundational Core (College-level)</b>                           |                               |                |                   |                        |  |          |
|   | HW0218 Communication Across the Sciences                           |                               |                |                   |                        | 2  | 15       |
| PS0002 Introduction to Data Science and Artificial Intelligence                                       |  |                               |                |                   | 3                      |  |          |
| CM4081 Professional Internship  |  |                               |                |                   | 10                     |  |          |
| Major Requirement   | <b>CHEM Core</b>   |                               |                |                   |                        |  |          |
|   | CM1001 Foundations of Chemistry I                                  |                               |                |                   |                        | 4  | 56       |
|   | CM1002 Foundations of Chemistry II                                 |                               |                |                   |                        | 4  |          |
|   | MH1802 Calculus for the Sciences                                   |                               |                |                   |                        | 4  |          |
|   | MH1804 Mathematics for Chemistry                                   |                               |                |                   |                        | 2  |          |
|   | PH1801 Foundations of Physics I                                    |                               |                |                   |                        | 3  |          |
|   | CM2021 Inorganic and Bioinorganic Chemistry                        |                               |                |                   |                        | 3  |          |
|   | CM2011 Analytical Chemistry  |                               |                |                   |                        | 3  |          |
|   | CM2061 Chemistry & Biological Chemistry Laboratory 1               |                               |                |                   |                        | 3  |          |
|   | PS0001 Introduction to Computational Thinking                      |                               |                |                   |                        | 3  |          |
|   | CM2031 Organic and Bioorganic Chemistry                            |                               |                |                   |                        | 3  |          |
|   | CM2041 Physical and Biophysical Chemistry 1                        |                               |                |                   |                        | 3  |          |
|   | CM2062 Chemistry & Biological Chemistry Laboratory 2               |                               |                |                   |                        | 3  |          |
|   | CM3011 <sup>&amp;</sup> Chemical Spectroscopy and Applications     |                               |                |                   |                        | 3  |          |
|   | CM3041 <sup>&amp;</sup> Physical and Biophysical Chemistry 2       |                               |                |                   |                        | 3  |          |
|   | CM3062 Chemistry & Biological Chemistry Laboratory 4               |                               |                |                   |                        | 3  |          |
|   | CM3031 <sup>&amp;</sup> Organic Reaction Mechanisms and Synthesis  |                               |                |                   |                        | 3  |          |
|   | CM3021 <sup>&amp;</sup> Organometallic Chemistry                   |                               |                |                   |                        | 3  |          |
|   | CM3061 Chemistry & Biological Chemistry Laboratory 3               |                               |                |                   |                        | 3  |          |
|   | <b>CHEM Major Prescribed Electives (MPE)</b>                       |                               |                |                   |                        |  |          |
| CM4080 Honours Project 1  |  |                               |                |                   | 10                     | 22                                       |          |
| 4 x MPEs  |  |                               |                |                   | 12                     |  |          |
| 2nd Major in Food Science and Technology (FST)  | <b>Food Science and Technology Compulsory Courses</b>              |                               |                |                   |                        |  |          |
|   | 1) CH5201 Food Chemistry   |                               |                |                   |                        | 5  | 30       |
|   | 2) CH5200 Food Microbiology  |                               |                |                   |                        | 3  |          |
|   | 3) CH5203 Food Process Engineering                                 |                               |                |                   |                        | 5  |          |
|   | 4) CH5202 Food Physics   |                               |                |                   |                        | 3  |          |
|   | 5) CH5204 Quality Systems Operations                               |                               |                |                   |                        | 2  |          |
| 6) NTU-FST MPE x 4  |  |                               |                |                   | 12                     |  |          |
| <b>Total</b>  |  |                               |                |                   |                        | <b>140</b>                               |          |

&CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

| <b>BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (CHFS)</b> |  |      |           |                          |   |                   |            |
|---|--|------|-----------|--------------------------|---|-------------------|------------|
| <b>Suggested Study Plan for AY2022-2023 intake</b>  |  |      |           |                          |   |                   |            |
| <i>with Professional Internship and FYP</i>   |  |      |           |                          |   |                   |            |
| <b>Year 1 Semester 1</b>  |  |      |           | <b>Year 1 Semester 2</b> |   |                   |            |
| Course  |  | Type | AU        | Course                   |   | Type              | AU         |
| CM1001  | Foundations of Chemistry I                               | C    | 4         | CM1002                   | Foundations of Chemistry II                                 | C                 | 4          |
| MH1802  | Calculus for the Sciences                                | C    | 4         | MH1804                   | Mathematics for Chemistry                                   | C                 | 2          |
| CC0001  | Inquiry and Communication in the Interdisciplinary World | CC   | 2         | PH1801                   | Foundations of Physics I                                    | C                 | 3          |
| CC0002  | Navigating the Digital World                             | CC   | 2         | CC0003                   | Ethics & Civics in a Multi-Cultural World                   | CC                | 2          |
| CC0005  | Healthy Living & Well-being                              | CC   | 3         | ML0004                   | Career and Entrepreneurial Development for the Future World | CC                | 2          |
| HW0001  | <i>Introduction to Academic Communication*</i>           |      |           |                          |   |                   |            |
|   |  |      | <b>15</b> |                          |   |                   | <b>13</b>  |
| <i>*for students who have not cleared QET</i>   |  |      |           |                          |   |                   |            |
| <b>Year 2 Semester 1</b>  |  |      |           | <b>Year 2 Semester 2</b> |   |                   |            |
| Course  |  | Type | AU        | Course                   |   | Type              | AU         |
| CM2011  | Analytical and Bioanalytical Chemistry                   | C    | 3         | CM2031                   | Organic and Bioorganic Chemistry                            | C                 | 3          |
| CM2021  | Inorganic and Bioinorganic Chemistry                     | C    | 3         | CM2041                   | Physical and Biophysical Chemistry 1                        | C                 | 3          |
| CM2061  | Chemistry & Biological Chemistry Laboratory 1            | C    | 3         | CM2062                   | Chemistry & Biological Chemistry Laboratory 2               | C                 | 3          |
| PS0001  | Introduction to Computational Thinking                   | C    | 3         | PS0002                   | Introduction to Data Science and Artificial Intelligence    | FC                | 3          |
| CC0006  | Sustainability: Society, Economy & Environment           | CC   | 3         | CC0007                   | Science & Technology for Humanity                           | CC                | 3          |
| CH5201  | Food Chemistry   | BDE  | 5         | CH5200                   | Food Microbiology   | BDE               | 3          |
|   |  |      |           |                          | NTU-FST Prescribed Elective                                 | BDE               | 3          |
|   |  |      | <b>20</b> |                          |   |                   | <b>21</b>  |
| <b>Year 3 Semester 1</b>  |  |      |           | <b>Year 3 Semester 2</b> |   |                   |            |
| Course  |  | Type | AU        | Course                   |   | Type              | AU         |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core  | C    | 3         | CM3xxx <sup>&amp;</sup>  | CHEM-Core   | C                 | 3          |
| CM3xxx <sup>&amp;</sup>   | CHEM-Core  | C    | 3         | CM3xxx <sup>&amp;</sup>  | CHEM-Core   | C                 | 3          |
| CM3041  | Physical and Biophysical Chemistry 2                     | C    | 3         | CH5202                   | Food Physics  | BDE               | 3          |
| CM3062  | Chemistry & Biological Chemistry Laboratory 4            | C    | 3         | CH5204                   | Quality Systems Operations                                  | BDE               | 2          |
| CH5203  | Food Process Engineering                                 | BDE  | 5         | HW0218                   | Communication Across the Sciences                           | FC                | 2          |
|   | NTU-FST Prescribed Elective                              | BDE  | 3         |                          | NTU-FST Prescribed Elective                                 | BDE               | 3          |
|   |  |      |           |                          | NTU-FST Prescribed Elective                                 | BDE               | 3          |
|   |  |      |           |                          | CHEM MPE 1  | MPE               | 3          |
|   |  |      | <b>20</b> |                          |   |                   | <b>22</b>  |
| <b>Year 4 Semester 1</b>  |  |      |           | <b>Year 4 Semester 2</b> |   |                   |            |
| Course  |  | Type | AU        | Course                   |   | Type              | AU         |
| CM4081  | Professional Internship                                  | FC   | 10        | CM4080                   | Honours Project 1   | MPE               | 10         |
|   |  |      |           |                          | CHEM MPE 2  | MPE               | 3          |
|   |  |      |           |                          | CHEM MPE 3  | MPE               | 3          |
|   |  |      |           |                          | CHEM MPE 4  | MPE               | 3          |
|   |  |      | <b>10</b> |                          |   |                   | <b>19</b>  |
|   |  |      |           |                          |   | <b>Total (AU)</b> | <b>140</b> |

*This study plan is meant as a guide.*

<sup>&</sup> CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters