

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

AY2023 - 2024 Intake onwards

with Professional Internship

| Programme | Year of Study | Number of Academic Units (AU) | | | | | Broadening and Deepening Electives (BDE) | Total |
|------------------------------------|---------------|-------------------------------|----------------|-------------------|------------------------|----|--|-------|
| | | Major Requirement | | Interdisciplinary | | | | |
| | | Core (C) | Major PE (MPE) | Common Core (CC) | Foundational Core (FC) | | | |
| Chemistry and Biological Chemistry | 1 | 17/18* | | 9 | | 6 | 32/33* | |
| | 2 | 21 | | 8 | 3 | 9 | 41 | |
| | 3 | 18 | | | 2 | 21 | 41 | |
| | 4 | | 12 | | 10 | 6 | 28 | |
| | Total | 56/57* | 12 | 17 | 15 | 42 | 142/143* | |

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

| Category | | AU | Total AU |
|--|---|---------------------------------|----------|
| Interdisciplinary Collaborative Core (ICC) | Common Core (University-level) CC0001 Inquiry and Communication in the Interdisciplinary World CC0002 Navigating the Digital World CC0003 Ethics & Civics in a Multi-Cultural World CC0005 Healthy Living & Wellbeing CC0006 Sustainability: Society, Economy & Environment CC0007 Science & Technology for Humanity ML0004 Career and Entrepreneurial Development for the Future World | 2 2 2 3 3 3 2 | 17 |
| | Foundational Core (College-level) HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artificial Intelligence CM4081 Professional Internship | 2 3 10 | 15 |

| | | | |
|-------------------|--|------|--------|
| Major Requirement | CHEM Core | | |
| | CM1001 Foundations of Chemistry I | 4 | 56/57* |
| | CM1002 Foundations of Chemistry II | 4 | |
| | MH1082 Calculus for the Sciences | 4 | |
| | CM1804^ Mathematics for Chemistry | 2 | |
| | PH1011 Physics or PH1012* Physics A | 3/4* | |
| | CM2011 Analytical and Bioanalytical Chemistry | 3 | |
| | CM2021 Inorganic and Bioinorganic Chemistry | 3 | |
| | CM2061 Chemistry & Biological Chemistry Laboratory 1 | 3 | |
| | CM2031 Organic and Bioorganic Chemistry | 3 | |
| | CM2041 Physical and Biophysical Chemistry 1 | 3 | |
| | CM2062 Chemistry & Biological Chemistry Laboratory 2 | 3 | |
| | PS0001^ Introduction to Computational Thinking | 3 | |
| | CM3011^& Chemical Spectroscopy and Applications | 3 | |
| | CM3041^& Physical and Biophysical Chemistry 2 | 3 | |
| | CM3062 Chemistry & Biological Chemistry Laboratory 4 | 3 | |
| | CM3031^& Organic Reaction Mechanisms and Synthesis | 3 | |
| | CM3021^& Organometallic Chemistry | 3 | |
| | CM3061 Chemistry & Biological Chemistry Laboratory 3 | 3 | |
| | CHEM Major Prescribed Electives (MPE) 4 x MPEs | 12 | |

| | | | |
|---|---|--------|-------------------|
| 2nd Major in Data Analytics (BDEs) | Data Analytics Compulsory Courses | | |
| | 1) Probability and Statistics: MH2500 Probability and Introduction to Statistics | 4 | 16 - 18 |
| | 2) Linear Algebra: MH1804 Mathematics for Chemistry | NA | |
| | 3) Data Analysis/Computing: PS0001 Introduction to Computational Thinking | NA | |
| | 4) Algorithms: MH1403 Algorithms & Computing | 3 | |
| | 5) Database: BC2402 Designing & Developing Databases (4AU) / EE4791 Database Systems (3AU)/SC2207 Introduction to Database(3AU) | 3 - 4 | |
| | 6) Data Mining: EE4483 Artificial Intelligence & Data Mining | 3 | |
| 7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques (4AU)/ SC4024 Data Visualization (3AU) | 3 - 4 | | |
| 2nd Major in Data Analytics (BDEs) | Data Analytics Electives (Read any 3) | | |
| | BC2407 Analytics II: Advanced Predictive Techniques (4AU) | 9 - 12 | 9 - 12 |
| | BS3008 Computational Biology and Modeling (3AU) | | |
| | BS4017 High-Throughput Bioinformatics (3AU) | | |
| | CM4043+^ Molecular Modelling: Principles and Applications (3AU) | | |
| | CM4044+^ Artificial Intelligence in Chemistry (3AU) | | |
| | ES2001 Computational Earth Systems Science (4AU) | | |
| | MH3400 Algorithms for the Real World (4AU) | | |
| | MH3500 Statistics (4AU) | | |
| | MH3510 Regression Analysis (4AU) | | |
| | MH3511 Data Analysis with Computer (3AU) | | |
| | MH3701 Basic Optimization (4AU) | | |
| | MH4500 Time Series Analysis (4AU) | | |
| | MH4513 Survival Analysis (4AU) | | |
| MH4302 Theory of Computing (4AU) | | | |
| MH4320 Computational Economics (4AU) | | | |
| MH4511 Sampling and Survey (4AU) @ | | | |
| MH4512 Clinical Trials (4AU) | | | |
| MH4702 Probabilistic Methods in OR (4AU) | | | |
| <i>Students are responsible to plan for their 2nd major courses</i> | | | |
| BDE | Any 6 BDE | 17 | 17 |
| Total | | | 142 - 148* |

^Counted towards 2nd major in Data Analytic Compulsory Course

+ Counted towards CHEM MPE

*Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

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

| B.Sci. (Chemistry and Biological Chemistry) with 2nd major in Data Analytics (CHDA) | | | | | | | |
|--|---|-------------|--------------------------|-------------------------|---|-----------|-----------------|
| Suggested Study Plan for AY2023-2024 intake | | | | | | | |
| <i>with Professional Internship</i> | | | | | | | |
| Year 1 Semester 1 | | | Year 1 Semester 2 | | | | |
| 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 | CM1804 [^] | Mathematics for Chemistry | C | 2 |
| CC0001 | Inquiry and Communication in the Interdisciplinary World | CC | 2 | PH1011/ | Physics <u>or</u> | C | 3 |
| CC0002 | Navigating the Digital World | CC | 2 | PH1012* | Physics A (<i>For students without 'A' Level Physics</i>) | C | 4 |
| CC0005 | Healthy Living & Well-being | CC | 3 | CC0003 | Ethics & Civics in a Multi-Cultural World | CC | 2 |
| HW0001 | <i>Introduction to Academic Communication</i> [#] | | | BDE 1 | | BDE | 3 |
| | | | | BDE 2 | | BDE | 3 |
| | | | 15 | | | | 17/18* |
| <i># for students who have not cleared QET</i> | | | | | | | |
| Year 2 Semester 1 | | | Year 2 Semester 2 | | | | |
| 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 |
| ML0004 | Career and Entrepreneurial Development for the Future World | CC | 2 | MH1403 | Algorithms & Computing | BDE | 3 |
| | BDE 3 | BDE | 3 | | BDE 4 | BDE | 3 |
| | | | 20 | | | | 21 |
| Year 3 Semester 1 | | | Year 3 Semester 2 | | | | |
| Course | | Type | AU | Course | Type | AU | |
| CM3xxx ^{&} | CHEM-Core | C | 3 | CM3xxx ^{&} | CHEM-Core | C | 3 |
| CM3xxx ^{&} | CHEM-Core | C | 3 | CM3xxx ^{&} | CHEM-Core | C | 3 |
| CM3062 | Chemistry & Biological Chemistry Laboratory 4 | C | 3 | CM3061 | Chemistry & Biological Chemistry Laboratory 3 | C | 3 |
| BC2402 | Designing & Developing Databases | BDE | 4 | HW0218 | Communication Across the Sciences | FC | 2 |
| BC2406 | Analytics I: Visual and Predictive Techniques | BDE | 4 | MH3500 | Statistics (CHDA Elective 1) | BDE | 4 |
| MH2500 | Probability and Introduction to Statistics | BDE | 4 | | CHDA Elective 2 | BDE | 3 |
| | | | | | BDE 5 | BDE | 2 |
| | | | 21 | | | | 20 |
| Year 4 Semester 1 | | | Year 4 Semester 2 | | | | |
| Course | | Type | AU | Course | Type | AU | |
| CM4043 ^{^/} | Molecular Modelling: Principles and Applications <u>or</u> | MPE | 3 | CM4081 | Professional Internship | FC | 10 |
| CM4044 [^] | Artificial Intelligence in Chemistry | | | | | | |
| | CHEM MPE2 | MPE | 3 | | | | |
| | CHEM MPE3 | MPE | 3 | | | | |
| | CHEM MPE4 | MPE | 3 | | | | |
| EE4483 | Artificial Intelligence & Data Mining | BDE | 3 | | | | |
| | BDE 6 | BDE | 3 | | | | |
| | | | 18 | | | | 10 |
| | | | | Total (AU) | | | 142/143* |

This study plan is meant as a guide.

[^]Counted towards 2nd major in Data Analytic requirements

*Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

[&] CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

AY2023 - 2024 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 | 17/18* | | 9 | | 6 | 32/33* |
| | 2 | 21 | | 8 | 3 | 6 | 38 |
| | 3 | 18 | | | 7 | 19 | 44 |
| | 4 | | 22 | | | 6 | 28 |
| | Total | 56/57* | 22 | 17 | 10 | 37 | 142/143* |

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

| Category | AU | Total AU | |
|--|--|----------|----|
| Interdisciplinary Collaborative Core (ICC) | Common Core (University-level) | | |
| | 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 | |
| | Foundational Core (College-level) | | |
| | HW0218 Communication Across the Sciences | 2 | 10 |
| | PS0002 Introduction to Data Science and Artificial Intelligence | 3 | |
| CM4082 Professional Attachment | 5 | | |

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|--------------------------|--|------|--------|--|
| Major Requirement | CHEM Core | | | |
| | CM1001 Foundations of Chemistry I | 4 | 56/57* | |
| | CM1002 Foundations of Chemistry II | 4 | | |
| | MH1082 Calculus for the Sciences | 4 | | |
| | CM1804^ Mathematics for Chemistry | 2 | | |
| | PH1011 Physics <u>or</u> PH1012* Physics A | 3/4* | | |
| | CM2011 Analytical and Bioanalytical Chemistry | 3 | | |
| | CM2021 Inorganic and Bioinorganic Chemistry | 3 | | |
| | CM2061 Chemistry & Biological Chemistry Laboratory 1 | 3 | | |
| | CM2031 Organic and Bioorganic Chemistry | 3 | | |
| | CM2041 Physical and Biophysical Chemistry 1 | 3 | | |
| | CM2062 Chemistry & Biological Chemistry Laboratory 2 | 3 | | |
| | PS0001^ Introduction to Computational Thinking | 3 | | |
| | CM3011& Chemical Spectroscopy and Applications | 3 | | |
| | CM3041& Physical and Biophysical Chemistry 2 | 3 | | |
| | CM3062 Chemistry & Biological Chemistry Laboratory 4 | 3 | | |
| | CM3031& Organic Reaction Mechanisms and Synthesis | 3 | | |
| | CM3021& Organometallic Chemistry | 3 | | |
| | CM3061 Chemistry & Biological Chemistry Laboratory 3 | 3 | | |
| | CHEM Major Prescribed Electives (MPE) | | | |
| CM4080 Honours Project 1 | 10 | 22 | | |
| 4 x MPEs | 12 | | | |

| | | | |
|---|--|---|-------------------|
| | | | |
| 2nd Major in Data Analytics (BDEs) | Data Analytics Compulsory Courses 1) Probability and Statistics: MH2500 Probability and Introduction to Statistics 2) Linear Algebra: CM804 Mathematics for Chemistry 3) Data Analysis/Computing: PS0001 Introduction to Computational Thinking 4) Algorithms: MH1403 Algorithms & Computing 5) Database: BC2402 Designing & Developing Databases (4AU) / EE4791 Database Systems (3AU) / SC2207 Introduction to Database (3AU) 6) Data Mining: EE4483 Artificial Intelligence & Data Mining 7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques (4AU) / SC4024 Data Visualization (3AU) | 4 NA NA 3 3 - 4 3 3 - 4 | 16 - 18 |
| 2nd Major in Data Analytics (BDEs) | Data Analytics Electives (Read any 3) BC2407 Analytics II: Advanced Predictive Techniques (4AU) BS3008 Computational Biology and Modeling (3AU) BS4017 High-Throughput Bioinformatics (3AU) CM4043 ^{+^} Molecular Modelling: Principles and Applications (3AU) CM4044 ^{+^} Artificial Intelligence in Chemistry (3AU) ES2001 Computational Earth Systems Science (4AU) MH3400 Algorithms for the Real World (4AU) MH3500 Statistics (4AU) MH3510 Regression Analysis (4AU) MH3511 Data Analysis with Computer (3AU) MH3701 Basic Optimization (4AU) MH4500 Time Series Analysis (4AU) MH4513 Survival Analysis (4AU) MH4302 Theory of Computing (4AU) MH4320 Computational Economics (4AU) MH4511 Sampling and Survey (4AU) @ MH4512 Clinical Trials (4AU) MH4702 Probabilistic Methods in OR (4AU) | 9 - 12 | 9 - 12 |
| <i>Students are responsible to plan for their 2nd major courses</i> | | | |
| BDE | Any 3 BDE | 12 | 12 |
| Total | | | 142 - 148* |

[^]Counted towards 2nd major in Data Analytic Compulsory Course

⁺ Counted towards CHEM MPE

*Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

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

B.Sci. (Chemistry and Biological Chemistry) with 2nd major in Data Analytics (CHDA)

Suggested Study Plan for AY2023-2024 intake

FYP with Professional Attachment

Year 1 Semester 1

| Course | | Type | AU |
|--------|--|------|-----------|
| CM1001 | Foundations of Chemistry I | C | 4 |
| MH1802 | Calculus for the Sciences | C | 4 |
| CC0001 | Inquiry and Communication in the Interdisciplinary World | CC | 2 |
| CC0002 | Navigating the Digital World | CC | 2 |
| CC0005 | Healthy Living & Well-being | CC | 3 |
| HW0001 | Introduction to Academic Communication # | | |
| | | | 15 |

for students who have not cleared QET

Year 2 Semester 1

| Course | | Type | AU |
|---------|---|------|-----------|
| CM2011 | Analytical and Bioanalytical Chemistry | C | 3 |
| CM2021 | Inorganic and Bioinorganic Chemistry | C | 3 |
| CM2061 | Chemistry & Biological Chemistry Laboratory 1 | C | 3 |
| PS0001^ | Introduction to Computational Thinking | C | 3 |
| CC0006 | Sustainability: Society, Economy & Environment | CC | 3 |
| ML0004 | Career and Entrepreneurial Development for the Future World | CC | 2 |
| | BDE 3 | BDE | 3 |
| | | | 20 |

Year 3 Semester 1

| Course | | Type | AU |
|---------|---|------|-----------|
| CM3xxx& | CHEM-Core | C | 3 |
| CM3xxx& | CHEM-Core | C | 3 |
| CM3062 | Chemistry & Biological Chemistry Laboratory 4 | C | 3 |
| BC2402 | Designing & Developing Databases | BDE | 4 |
| BC2406 | Analytics I: Visual and Predictive Techniques | BDE | 4 |
| MH2500 | Probability and Introduction to Statistics | BDE | 4 |
| | | | 21 |

Year 4 Semester 1

| Course | | Type | AU |
|----------|---|------|-----------|
| CM4043^/ | Molecular Modelling: Principles and Applications or | MPE | 3 |
| CM4044^ | Artificial Intelligence in Chemistry | | |
| | CHEM MPE2 | MPE | 3 |
| | CHEM MPE3 | MPE | 3 |
| | CHEM MPE4 | MPE | 3 |
| EE4483 | Artificial Intelligence & Data Mining | BDE | 3 |
| | BDE 4 | BDE | 3 |
| | | | 18 |

Year 1 Semester 2

| Course | | Type | AU |
|---------|--|------|---------------|
| CM1002 | Foundations of Chemistry II | C | 4 |
| CM1804^ | Mathematics for Chemistry | C | 2 |
| PH1011/ | Physics or | C | 3 |
| PH1012* | Physics A (For students without 'A' Level Physics) | C | 4 |
| CC0003 | Ethics & Civics in a Multi-Cultural World | CC | 2 |
| | BDE 1 | BDE | 3 |
| | BDE 2 | BDE | 3 |
| | | | 17/18* |

Year 2 Semester 2

| Course | | Type | AU |
|--------|--|------|-----------|
| CM2031 | Organic and Bioorganic Chemistry | C | 3 |
| CM2041 | Physical and Biophysical Chemistry 1 | C | 3 |
| CM2062 | Chemistry & Biological Chemistry Laboratory 2 | C | 3 |
| PS0002 | Introduction to Data Science and Artificial Intelligence | FC | 3 |
| CC0007 | Science & Technology for Humanity | CC | 3 |
| MH1403 | Algorithms & Computing | BDE | 3 |
| | | | 18 |

Year 3 Semester 2

| Course | | Type | AU |
|---------|---|------|----|
| CM3xxx& | CHEM-Core | C | 3 |
| CM3xxx& | CHEM-Core | C | 3 |
| CM3061 | Chemistry & Biological Chemistry Laboratory 3 | C | 3 |
| HW0218 | Communication Across the Sciences | FC | 2 |
| MH3500 | Statistics (CHDA Elective 1) | BDE | 4 |
| | CHDA Elective 2 | BDE | 3 |

Year 3 Special Sem

| | | | |
|--------|-------------------------|----|-----------|
| CM4082 | Professional Attachment | FC | 5 |
| | | | 23 |

Year 4 Semester 2

| Course | | Type | AU |
|--------|-------------------|------|-----------|
| CM4080 | Honours Project 1 | MPE | 10 |
| | | | 10 |

Total (AU)**142/143***

This study plan is meant as a guide.

^Counted towards 2nd major in Data Analytic requirements

*Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

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

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

AY2023 - 2024 Intake onwards

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 | 17/18* | | 9 | | 7 | 33/34* |
| | 2 | 21 | | 8 | 3 | 3 | 35 |
| | 3 | 18 | 3 | | 2 | 19 | 42 |
| | 4 | | 19 | | 10 | 3 | 32 |
| | Total | 56/57* | 22 | 17 | 15 | 32 | 142/143* |

BSc in Chemistry and Biological Chemistry with 2nd Major in Data Analytics (CHDA)

| Category | AU | Total AU |
|--|--|----------|
| Interdisciplinary Collaborative Core (ICC) | Common Core (University-level) | |
| | CC0001 Inquiry and Communication in the Interdisciplinary World CC0002 Navigating the Digital World CC0003 Ethics & Civics in a Multi-Cultural World CC0005 Healthy Living & Wellbeing CC0006 Sustainability: Society, Economy & Environment CC0007 Science & Technology for Humanity ML0004 Career and Entrepreneurial Development for the Future World | 17 |
| Major Requirement | Foundational Core (College-level) | |
| | HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artificial Intelligence CM4081 Professional Internship | 15 |
| | CHEM Core | |
| | CM1001 Foundations of Chemistry I CM1002 Foundations of Chemistry II MH1082 Calculus for the Sciences CM1804^ Mathematics for Chemistry PH1011 Physics or PH1012* Physics A CM2011 Analytical and Bioanalytical Chemistry CM2021 Inorganic and Bioinorganic Chemistry CM2061 Chemistry & Biological Chemistry Laboratory 1 CM2031 Organic and Bioorganic Chemistry CM2041 Physical and Biophysical Chemistry 1 CM2062 Chemistry & Biological Chemistry Laboratory 2 PS0001^ Introduction to Computational Thinking CM3011& Chemical Spectroscopy and Applications CM3041& Physical and Biophysical Chemistry 2 CM3062 Chemistry & Biological Chemistry Laboratory 4 CM3031& Organic Reaction Mechanisms and Synthesis CM3021& Organometallic Chemistry CM3061 Chemistry & Biological Chemistry Laboratory 3 | 56/57* |
| | CHEM Major Prescribed Electives (MPE) | |
| | CM4080 Honours Project 1 4 x MPEs | 22 |

| | | | |
|--|--|--------|-------------------|
| 2nd Major in Data Analytics (BDEs) | Data Analytics Compulsory Courses | | |
| | 1) Probability and Statistics: MH2500 Probability and Introduction to Statistics | 4 | |
| | 2) Linear Algebra: MH1804 Mathematics for Chemistry | NA | |
| | 3) Data Analysis/Computing: PS0001 Introduction to Computational Thinking | NA | |
| | 4) Algorithms: MH1403 Algorithms & Computing | 3 | 16 - 18 |
| | 5) Database: BC2402 Designing & Developing Databases (4AU) / EE4791 Database Systems (3AU) / SC2207 Introduction to Database (3AU) | 3 - 4 | |
| | 6) Data Mining: EE4483 Artificial Intelligence & Data Mining | 3 | |
| 7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques (4AU) / SC4024 Data Visualization (3AU) | 3 - 4 | | |
| 2nd Major in Data Analytics (BDEs) | Data Analytics Electives (Read any 3) | | |
| | BC2407 Analytics II: Advanced Predictive Techniques (4AU) | | |
| | BS3008 Computational Biology and Modeling (3AU) | | |
| | BS4017 High-Throughput Bioinformatics (3AU) | | |
| | CM4043+^ Molecular Modelling: Principles and Applications (3AU) | | |
| | CM4044+^ Artificial Intelligence in Chemistry (3AU) | | |
| | ES2001 Computational Earth Systems Science (4AU) | | |
| | MH3400 Algorithms for the Real World (4AU) | | |
| | MH3500 Statistics (4AU) | | |
| | MH3510 Regression Analysis (4AU) | | |
| | MH3511 Data Analysis with Computer (3AU) | 9 - 12 | 9 - 12 |
| | MH3701 Basic Optimization (4AU) | | |
| | MH4500 Time Series Analysis (4AU) | | |
| | MH4513 Survival Analysis (4AU) | | |
| | MH4302 Theory of Computing (4AU) | | |
| MH4320 Computational Economics (4AU) | | | |
| MH4511 Sampling and Survey (4AU) @ | | | |
| MH4512 Clinical Trials (4AU) | | | |
| MH4702 Probabilistic Methods in OR (4AU) | | | |
| <i>Students are responsible to plan for their 2nd major courses</i> | | | |
| BDE | Any 2 BDE | 7 | 7 |
| Total | | | 142 - 148* |

^Counted towards 2nd major in Data Analytic Compulsory Course

+ Counted towards CHEM MPE

**Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).*

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

| B.Sci. (Chemistry and Biological Chemistry) with 2nd major in Data Analytics (CHDA) | | | | | | | |
|--|---|-------------|-----------|--------------------------|---|-------------|-----------------|
| Suggested Study Plan for AY2023-2024 intake | | | | | | | |
| <i>with Professional Internship and FYP</i> | | | | | | | |
| Year 1 Semester 1 | | | | Year 1 Semester 2 | | | |
| 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 | CM1804 [^] | Mathematics for Chemistry | C | 2 |
| CC0001 | Inquiry and Communication in the Interdisciplinary World | CC | 2 | PH1011/ | Physics <u>or</u> | C | 3 |
| CC0002 | Navigating the Digital World | CC | 2 | PH1012* | Physics A (<i>For students without 'A' Level Physics</i>) | C | 4 |
| CC0005 | Healthy Living & Well-being | CC | 3 | CC0003 | Ethics & Civics in a Multi-Cultural World | CC | 2 |
| HW0001 | Introduction to Academic Communication [#] | | | | BDE 1 | BDE | 3 |
| | | | | | BDE 2 | BDE | 4 |
| | | | 15 | | | | 18/19* |
| <i># for students who have not cleared QET</i> | | | | | | | |
| Year 2 Semester 1 | | | | Year 2 Semester 2 | | | |
| 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 |
| ML0004 | Career and Entrepreneurial Development for the Future World | CC | 2 | MH1403 | Algorithms & Computing | BDE | 3 |
| | | | 17 | | | | 18 |
| Year 3 Semester 1 | | | | Year 3 Semester 2 | | | |
| Course | | Type | AU | Course | | Type | AU |
| CM3xxx ^{&} | CHEM-Core | C | 3 | CM3xxx ^{&} | CHEM-Core | C | 3 |
| CM3xxx ^{&} | CHEM-Core | C | 3 | CM3xxx ^{&} | CHEM-Core | C | 3 |
| CM3062 | Chemistry & Biological Chemistry Laboratory 4 | C | 3 | CM3061 | Chemistry & Biological Chemistry Laboratory 3 | C | 3 |
| BC2402 | Designing & Developing Databases | BDE | 4 | HW0218 | Communication Across the Sciences | FC | 2 |
| BC2406 | Analytics I: Visual and Predictive Techniques | BDE | 4 | MH3500 | Statistics (CHDA Elective 1) | BDE | 4 |
| MH2500 | Probability and Introduction to Statistics | BDE | 4 | | CHDA Elective 2 | BDE | 3 |
| | | | | | CHEM MPE 1 | MPE | 3 |
| | | | 21 | | | | 21 |
| Year 4 Semester 1 | | | | Year 4 Semester 2 | | | |
| Course | | Type | AU | Course | | Type | AU |
| CM4080 | Honours Project 1 | MPE | 10 | CM4081 | Professional Internship | FC | 10 |
| CM4043 [^] / | Molecular Modelling: Principles and Applications <u>or</u> | MPE | 3 | | | | |
| CM4044 [^] | Artificial Intelligence in Chemistry | | | | | | |
| EE4483 | Artificial Intelligence & Data Mining | BDE | 3 | | | | |
| | CHEM MPE 3 | MPE | 3 | | | | |
| | CHEM MPE 4 | MPE | 3 | | | | |
| | | | 22 | | | | 10 |
| | | | | Total (AU) | | | 142/143* |

This study plan is meant as a guide.

[^]Counted towards 2nd major in Data Analytic requirements

*Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

[&] CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters