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

AY2022 - 2023 Intake onwards

with Professional Internship

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

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)**		17
	CC0001 Inquiry and Communication in the Interdisciplinary World	2	
	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)		15
	HW0218 Communication Across the Sciences	2	
	PS0002 Introduction to Data Science and Artificial Intelligence	3	
	CM4081 Professional Internship	10	

Major Requirement	**CHEM Core**			
	CM1001	Foundations of Chemistry I	4	56
	CM1002	Foundations of Chemistry II	4	
	MH1082	Calculus for the Sciences	4	
	MH1804^	Mathematics for Chemistry	2	
	PH1801	Foundations of Physics I	3	
	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	3	
	CM3021	Organometallic Chemistry	3	
	CM3031	Organic Reaction Mechanisms and Synthesis	3	
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3	
	CHEM Major Prescribed Electives (MPE)			
	4 x MPEs		12	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) 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
BDE	Any 6 BDE	12	12
Total			**142 - 147**

^Counted towards 2nd major in Data Analytic Compulsory Course

**Can be counted towards CHEM MPE*

B.Sci. (Chemistry and Biological Chemistry) with 2nd major in Data Analytics (CHDA)
Suggested Study Plan for AY2022-2023 intake
with Professional Internship

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

Year 1 Semester 2

Course		Type	AU
CM1002	Foundations of Chemistry II	C	4
MH1804 ^	Mathematics for Chemistry	C	2
PH1801	Foundations of Physics I	C	3
CC0003	Ethics & Civics in a Multi-Cultural World	CC	2
	BDE 1	BDE	3
	BDE 2	BDE	3
			17

**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 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
	BDE 4	BDE	3
			21

Year 3 Semester 1

Course		Type	AU
CM3011	Chemical Spectroscopy and Applications	C	3
CM3041	Physical and Biophysical Chemistry 2	C	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	C	3
BC2402	Designing & Developing Databases	BDE	4
BC2406	Analytics I: Visual & Predictive Techniques	BDE	4
MH2500	Probability & Introduction to Statistics	BDE	4
			21

Year 3 Semester 2

Course		Type	AU
CM3021	Organometallic Chemistry	C	3
CM3031	Organic Reaction Mechanisms and Synthesis	C	3
CM3061	Chemistry & Biological Chemistry Laboratory 3	C	3
HW0218	Communication Across the Sciences	FC	2
MH3500	Statistics	BDE	4
	DA Elective	BDE	3
	BDE 5	BDE	2
			20

Year 4 Semester 1

Course		Type	AU
CM4043 ^	Molecular Modelling: Principles and Applications	MPE	3
	CHEM MPE2	MPE	3
	CHEM MPE3	MPE	3
	CHEM MPE4	MPE	3
EE4483	Artificial Intelligence & Data Mining	BDE	3
	BDE 6	BDE	3
			18

Year 4 Semester 2

Course		Type	AU
CM4081	Professional Internship	FC	10
			10
	Total (AU)		**142**

^Counted towards 2nd major in Data Analytic requirements

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

AY2022 - 2023 Intake onwards

FYP with Professional Attachment

Programme	Year of Study	Number of Academic Units (AU)					
		Major		Interdisciplinary		Broadening and Deepening Electives (BDE)	Total
		Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)		
Chemistry and Biological Chemistry	1	17		9		6	32
	2	21		8	3	6	38
	3	18			7	19	44
	4		22			6	28
	Total	56	22	17	10	37	142

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)**			17
	CC0001	Inquiry and Communication in the Interdisciplinary World	2	
	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)			10
	HW0218	Communication Across the Sciences	2	
	PS0002	Introduction to Data Science and Artificial Intelligence	3	
	CM4082	Professional Attachment	5	
Major Requirement	**CHEM Core**			23
	CM1001	Foundations of Chemistry I	4	
	CM1002	Foundations of Chemistry II	4	
	MH1082	Calculus for the Sciences	4	
	MH1804^	Mathematics for Chemistry	2	
	PH1801	Foundations of Physics I	3	
	CM2011	Analytical and Bioanalytical Chemistry	3	
	CM2021	Inorganic and Bioinorganic Chemistry	3	

Major Requirement	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	33
	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	3	
	CM3021	Organometallic Chemistry	3	
	CM3031	Organic Reaction Mechanisms and Synthesis	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		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) 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
BDE	Any 3 BDE	12	12
Total			**142 - 147**

^Counted towards 2nd major in Data Analytic Compulsory Course

**Can be counted towards CHEM MPE*

B.Sci. (Chemistry and Biological Chemistry) with 2nd major in Data Analytics (CHDA)
Suggested Study Plan for AY2022-2023 intake
FYP with Professional Attachment Option

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

Year 1 Semester 2

Course		Type	AU
CM1002	Foundations of Chemistry II	C	4
MH1804 ^	Mathematics for Chemistry	C	2
PH1801	Foundations of Physics I	C	3
CC0003	Ethics & Civics in a Multi-Cultural World	CC	2
	BDE 1	BDE	3
	BDE 2	BDE	3
			17

**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 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 1

Course		Type	AU
CM3011	Chemical Spectroscopy and Applications	C	3
CM3041	Physical and Biophysical Chemistry 2	C	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	C	3
BC2402	Designing & Developing Databases	BDE	4
BC2406	Analytics I: Visual & Predictive Techniques	BDE	4
MH2500	Probability & Introduction to Statistics	BDE	4
			21

Year 3 Semester 2

Course		Type	AU
CM3021	Organometallic Chemistry	C	3
CM3031	Organic Reaction Mechanisms and Synthesis	C	3
CM3061	Chemistry & Biological Chemistry Laboratory 3	C	3
HW0218	Communication Across the Sciences	FC	2
MH3500	Statistics	BDE	4
	DA Elective	BDE	3
Year 3 Special Sem			
CM4082	Professional Attachment	FC	5
			23

Year 4 Semester 1

Course		Type	AU
CM4043 ^	Molecular Modelling: Principles and Applications	MPE	3
	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 4 Semester 2

Course		Type	AU
CM4080	Honours Project 1	MPE	10
			10
	Total (AU)		**142**

^Counted towards 2nd major in Data Analytic requirements