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

AY2022 - 2023 Intake onwards

FYP with Professional Attachment

			N	umber of Acad	demic Units (Al	J)	
	Year of	Major Requirement		Interdis	ciplinary	Broadening and	
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	Deepening Electives (BDE)	Total
	1	17		9		6	32
Chemistry and	2	21		8	3	6	38
Biological	3	18			7	19	44
Chemistry	4		22			6	28
	Total	56	22	17	10	37	142

Category			AU	Total AU		
	Common (	Core (University-level)				
	CC0001 Inc	quiry and Communication in the Interdisciplinary World	2			
			2			
			2			
	CC0005 He	ealthy Living & Wellbeing	3			
		•	3	17		
Collaborative	CC0007 Sc	ience & Technology for Humanity	3			
Common Core (University-level)   CC0001 Inquiry and Communication in the Interdisciplinary World   CC0003 Ethics & Civics in a Multi-Cultural World   CC0005 Healthy Living & Wellbeing   3   CC0006 Sustainability: Society, Economy & Environment   3   CC0007 Science & Technology for Humanity   CO007 Science & Technology for Humanity   3   ML0004 Career and Entrepreneurial Development for the Future   World   2   World   Foundational Core (College-level)   HW0218 Communication Across the Sciences   2   PS0002 Introduction to Data Science and Artificial Intelligence   3   CM4082 Professional Attachment   5   CHEM Core   CM1001   Foundations of Chemistry   4   CM1002   MH1082   Calculus for the Sciences   4   MH1084   Ph1801   Foundations of Physics   3   Analytical and Bioanalytical Chemistry   2   CM2011   CM2021   CM2011   CM2021   CM2011   CM2021   CM2011   CM2021   CM2011   CM2021   CM2011   CM2031   CM2031   CM2031   CM2031   CM2041   Physical and Bioingranic Chemistry   3   CM2014   CM2062   PS0001^4   CM3014   Physical and Biophysical Chemistry Laboratory 2   3   Physical and Biophysical Chemistry Laboratory 2   3   CM3014   Physical and Biophysical Chemistry Laboratory 4   3   CM3013   Physical and Biophysical Chemistry Laboratory 4   3   CM3013   CM3013   Organic Reaction Mechanisms and Synthesis   3   CM3012   CM3012   CM3014   CM30	World		2			
	HW0218 C	Communication Across the Sciences	2			
	PS0002 Int	roduction to Data Science and Artificial Intelligence	3	10		
	Common Core (University-level) CC0001 Inquiry and Communication CC0002 Navigating the Digital Work CC0003 Ethics & Civics in a Multi-Cu CC0005 Healthy Living & Wellbeing CC0006 Sustainability: Society, Ecor CC0007 Science & Technology for H ML0004 Career and Entrepreneuria World  Foundational Core (College-level) HW0218 Communication Across the PS0002 Introduction to Data Science CM4082 Professional Attachment  CHEM Core  CM1001 Foundations of Chemistr CM1002 Foundations of Chemistr CM1002 Mathematics for Chemis PH1801 Foundations of Physics I CM2011 Analytical and Bioanalyti CM2021 Inorganic and Bioinorgar CM2061 CM2031 Organic and Biophysical CM2061 CM2031 CM2061 CM2062 PS0001^ CM3041 CM3062 CM3041 CM3062 CM3041 CM3062 CM3031 CM3062	rofessional Attachment	5			
	CHEM Cor					
		·	4			
	CM1002	-	4			
			4			
	MH1804^	·	2			
	PH1801	Foundations of Physics I	3			
	CM2011		3			
	CM2021	Inorganic and Bioinorganic Chemistry	3			
	CM2061	Chemistry & Biological Chemistry Laboratory 1				
	CM2031	Organic and Bioorganic Chemistry	3	56		
Major	CM2041	Physical and Biophysical Chemistry 1	3			
	CM2062	Chemistry & Biological Chemistry Laboratory 2	3			
Requirement	PS0001^	Introduction to Computational Thinking	3			
	CM3011 <sup>&amp;</sup>	Chemical Spectroscopy and Applications	3			
	CM3041 <sup>&amp;</sup>	Physical and Biophysical Chemistry 2	3			
			3			
		Organic Reaction Mechanisms and Synthesis	3			
	CM3021 <sup>&amp;</sup>	Organometallic Chemistry	3			
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3			
	CHEM MA	ins Prescribed Electives (MDE)				
	-		10	l		
	5	:		22		

Гotal			142 - 148
BDE	Any 4 DDL	12	12
)DE	Students are responsible to plan for their 2nd major courses  Any 4 BDE	12	12
	MH4702 Probabilistic Methods in OR (4AU)  Students are responsible to plan for their 2nd major courses		
	MH4512 Clinical Trials (4AU)		
	MH4511 Sampling and Survey (4AU) @		
	MH4320 Computational Economics (4AU)		
	MH4302 Theory of Computing (4AU)		
	MH4513 Survival Analysis (4AU)		
	MH4500 Time Series Analysis (4AU)		
(,	MH3701 Basic Optimization (4AU)		
(BDEs)	MH3511 Data Analysis with Computer (3AU)	9 - 12	9 - 12
Data Analytics	MH3510 Regression Analysis (4AU)		
2nd Major in	MH3500 Statistics (4AU)		
	MH3400 Algorithms for the Real World (4AU)		
	CM4044* Artificial Intelligence in Chemistry (3AU) ES2001 Computational Earth Systems Science (4AU)		
	CM4044* Molecular Modelling: Principles and Applications (3AU)		
	BS4017 High-Throughput Bioinformatics (3AU)		
	BS3008 Computer Aided Drug Discovery (3AU)		
	BC2407 Analytics II: Advanced Predictive Techniques (4AU)		
	Data Analytics Electives (Read any 3)		
	In		
	SC4024 Data Visualization (3AU)		
	Predictive Techniques (4AU) / SC4023 Big Data Management (3AU) /	3 - 4	
	7) Data Visualisation/Management: BC2406 Analytics I: Visual and		
	Analytics and Mining (3AU)		
	IE4483 Artificial Intelligence & Data Mining (3AU) / SC4020 Data	3 - 4	
	6) Data Mining: MH4510 Statistical Learning & Data Mining (4AU) /		
(DDE3)	(3AU)		
Data Analytics (BDEs)	EE4791 Database Systems (3AU) / SC2207 Introduction to Database	3 - 4	16 - 19
2nd Major in	5) Database: BC2402 Designing & Developing Databases (4AU) /		
2	4) Algorithms: MH1403 Algorithms & Computing	3	
	Thinking	NA	
	3) Data Analysis/Computing: PS0001 Introduction to Computational		
	2) Linear Algebra: CM1804 Mathematics for Chemistry	NA	
	1) Probability and Statistics: MH2500 Probability and Introduction to Statistics	4	
	Data Analytics Compulsory Courses		

<sup>^</sup>Counted towards 2nd major in Data Analytic Compulsory Course

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

<sup>\*</sup>Can be counted towards CHEM MPE

	ofessional Attachment						
ear 1 Sem	ester 1			Year 1 Sem	nester 2		
Course		Type	AU	Course		Type	AU
CM1001	Foundations of Chemistry I	С	4	CM1002	Foundations of Chemistry II	С	4
ИН1802	Calculus for the Sciences	С	4	MH1804^	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in the Interdisciplinary World	CC	2	PH1801	Foundations of Physics I	С	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		BDE 1 BDE 2	BDE BDE	3
HW0001	Introduction to Academic Communicati	on*					
*for studen	ts who have not cleared QET		15				17
ear 2 Sem	ester 1			Year 2 Sem	nester 2		
Course		Туре	AU	Course		Type	AU
CM2011	Analytical and Bioanalytical Chemistry	С	3	CM2031	Organic and Bioorganic Chemistry	С	3
CM2021	Inorganic and Bioinorganic Chemistry	С	3	CM2041	Physical and Biophysical Chemistry 1	С	3
CM2061	Chemistry & Biological Chemistry Laboratory 1	С	3	CM2062	Chemistry & Biological Chemistry Laboratory 2	С	3
PS0001^	Introduction to Computational Thinking	С	3	PS0002	Introduction to Data Science and Artificial Intelligence	FC	3
CC0006	Sustainability: Society, Economy & Environment	CC	3	CC0007	Science & Technology for Humanity	СС	3
ML0004	Career and Entrepreneurial  Development for the Future World	CC	2	MH1403	Algorithms & Computing	BDE	3
	BDE 3	BDE	3				
			20				18
Year 3 Sem	ester 1			Year 3 Sem	ester 2		
Course		Туре	AU	Course		Type	AU
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
BC2402	Designing & Developing Databases (CHDA-Core)	BDE	4	HW0218	Communication Across the Sciences	FC	2
BC2406	Analytics I: Visual and Predictive Techniques (CHDA-Core)	BDE	4	MH3500	Statistics (CHDA-Elective 1)	BDE	4
MH2500	Probability and Introduction to Statistics (CHDA-Core)	BDE	4		CHDA-Elective 2	BDE	3
				Year 3 Spec	<u>cial Sem</u> Professional Attachment	FC	5
			21				23
Year 4 Sem	ester 1			Year 4 Sem	nester 2		
Course		Туре	AU	Course		Type	AU
CM4044 <sup>+</sup> ^	Artificial Intelligence in Chemistry	MPE	3	CM4080	Honours Project 1	MPE	10
	CHEM MPE2	MPE	3				
	CHEM MPE3	MPE	3				
	CHEM MPE4	MPE	3				
E4483	Artificial Intelligence & Data Mining (CHDA-Core)	BDE	3				
	BDE 4	BDE	3				
			18		Total (AU)		10

This study plan is meant as a guide.

<sup>^</sup>Counted towards 2nd major in Data Analytic requirements

 $<sup>^{\&</sup>amp;}$  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)

AY2022 - 2023 Intake onwards

with Professional Internship

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

	y anu bioi	ogical Chemistry with 2nd Major in Data Analytics (CH		I <u>= </u>
Category	1.		AU	Total AU
		Core (University-level)		
		quiry and Communication in the Interdisciplinary World	2	
	CC0002 Na	avigating the Digital World	2	
	CC0003 Et	hics & Civics in a Multi-Cultural World	2	
	CC0002 Navigating the Digital World CC0003 Ethics & Civics in a Multi-Cultural World CC0005 Healthy Living & Wellbeing CC0006 Sustainability: Society, Economy & Environme CC0007 Science & Technology for Humanity ML0004 Career and Entrepreneurial Development for World  Foundational Core (College-level) HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artificial Inte CM4081 Professional Internship		3	
luka valia simlina m .			3	17
			3	
	ML0004 C	areer and Entrepreneurial Development for the Future	2	
core (ICC)	World		2	
	Foundatio	nal Core (College-level)		
		· · · · · · · · · · · · · · · · · · ·	2	
			3	15
			10	
	CIVI-001 1	Toressional internship	10	<u> </u>
	CHEM Cor	e		
	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	
	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	
	CM2031	Organic and Bioorganic Chemistry	3	56
Major	CM2041	Physical and Biophysical Chemistry 1	3	
Requirement	CM2062	Chemistry & Biological Chemistry Laboratory 2	3	
	PS0001^	Introduction to Computational Thinking	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	
	CHERA RA-	ing Draggeihad Flootings (MADE)		
	4 x MPEs	jor Prescribed Electives (MPE)	12	12
	T V IAIL F2		1 14	1 12

	MH4500 Time Series Analysis (4AU) MH4513 Survival Analysis (4AU) MH4302 Theory of Computing (4AU)		
Data Analytics (BDEs)	MH3510 Regression Analysis (4AU) MH3511 Data Analysis with Computer (3AU) MH3701 Basic Optimization (4AU)	9 - 12	9 - 12
2nd Major in	MH3400 Algorithms for the Real World (4AU) MH3500 Statistics (4AU)		
	BS3008 Computer Aided Drug Discovery (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)		
	Data Analytics Electives (Read any 3)  BC2407 Analytics II: Advanced Predictive Techniques (4AU)		
			1
	7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques (4AU) / SC4023 Big Data Management (3AU) / SC4024 Data Visualization (3AU)	3 - 4	
	(3AU) 6) Data Mining: MH4510 Statistical Learning & Data Mining (4AU) / IE4483 Artificial Intelligence & Data Mining (3AU) / SC4020 Data Analytics and Mining (3AU)	3 - 4	
2nd Major in Data Analytics (BDEs)	5) Database: BC2402 Designing & Developing Databases (4AU) / EE4791 Database Systems (3AU) / SC2207 Introduction to Database	3 - 4	16 - 19
On al Maria min	Thinking 4) Algorithms: MH1403 Algorithms & Computing	NA 3	
	2) Linear Algebra: MH1804 Mathematics for Chemistry     3) Data Analysis/Computing: PS0001 Introduction to Computational	NA	
	1) Probability and Statistics: MH2500 Probability and Introduction to Statistics	4	

<sup>^</sup>Counted towards 2nd major in Data Analytic Compulsory Course

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

<sup>\*</sup>Can be counted towards CHEM MPE

-	mistry and Biological Chemistry) with 2r	nd major	in Data Ana	alytics (CHDA)			
	Study Plan for AY2022-2023 intake						
with Projes	ssional Internship						
Year 1 Sem	nester 1			Year 1 Sem	ester 2		
Course	For adultion of Chamistra	Type	AU	Course	Face delices of Chandele II	Type	AU
CM1001 MH1802	Foundations of Chemistry I Calculus for the Sciences	C C	4 4	CM1002 MH1804^	Foundations of Chemistry II Mathematics for Chemistry	C C	4 2
CC0001	Inquiry and Communication in the	СС	2	PH1801	Foundations of Physics I	С	3
	Interdisciplinary World				Ethics & Civics in a Multi-Cultural		
CC0002	Navigating the Digital World	CC	2	CC0003	World	CC	2
CC0005	Healthy Living & Well-being	CC	3		BDE 1 BDE 2	BDE BDE	3 3
HW0001	Introduction to Academic Communicati	ion*					
*for studer	nts who have not cleared QET		15				17
Voor 2 Som	acetor 1			Year 2 Sem	octor 2		
Course	iestei 1	Type	AU	Course	ester 2	Туре	AU
	Analytical and Bioanalytical Chemistry  A2021 Inorganic and Bioinorganic Chemistry  A2061 Chemistry & Biological Chemistry Laboratory 1 Introduction to Computational Thinking Sustainability: Society, Economy & Environment Career and Entrepreneurial			-	Organia and Diagramia Chamist		
CM2011	Chemistry	С	3	CM2031	Organic and Bioorganic Chemistry	С	3
CM2021	Inorganic and Bioinorganic Chemistry	С	3	CM2041	Physical and Biophysical Chemistry 1	С	3
CM2061	Laboratory 1	С	3	CM2062	Chemistry & Biological Chemistry Laboratory 2	С	3
PS0001^	Thinking	С	3	PS0002	Introduction to Data Science and Artificial Intelligence	FC	3
CC0006	Environment	CC	3	CC0007	Science & Technology for Humanity	СС	3
ML0004	•	CC	2	MH1403	Algorithms & Computing	BDE	3
	BDE 3	BDE	3		BDE 4	BDE	3
			20				21
Year 3 Sem	nester 1			Year 3 Sem	ester 2		
Course		Туре	AU	Course		Туре	AU
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3062	Chemistry & Biological Chemistry	С	3	CM3061	Chemistry & Biological Chemistry	С	3
BC2402	Laboratory 4 Designing & Developing Databases	BDE	4	HW0218	Laboratory 3  Communication Across the Sciences	FC	2
	(CHDA-Core) Analytics I: Visual and Predictive						
BC2406	Techniques (CHDA-Core)	BDE	4	MH3500	Statistics (CHDA-Elective 1)	BDE	4
MH2500	Probability and Introduction to Statistics (CHDA-Core)	BDE	4		CHDA-Elective 2	BDE	3
					BDE 5	BDE	2
			21				20
Year 4 Sem	nester 1			Year 4 Sem	ester 2		
Course		Туре	AU	Course		Туре	AU
CM4081	Professional Internship	FC	10	CM4043+^	Molecular Modelling: Principles and Applications	MPE	3
					CHEM MPE2	BDE	3
					CHEM MPE 3	MPE	3
					CHEM MPE 4	MPE	3
					CHDA-Core	BDE	3
					BDE 6	BDE	3
			10		Total (AU)		18 142

This study plan is meant as a guide.

<sup>^</sup>Counted towards 2nd major in Data Analytic requirements

<sup>&</sup>lt;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 Data Analytics (CHDA)

AY2022 - 2023 Intake onwards

with Professional Internship and FYP

		Number of Academic Units (AU)										
	Year of	Major Requirement		Interdis	ciplinary	Broadening and						
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	Deepening Electives (BDE)	Total					
	1	17		9		7	33					
Chemistry and	2	21		8	3	3	35					
Biological	3	18	3		2	19	42					
Chemistry	4		19		10	3	32					
	Total	56	22	17	15	32	142					

Category			AU	Total AU
	Common (	Core (University-level)		
	CC0001 Inc	quiry and Communication in the Interdisciplinary World	2	
			2	
	CC0003 Et	hics & Civics in a Multi-Cultural World	2	
	CC0005 He	ealthy Living & Wellbeing	3	4.7
		•	3	17
iterdisciplinary C			3	
		<u>-</u> -		
Common Core (University-level) CC0001 Inquiry and Communication in the Interdisciplinary World CC0003 Ethics & Civics in a Multi-Cultural World CC0003 Ethics & Civics in a Multi-Cultural 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  Foundational Core (College-level) HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artificial Intelligence CM4081 Professional Internship  CHEM Core CM1001 CM1001 Foundations of Chemistry I CM1002 MH1804 PH1801 Calculus for the Sciences 4 MH1804 PH1801 Foundations of Physics I CM2011 CM2021 CM2061 CM2021 CM2061 CM2021 CM2061 CM2061 CM2061 CM2061 CM2061 CM2061 CM2061 CM2061 CM2061 CM2062 PS0001^n CM2062 PS0001^n CM2062 CM3011* CM3011* CM3011* CM3011* CM3012* CM3012* CM3012* CM3012* CM3013* CM3013* CM3013* CM3013* CM3013* CM3014* CM3012* CM3012* CM3012* CM3013* CM3014* CM3011* CM3013* CM3014* CM3012* CM3012* CM3013* CM3014* CM3011* C	World	·	2	
	HW0218 C	Communication Across the Sciences	2	
	PS0002 Int	troduction to Data Science and Artificial Intelligence	3	15
Common Core (University-level) CC0001 Inquiry and Communication in the Inter CC0002 Navigating the Digital World CC0003 Ethics & Civics in a Multi-Cultural World CC0005 Healthy Living & Wellbeing CC0006 Sustainability: Society, Economy & Envir CC0007 Science & Technology for Humanity ML0004 Career and Entrepreneurial Developme World  Foundational Core (College-level) HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artifici CM4081 Professional Internship  CHEM Core  CM1001 Foundations of Chemistry I CM1002 MH1082 Galculus for the Sciences MH1804^ PH1801 Foundations of Physics I CM2011 Analytical and Bioanalytical Chemistry CM2021 Inorganic and Bioinorganic Chemistry CM2021 Chemistry & Biological Chemistry Lat CM2031 CM2041 CM2041 Chemistry & Biological Chemistry CM2041 CM2041 Chemistry & Biological Chemistry Lat CM2062 PS0001^ CM3011 CM2062 PS0001^ CM3011 CM2062 PS0001^ CM3012 Chemistry & Biological Chemistry Lat CM3011 CM2062 CM3031 Chemistry & Biological Chemistry Lat CM3012 Chemistry & Biological Chemistry Lat CM3013 Chemical Spectroscopy and Applicati Physical and Biophysical Chemistry Lat CM3014 Chemical Spectroscopy and Applicati Physical and Biophysical Chemistry Lat CM3012 Chemistry & Biological Chemistry Lat CM3012 Chemistry & Biological Chemistry Lat CM3012 Chemistry & Biological Chemistry Lat CM3011 CM3012 Chemistry & Biological Chemistry Lat CM3012 CHEMICAL CHEMICAL CHEMICAL CHEMISTRY CM3012 CHEMICAL CHEMICAL CHEMISTRY CM3012 CHEMICAL CHEMICAL CHEMICAL CHEMICAL CHEMISTRY CM3012 CHEMICAL CHEM	rofessional Internship	10		
	CHEM Cor	e		
	CM1001	Foundations of Chemistry I	4	
	CM1002	I -	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	56
Major	CM2041	Physical and Biophysical Chemistry 1	3	30
	CM2062	Chemistry & Biological Chemistry Laboratory 2	3	
Requirement	PS0001^	Introduction to Computational Thinking	3	
	CM3011 <sup>&amp;</sup>	Chemical Spectroscopy and Applications	3	
	CM3041 <sup>&amp;</sup>	Physical and Biophysical Chemistry 2	3	
			3	
	CM3031 <sup>&amp;</sup>	Organic Reaction Mechanisms and Synthesis	3	
			3	
		Chemistry & Biological Chemistry Laboratory 3	3	
	CHEM MA	ior Proceeded Electives (MDE)		<u> </u>
	-		10	T
				22

Total			142 - 148
JUL	j,	,	,
BDE	Students are responsible to plan for their 2nd major courses  Any 2 BDE	7	7
2nd Major in Data Analytics (BDEs)	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) MH4302 Computational Economics (4AU) MH4511 Sampling and Survey (4AU) @ MH4512 Clinical Trials (4AU) MH4702 Probabilistic Methods in OR (4AU)	9 - 12	9 - 12
	BC2407 Analytics II: Advanced Predictive Techniques (4AU) BS3008 Computer Aided Drug Discovery (3AU) BS4017 High-Throughput Bioinformatics (3AU)		
	7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques (4AU) / SC4023 Big Data Management (3AU) / SC4024 Data Visualization (3AU)	3 - 4	
	6) Data Mining: MH4510 Statistical Learning & Data Mining (4AU) / IE4483 Artificial Intelligence & Data Mining (3AU) / SC4020 Data Analytics and Mining (3AU)	3 - 4	
2nd Major in Data Analytics (BDEs)	4) Algorithms: MH1403 Algorithms & Computing 5) Database: BC2402 Designing & Developing Databases (4AU) / EE4791 Database Systems (3AU) / SC2207 Introduction to Database (3AU)	3 3 - 4	16 - 19
	3) Data Analysis/Computing: PS0001 Introduction to Computational Thinking	NA	
	2) Linear Algebra: CM1804 Mathematics for Chemistry	NA	
	Data Analytics Compulsory Courses  1) Probability and Statistics: MH2500 Probability and Introduction to Statistics	4	

<sup>^</sup>Counted towards 2nd major in Data Analytic Compulsory Course

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

<sup>\*</sup>Can be counted towards CHEM MPE

	mistry and Biological Chemistry) with 2n	d major	in Data Ana	lytics (CHDA)			
	Study Plan for AY2022-2023 intake						
with Profes	ssional Internship and FYP						
Year 1 Sem	nester 1			Year 1 Sem	ester 2		
Course		Туре	AU	Course		Туре	AU
CM1001	Foundations of Chemistry I	С	4	CM1002	Foundations of Chemistry II	С	4
MH1802	Calculus for the Sciences	С	4	MH1804^	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in the Interdisciplinary World	СС	2	PH1801	Foundations of Physics I	С	3
CC0002	Navigating the Digital World	СС	2	CC0003	Ethics & Civics in a Multi-Cultural World	СС	2
CC0005	Healthy Living & Well-being	CC	3		BDE 1 BDE 2	BDE BDE	3 4
HW0001	Introduction to Academic Communicat	ion*			55L Z	BBE	7
			15				18
*for studer	nts who have not cleared QET						
Year 2 Sem	nester 1			Year 2 Sem	ester 2		
Course		Туре	AU	Course		Type	AU
CN 42011	Interdisciplinary World  2002 Navigating the Digital World  2005 Healthy Living & Well-being  20001 Introduction to Academic Commun  2015 Ar 2 Semester 1  2016 Analytical and Bioanalytical Chemistry  2021 Inorganic and Bioinorganic Chemis  2021 Chemistry & Biological Chemistry  2021 Laboratory 1  2021 Introduction to Computational Thinking 2026 Sustainability: Society, Economy & Environment  2027 Career and Entrepreneurial Development for the Future World  2028 Ar 3 Semester 1  2029 Chemistry & Biological Chemistry  20304 Career and Entrepreneurial Development for the Future World  20305 Chemistry & Biological Chemistry  20306 Laboratory 4 20402 Designing & Developing Databases (CHDA-Core)		3	CN42021	Organic and Biographic Chemistry	С	2
	•	C		CM2031	Organic and Bioorganic Chemistry		3
CM2021		С	3	CM2041	Physical and Biophysical Chemistry 1	С	3
CM2061	Laboratory 1	С	3	CM2062	Chemistry & Biological Chemistry Laboratory 2	С	3
PS0001^	•	С	3	PS0002	Introduction to Data Science and Artificial Intelligence	FC	3
CC0006		СС	3	CC0007	Science & Technology for Humanity	СС	3
ML0004	Career and Entrepreneurial Development for the Future World	CC	2	MH1403	Algorithms & Computing	BDE	3
	·						
			17				18
Year 3 Sem	nester 1			Year 3 Sem	ester 2		
Course		Туре	AU	Course		Type	AU
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3	CM3xxx <sup>&amp;</sup>	CHEM-Core	С	3
CM3062		С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
BC2402	Designing & Developing Databases (CHDA-Core)	BDE	4	HW0218	Communication Across the Sciences	FC	2
BC2406	Analytics I: Visual and Predictive Techniques (CHDA-Core)	BDE	4	MH3500	Statistics (CHDA-Elective 1)	BDE	4
MH2500	Probability and Introduction to Statistics (CHDA-Core)	BDE	4		CHDA-Elective 2	BDE	3
	Statistics (CHDA-COTE)				CHEM MPE 1	MPE	3
			21	-			21
Year 4 Sem	nester 1	_		Year 4 Sem	ester 2	_	
Course	Duefessional teterrelite	Туре	AU	Course	Hamasura Dunis t-4	Type	AU
	Professional Internship	FC	10	CM4080 CM4043+^	Honours Project 1  Molecular Modelling: Principles and	MPE MPE	10 3
CM4081					Applications		-
CM4081							
CM4081					CHEM MPE 3	MPE	3
CM4081					CHEM MPE 3 CHEM MPE 4	MPE	3
CM4081					CHEM MPE 3		
CM4081			10		CHEM MPE 3 CHEM MPE 4	MPE	3

This study plan is meant as a guide.

<sup>^</sup>Counted towards 2nd major in Data Analytic requirements

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