BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (CHFS)

AY2023 - 2024 Intake onwards

with Professional Internship

		Number of Academic Units (AU)								
Programme	Year of Study	Major Re	quirement	Interdis	ciplinary	Broadening and				
3	,	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	Deepening Electives (BDE)	Total			
	1	17/18*		11		6	34/35*			
Chemistry and	2	21		6	3	8	38			
Biological	3	18			2	19	39			
Chemistry	4		12		10	6	28			
	Total	56/57*	12	17	15	39	139/140*			

BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (FST)

Category			AU	Total AU
		re (University-level)		
	-	uiry and Communication in the Interdisciplinary World	2	
		igating the Digital World	2	
		cs & Civics in a Multi-Cultural World	2	
		Ithy Living & Wellbeing	3	17
		tainability: Society, Economy & Environment	3	
Collaborative	CC0007 Scie	3		
Core (ICC)	ML0004 Car	eer and Entrepreneurial Development for the Future World	2	
	Foundation	al Core (College-level)		
	HW0218 Co	mmunication Across the Sciences	2	
	PS0002 Intro	oduction to Data Science and Artificial Intelligence	3	15
	CM4081 Pro	fessional Internship	10	
	CHEM Core			
	CM1001	Foundations of Chemistry I	4	
	CM1002	Foundations of Chemistry II	4	
	MH1802	Calculus for the Sciences	4	
	CM1804	Mathematics for Chemistry	2	
	PH1011	Physics <u>or</u> PH1012* Physics A	3/4*	
	CM2021	Inorganic and Bioinorganic Chemistry	3	
	CM2011	Analytical Chemistry	3	
	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	
	PS0001	Introduction to Computational Thinking	3	56/57*
Major	CM2031	Organic and Bioorganic Chemistry	3	30/3/
Requirement	CM2041	Physical and Biophysical Chemistry 1	3	
	CM2062	Chemistry & Biological Chemistry Laboratory 2	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	<u> </u>
	CHEM Majo	r Prescribed Electives (MPE)		
	4 x MPEs		12	12

	Food Science and Technology Compulsory Courses			
2nd Major in	1) CH5201 Food Chemistry		5	
2nd Major in Food Science	2) CH5200 Food Microbiology		3	
	3) CH5203 Food Process Engineering		5	20
and Technology	4) CH5202 Food Physics		3	30
(FST)	5) CH5204 Quality Systems Operations		2	
	6) NTU-FST MPE x 4		12	
	L 000	<u> </u>		
BDE	Any 3 BDE		9	9
Total				139/140*

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

[&]amp; CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

	mistry and Biological Chemistry with 2nd	d Major i	n Food Scie	nce and Techno	logy (CHFS)		
	Study Plan for AY2023-2024 intake						
with Profes	sional Internship						
Year 1 Sem	nester 1			Year 1 Sen	nester 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	CM1804	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in the Interdisciplinary World	CC	2	PH1011/	Physics <u>or</u>	С	3
CC0002	Navigating the Digital World	СС	2	PH1012*	Physics A (For students without 'A' Level Physics)	С	4
CC0005	Healthy Living & Well-being	СС	3	CC0003	Ethics & Civics in a Multi-Cultural World	СС	2
				ML0004	Career and Entrepreneurial Development for the Future World	СС	2
HW0001	Introduction to Academic Communicati	ion#			BDE 1	BDE	3
	maroduction to Academic Communicati	1011			BDE 2	BDE	3
			15		3011		19/20
for studer	nts who have not cleared QET		-5				-5, -5
Year 2 Sem	nester 1			Year 2 Sen	nester 2		
Course		Type	AU	Course		Туре	AU
CM2011	Analytical and Bioanalytical	С	3	CM2031	Organic and Bioorganic Chemistry	С	3
CM2021	Chemistry Inorganic and Riginorganic Chemistry		3	CM2041	,		3
CIVIZUZI	Inorganic and Bioinorganic Chemistry	С	5	CIVIZU41	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 &	CC	3	CC0007	Science & Technology for Humanity	CC	3
CH5201	Environment Food Chemistry	BDE	5	CH5200	Food Microbiology	BDE	3
	,						
			20				18
Year 3 Sem	nester 1	_		Year 3 Sen	nester 2	_	
Course		Туре	AU	Course		Туре	AU
CM3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
CM3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
CH5203	Food Process Engineering	BDE	5	CH5202	Food Physics	BDE	3
	NTU-FST Prescribed Elective	BDE	3	CH5204	Quality Systems Operations	BDE	2
	BDE 3	BDE	3		NTU-FST Prescribed Elective	BDE	3
				HW0218	Communication Across the Sciences	FC	2
			20				19
Year 4 Sem	nester 1	Tuno	ΔIJ	Year 4 Sen	nester 2	Tuna	A11
Course CM4081	Professional Internship	Type FC	10	Course	CHEM MPE1	Type MPE	AU 3
CIVIHUOL	i ioressional internsinp	rc	10		CHEM MPE2	MPE	3
					CHEM MPE3	MPE	3
					CHEM MPE4	MPE	3
					NTU-FST Prescribed Elective	BDE	3
					NTU-FST Prescribed Elective	BDE	3
			10		Total (AU)		18
					IOTALIAUI		139/14

This study plan is meant as a guide.

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

 $^{^{\}it 8}$ CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters

BSc in Chemistry and Biological Chemistry with 2nd Major in Food Science and Technology (CHFS)

AY2023 - 2024 Intake onwards

FYP with Professional Attachment

Programme		Number of Academic Units (AU)								
	Year of	Major Re	quirement	Interdisc	ciplinary	Broadening and				
	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	Deepening Electives (BDE)	Total			
	1	17/18*		11			28/29*			
Chemistry and	2	21		6	3	8	38			
Biological	3	18			7	18	43			
Chemistry	4		22			8	30			
	Total	56/57*	22	17	10	34	139/140*			

Category		AU	Total AU
	Common Core (University-level)		
	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	17
nterdisciplinary	CC0006 Sustainability: Society, Economy & Environment	3	
Collaborative	CC0007 Science & Technology for Humanity	3	
Core (ICC)	ML0004 Career and Entrepreneurial Development for the Future World	2	
	Foundational Core (College-level)		1
	HW0218 Communication Across the Sciences	2	
	PS0002 Introduction to Data Science and Artificial Intelligence	3	10
	CM4082 Professional Attachment	5	
	CHEM Core		
	CM1001 Foundations of Chemistry I	4	
	CM1002 Foundations of Chemistry II	4	
	MH1802 Calculus for the Sciences	4	
	CM1804 Mathematics for Chemistry	2	
	PH1011 Physics or PH1012* Physics A	3/4*	
	CM2021 Inorganic and Bioinorganic Chemistry	3	
	CM2011 Analytical Chemistry	3	
	CM2061 Chemistry & Biological Chemistry Laboratory 1	3	
	PS0001 Introduction to Computational Thinking	3	56/57*
Major	CM2031 Organic and Bioorganic Chemistry	3	30/37
Requirement	CM2041 Physical and Biophysical Chemistry 1	3	
Requirement	CM2062 Chemistry & Biological Chemistry Laboratory 2	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	
	4 x MPEs	12	22

Total			139/140*
BDE	Any 2 BDE	4	4
	6) NTU-FST MPE x 4	12	
2nd Major in Food Science and Technology (FST)	 CH5201 Food Chemistry CH5200 Food Microbiology CH5203 Food Process Engineering CH5202 Food Physics CH5204 Quality Systems Operations 	3 5 3 2	30
	Food Science and Technology Compulsory Courses	1	

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

 $^{^{\&}amp;}$ CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

	mistry and Biological Chemistry with 2nd	d Major i	n Food Scie	nce and Technol	ogy (CHFS)		
00	Study Plan for AY2023-2024 intake						
YP with Pi	rofessional Attachment Option						
ear 1 Sem	nester 1	Tuna	A11	Year 1 Sen	nester 2	Tues	A11
ourse	Farmalations of Chamisture	Туре	AU	Course	Farmedations of Chamister II	Туре	AU
M1001 1H1802	Foundations of Chemistry I	C C	4 4	CM1002	Foundations of Chemistry II	C C	4 2
C0001	Calculus for the Sciences Inquiry and Communication in the	CC	2	CM1804 PH1011/	Mathematics for Chemistry Physics or	C	3
C0001	inquiry and communication in the	CC	2	FIIIOII/	Physics <u>or</u> Physics A (For students without 'A'	C	3
C0002	Navigating the Digital World	CC	2	PH1012*	Level Physics)	С	4
			_		Ethics & Civics in a Multi-Cultural		_
C0005	Healthy Living & Well-being	CC	3	CC0003	World	CC	2
				NALOOO 4	Career and Entrepreneurial	66	,
				ML0004	Development for the Future World	CC	2
W0001	Introduction to Academic Communicat	ion [#]					
			15				13/1
for studer	nts who have not cleared QET						
•							
ear 2 Sem	nester 1			Year 2 Sen	nester 2		
ourse		Type	AU	Course		Type	AU
N42011	Analytical and Bioanalytical			CM2021	Organic and Biographic Chamistry		2
M2011	Chemistry	С	3	CM2031	Organic and Bioorganic Chemistry	С	3
CM2021	Inorganic and Bioinorganic Chamistre	С	3	CM2041	Physical and Biophysical Chemistry 1	С	3
VIAIS (T	Inorganic and Bioinorganic Chemistry	C	3	CIVIZU41	rnysicai anu biophysicai Chemistry 1	C	3
CM2061	Chemistry & Biological Chemistry	С	3	CM2062	Chemistry & Biological Chemistry	С	3
7IVIZU01	Laboratory 1	C	3	CIVI2062	Laboratory 2	C	3
S0001	Introduction to Computational	С	3	PS0002	Introduction to Data Science and	FC	3
30001	Thinking	C	3	P30002	Artificial Intelligence	FC	3
C0006	Sustainability: Society, Economy &	СС	3	CC0007	Science & Technology for Humanity	СС	3
.0000	Environment	cc	3	CC0007	Science & reciniology for flumanity	CC	3
CH5201	Food Chemistry	BDE	5	CH5200	Food Microbiology	BDE	3
			20				18
ear 3 Sem	acetou 1			Year 3 Sen	anatau 3		
course	iestei 1	Tuno	AU		nester 2	Tuno	AU
	CUENA Como	Туре		Course &	CHEM Care	Туре	
M3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
M3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
:M3062	Chemistry & Biological Chemistry	С	3	CM3061	Chemistry & Biological Chemistry	С	3
	Laboratory 4				Laboratory 3		
:H5203	Food Process Engineering	BDE	5	CH5202	Food Physics	BDE	3
	NTU-FST Prescribed Elective	BDE	3	CH5204	Quality Systems Operations	BDE	2
	BDE 1	BDE	2	,,,,,,,,,,	NTU-FST Prescribed Elective	BDE	3
				HW0218	Communication Across the Sciences	FC	2
				v. 25	etal e a c		
				Year 3 Spe		50	_
				CM4082	Professional Attachment	FC	5
			10				
			19				24
ear 4 Sem	acetar 1			Year 4 Sen	nostor 2		
ourse	1000.1	Туре	AU	Course		Туре	AU
-4130	CHEM MPE1	MPE	3	CM4080	Honours Project 1	MPE	10
	CHEM MPE2	MPE	3	CIVI-1000	BDE 2	BDE	2
	CHEM MPE3	MPE	3			JUL	_
		MPE	3				
	(HEM MPEA	IVII" L					
	CHEM MPE4 NTU-FST Prescribed Flective	RDF	3				
	NTU-FST Prescribed Elective	BDE BDE	3				
		BDE BDE	3 3				
	NTU-FST Prescribed Elective		3				12
	NTU-FST Prescribed Elective				Total (AU)		12 139/1

This study plan is meant as a guide.

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

 $^{^{\&}amp;}$ CM3xxx refers to CM3011, CM3021, CM3031, CM3041 - These courses are offered in both semesters

BSc in Chemistry and Biological Chemistry (CHEM)

AY2023 - 2024 Intake onwards

with Professional Internship and FYP

		Number of Academic Units (AU)							
Programme	Year of	Major Re	quirement	Interdisc	ciplinary	Broadening and			
	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	Deepening Electives (BDE)	Total		
	1	17/18*		9		9	35/36*		
Chemistry and	2	21		8	3	5	37		
Biological	3	18	3		2	8	31		
Chemistry	4		19		10		29		
	Total	56/57*	22	17	15	22	132/133*		

BSc in Chemistry and Biological Chemistry (CHEM)

Category			AU	Total AU		
	Common C	Core (University-level)				
	CC0001 Inquiry and Communication in the Interdisciplinary World 2					
	CC0002 Na	2				
	CC0003 Etl	hics & Civics in a Multi-Cultural World	2			
	CC0005 He	ealthy Living & Wellbeing	3	17		
	CC0006 Su	stainability: Society, Economy & Environment	3	17		
nterdisciplinary	CC0007 Sc	ience & Technology for Humanity	3			
Collaborative	ML0004 Ca	areer and Entrepreneurial Development for the Future	2			
Core (ICC)	World		2			
	Foundatio	nal Core (College-level)				
	HW0218 C	ommunication Across the Sciences	2	4.5		
	PS0002 Int	roduction to Data Science and Artificial Intelligence	3	15		
		rofessional Internship	10			
	CHEM Cor					
	CM1001	Foundations of Chemistry I	4			
	CM1002	Foundations of Chemistry II	4			
	MH1802	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	56/57*		
Major	CM2041	Physical and Biophysical Chemistry 1	3			
Requirement	CM2062	Chemistry & Biological Chemistry Laboratory 2	3			
	PS0001	Introduction to Computational Thinking	3			
	CM3011 ^{&}		3			
	CM3041 ^{&}		3			
	CM3062	Chemistry & Biological Chemistry Laboratory 4	3			
	CM3031 ^{&}	=	3			
	CM3021 ^{&}	-	3			
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3			
	-	or Prescribed Electives (MPE)				
	CM4080	Honours Project 1	10	22		
	4 x MPEs		12	22		
roadening and	Deenening	Flectives (BDF)		22		
. caaciiiig aila	_ ccpciiiig					
otal				132/133*		

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

 $^{^{\&}amp;}$ CM3011, CM3021. CM3031, CM3041 are offered in both semesters.

-	mistry and Biological Chemistry) Study Plan for AY2023-2024 intake						
	ssional Internship and FYP						
ear 1 Sem	nester 1			Year 1 Sen	nester 2		
Course	iester 1	Туре	AU	Course		Туре	AU
CM1001	Foundations of Chemistry I	C	4	CM1002	Foundations of Chemistry II	С	4
MH1802	Calculus for the Sciences	С	4	CM1804	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in the Interdisciplinary World	CC	2	PH1011/	Physics <u>or</u>	С	3
CC0002	Navigating the Digital World	СС	2	PH1012*	Physics A (For students without 'A' Level Physics)	С	4
CC0005	Healthy Living & Well-being	СС	3	CC0003	Ethics & Civics in a Multi-Cultural World	СС	2
	BDE 1	BDE	3		BDE 2 BDE 3	BDE BDE	3 3
HW0001	Introduction to Academic Communicati	ion #					
			18	-			17/18
	nts who have not cleared QET						
ear 2 Sem	nester 1	T		Year 2 Sen	nester 2	T	
Course	Analytical and Bioanalytical	Туре	AU	Course		Туре	AU
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	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	СС	3	CC0007	Science & Technology for Humanity	СС	3
ML0004	Career and Entrepreneurial Development for the Future World	СС	2		BDE 4	BDE	2
			17				17
Year 3 Sem	nester 1			Year 3 Sen	nester 2		
Course		Туре	AU	Course		Type	AU
CM3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
CM3xxx ^{&}	CHEM-Core	С	3	CM3xxx ^{&}	CHEM-Core	С	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
	BDE 5	BDE	2	HW0218	Communication Across the Sciences	FC	2
	BDE 6	BDE	3		CHEM MPE1	MPE	3
	BDE 7	BDE	3		BDE 8	BDE	3
			17				17
	postor 1			Voor 4 San	noctor 2		
loar A Sam	iestei I	Туре	AU	Year 4 Sen Course	nester 2	Туре	AU
		. , , , ,		CM4080	Honours Project 1	MPE	10
Course	Professional Internship	FC	10			_	
Course	Professional Internship	FC	10		CHEM MPE2	MPE	3
Course	Professional Internship	FC	10		CHEM MPE2 CHEM MPE3	MPE MPE	3 3
Course	Professional Internship	FC	10				
Year 4 Sem Course CM4081	Professional Internship	FC	10		CHEM MPE3	MPE	3

This study plan is meant as a guide.

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

*CA2021 CA40041 - These course

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