BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES) AY2021 - 2022 Intake

			Nur	nber of Acad	lemic Units (AU)		
_	Year of	Major Re	equirement	Interdis	ciplinary	Broadening		
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	and Deepening Electives	Total	
	1	24		9		8	41	
Chemistry and	2	21		8	3	6	38	
Biological	3	18			7	18	43	
Chemistry	4		22			2	24	
	Total	63	22	17	10	34	146	
		-	•	the Interdis	rinlinary	2		
	Common Co	re (Universi	ity-level)					
	•	•	nmunication in	the Interdiso	ciplinary	2		
	CC0002 Navi	•	•	1.44 1.1		2		
			n a Multi-Cultu	irai World		2	47	
ر مر مان من مان م	CC0005 Heal	3	17					
nterdisciplinary Collaborative					ment	3		
Conaborative	CC0007 Scie ML0004 Card	2						
core (icc)	IVILOUU4 Car	2						
	Foundationa	al Core (Coll	ege-level)					
		ciences		2	10			
	HW0218 Cor	IIIIIuiiicatio	PS0002 Introduction to Data Science and Artificial Intelligence					
				nd Artificial I	ntelligence	3		
		duction to	Data Science a	nd Artificial I	ntelligence	3 5		
	PS0002 Intro CM4082 Pro	duction to	Data Science a	nd Artificial I	ntelligence			
	PS0002 Intro CM4082 Pro	oduction to fessional At	Data Science a tachment			5		
	PS0002 Intro CM4082 Pro	duction to fessional At Basic Inorg	Data Science a	y with Labora				

	HW0218 C	2	10			
	PS0002 Introduction to Data Science and Artificial Intelligence					
	CM4082 Pr	ofessional Attachment	5			
	CHEM Core					
	CM1021	Basic Inorganic Chemistry with Laboratory	4			
	CM1031	Basic Organic Chemistry with Laboratory	4			
	MH1802	Calculus for the Sciences	4			
	CM1041	Basic Physical Chemistry with Laboratory	4			
	CM1051	Basic Biological Chemistry	3			
	MH1804	Mathematics for Chemistry	2			
	PH1801	Foundation of Physics 1	3			
	CM2011	Analytical Chemistry	3			
	CM2021	Inorganic and Bioinorganic Chemistry	3			
	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	63		
Major	PS0001	Introduction to Computational Thinking	3	03		
Requirement	CM2031	Organic and Bioorganic Chemistry	3			
	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			
	CM3021	Organometallic Chemistry	3			
	CM3031	Organic Reaction Mechanisms and Synthesis	3			
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3			
	CHEM Maj	or Prescribed Electives (MPE)				
	CM4080	Honours Project 1	10	22		
	4 x MPEs		12	22		

	Environmental Science Compulsory Courses		
	1) ES1001 E2S2 Environment and Society	4	
	2) ES2003 E2S2 Biosphere	4	
	3) ES3009 Introduction to Geochemistry	4	
	4) ES5001 Natural Hazards, Climate Change and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 4 Courses from the following list		
	1) ES1007 Climate Change	3	
	2) ES3801 Biogeochemistry	3	
2nd Major in Environmental	3) ES3802 The Urban Environment: Issue, Assessment, and Management	3	
Science (CHES)	4) ES5002 Emergent Life	3	30
, ,	5) ES5003 Blue Planet: How the Oceans Work	3	
	6) ES5005 (ES8005) Environmental Earth Systems Science	3	
	7) ES9003 The Genome and Society	3	
	8) EM5101 (EM9101)Environmental Quality	3	
	9) EM5103 Water Resource Management	3	
	10) EM5104 (EM9104) Air Quality Management	3	
	11) EM5105 (EM9105) Energy Resources Management	3	
	12) EM 5107 (EM9107) Environmental Health and Safety Management	3	
	13) EM5109 Environmental Issues and Sustainability	3	
	Students are responsible to plan for their 2nd major courses		
BDE	Any 2 BDE	4	4

Suggested	mistry and Biological Chemistry with 2nd M Study Plan for AY2021-2022 intake rofessional Attachment Option	ajor in Er	nvironmental	Science (CHES)			
Year 1 Sem	nester 1	_		Year 1 Sem	nester 2		
Course	Basic Inorganic Chemistry with	Туре	AU	Course		Туре	AU
CM1021	Laboratory	С	4	CM1041	Basic Physical Chemistry with Laboratory	С	4
CM1031	Basic Organic Chemistry with Laboratory	С	4	CM1051	Basic Biological Chemistry	С	3
MH1802	Calculus for the Sciences	С	4	MH1804	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in an	CC	2	PH1801	Foundation of Physics 1	С	3
CC0002	Interdisciplinary World Navigating the Digital World	CC	2	CC0003	Ethics & Civics in a Multicultural World	CC	2
ES1001	Environment and Society	BDE	4	CC0005	Healthy Living and Wellbeing	CC	3
HW0001	Introduction to Academic Communication			ES2003	E2S2 Biosphere	BDE	4
			20				21
*for stude	nts who have not cleared QET		20				
Year 2 Sem	nester 1	_		Year 2 Sem	nester 2	_	
Course CM2011	Analytical Chemistry	Type C	AU 3	Course CM2031	Organic and Bioorganic Chemistry	Type C	AU 3
CM2011 CM2021	Inorganic and Bioinorganic Chemistry	C	3	CM2041	Physical and Biophysical Chemistry	C	3
	Chemistry & Biological Chemistry	С	3	CM2062	Chemistry & Biological Chemistry	С	3
CM2061	Laboratory 1	C	3	CIVIZU62	Laboratory 2	C	3
PS0001	Introduction to Computational Thinking	С	3	ML0004	Career & Entrepreneurial Development for the Future World	CC	2
CC0006	Sustainability: Society, Economy & Environment	CC	3	PS0002	Introduction to Data Science and Artificial Intelligence	FC	3
CC0007	Science & Technology for Humanity	CC	3	ES5006 (ES8006)	Environmental Sustainability	BDE	3
ES5001 (ES8001)	Natural Hazards and Society	BDE	3				
			21				17
Year 3 Sen Course	nester 1	Туре	AU	Year 3 Sem Course	nester 2	Туре	AU
CM3011	Chemical Spectroscopy and Applications	С	3	CM3021	Organometallic Chemistry	C	3
CM3041	Physical and Biophysical Chemistry 2	С	3	CM3031	Organic Reaction Mechanisms and	С	3
CIVISO 11		C	3	CIVI3031	Synthesis	Č	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
ES3009	Introduction to Geochemistry	BDE	4	HW0218	Effective Communication 2	FC	2
	ES Prescribe Elective 1	BDE	3		ES Prescribe Elective 2	BDE	3
	Broadening and Deepening Elective 1	BDE	2		ES Prescribe Elective 3	BDE	3
					ES Prescribe Elective 4	BDE	3
				Year 3 Spe			_
				CM4082	Professional Attachment	FC	5
			18				25
Year 4 Sen	nester 1			Year 4 Sem	nester 2		
Course	nester 2	Туре	AU	Course	1000. 2	Туре	AU
CM4XXX	СНЕМ МРЕ	MPE	3	CM4080	Honours Project 1	MPE	10
CM4XXX	CHEM MPE	MPE	3		Broadening and Deepening Elective 2	BDE	2
CM4XXX	CHEM MPE CHEM MPE	MPE MPE	3 3				
	CITEIVI IVII L	IVIFE	3				
CM4XXX							
CIVI4AAA			12		Total (AU)		12

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

AY2021 - 2022 Intake

with Professional Internship

		Number of Academic Units (AU)								
	Year of	Major Re	quirement	Interdisc	ciplinary	Broadening				
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	and Deepening Electives (BDE)	Total			
	1	24		9		8	41			
Chemistry and	2	21		8	3	6	38			
Biological	3	18			2	19	39			
Chemistry	4		12		10	6	28			
	Total	63	12	17	15	39	146			

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

Category			AU	Total AU
	Common C	Core (University-level)		
	CC0001 Inc	quiry and Communication in the Interdisciplinary World	2	
	CC0002 Na	vigating the Digital World	2	
	CC0003 Eth	nics & Civics in a Multi-Cultural World	2	
	CC0005 He	althy Living & Wellbeing	3	17
Interdisciplinary	CC0006 Su:	stainability: Society, Economy & Environment	3	
Collaborative	CC0007 Sci	ence & Technology for Humanity	3	
Core (ICC)	ML0004 Ca World	reer and Entrepreneurial Development for the Future	2	
	Foundation	nal Core (College-level)		
	HW0218 C	ommunication Across the Sciences	2	10
	PS0002 Int	roduction to Data Science and Artificial Intelligence	3	10
	CM4082 Pr	ofessional Attachment	5	
	CHEM Core			
	CM1021	Basic Inorganic Chemistry with Laboratory	4	
	CM1031	Basic Organic Chemistry with Laboratory	4	
	MH1802	Calculus for the Sciences	4	
	CM1041	Basic Physical Chemistry with Laboratory	4	
	CM1051	Basic Biological Chemistry	3	
	MH1804	Mathematics for Chemistry	2	
	PH1801	Foundation of Physics 1	3	
	CM2011	Analytical Chemistry	3	
	CM2021	Inorganic and Bioinorganic Chemistry	3	
	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	63
Major	PS0001	Introduction to Computational Thinking	3	
Requirement	CM2031	Organic and Bioorganic Chemistry	3	
	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	
	CM3021	Organometallic Chemistry	3	
	CM3031	Organic Reaction Mechanisms and Synthesis	3	
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3	
	CHEM Maj	or Prescribed Electives (MPE)		
	CM4080	Honours Project 1	10	22
	4 x MPEs		12	

	Environmental Science Compulsory Courses		
	1) ES1001 E2S2 Environment and Society	4	
	2) ES2003 E2S2 Biosphere	4	
	3) ES3009 Introduction to Geochemistry	4	
	4) ES5001 Natural Hazards, Climate Change and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 4 Courses from the following list		
	1) ES1007 Climate Change	3	
	2) ES3801 Biogeochemistry	3	
2nd Major in	3) ES3802 The Urban Environment: Issue, Assessment, and	3	
Environmental	Management	3	30
Science (CHES)	4) ES5002 Emergent Life	3	30
	5) ES5003 Blue Planet: How the Oceans Work	3	
	6) ES5005 (ES8005) Environmental Earth Systems Science	3	
	7) ES9003 The Genome and Society	3	
	8) EM5101 (EM9101)Environmental Quality	3	
	9) EM5103 Water Resource Management	3	
	10) EM5104 (EM9104) Air Quality Management	3	
	11) EM5105 (EM9105) Energy Resources Management	3	
	12) EM 5107 (EM9107) Environmental Health and Safety Management	3	
	13) EM5109 Environmental Issues and Sustainability	3	
	Students are responsible to plan for their 2nd major courses		I
BDE	Any 2 BDE	4	4

BSc in Cher	mistry and Biological Chemistry with 2nd M	ajor in En	vironmenta	l Science (CHES)			
Suggested	Study Plan for AY2021-2022 intake						
with Profes	ssional Internship						
Year 1 Sem	nector 1			Year 1 Sen	nester 7		
Course	iestei 1	Туре	AU	Course	nester 2	Туре	AU
CM1021	Basic Inorganic Chemistry with	С	4	CM1041	Basic Physical Chemistry with Laboratory	С	4
CIVITOZI	Laboratory	C	4	CIVITO41	basic riffsical chemistry with Laboratory	C	4
CM1031	Basic Organic Chemistry with Laboratory	С	4	CM1051	Basic Biological Chemistry	С	3
MH1802	Calculus for the Sciences	С	4	MH1804	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in an	CC	2	PH1801	Foundation of Physics 1	С	3
CC0002	Interdisciplinary World Navigating the Digital World	CC	2	CC0003	Ethics & Civics in a Multicultural World	CC	2
ES1001	Environment and Society	BDE	4	CC0005	Healthy Living and Wellbeing	CC	3
	·			ES2003	E2S2 Biosphere	BDE	4
HW0001	Introduction to Academic Communication	*					
			20				21
*for studer	nts who have not cleared QET						
v 26				v			
Year 2 Sem Course	nester 1	Туре	AU	Year 2 Sen Course	nester 2	Туре	AU
CM2011	Analytical Chemistry	С	3	CM2031	Organic and Bioorganic Chemistry	С	3
CM2021	Inorganic and Bioinorganic Chemistry	C	3	CM2041	Physical and Biophysical Chemistry 1	C	3
CM2061	Chemistry & Biological Chemistry	С	3	CM2062	Chemistry & Biological Chemistry	С	3
0.11.2001	Laboratory 1	Ü		02002	Laboratory 2	Ü	J
PS0001	Introduction to Computational Thinking	С	3	ML0004	Career & Entrepreneurial Development for the Future World	CC	2
ccooc	Sustainability: Society, Economy &	66	2	DC0003	Introduction to Data Science and	F.C	2
CC0006	Environment	CC	3	PS0002	Artificial Intelligence	FC	3
CC0007	Science & Technology for Humanity	CC	3	ES5006	Environmental Sustainability	BDE	3
ES5001				(ES8006)			
(ES8001)	Natural Hazards and Society	BDE	3				
			21				17
Year 3 Sem	nester 1			Year 3 Sen	nester 2		
Course		Type	AU	Course		Type	AU
CM3011	Chemical Spectroscopy and Applications	С	3	CM3021	Organometallic Chemistry	С	3
					Organic Reaction Mechanisms and		
CM3041	Physical and Biophysical Chemistry 2	С	3	CM3031	Synthesis	С	3
CM3062	Chemistry & Biological Chemistry	С	3	CM3061	Chemistry & Biological Chemistry	С	3
	Laboratory 4				Laboratory 3 Effective Communication 2	FC	2
ES3009	Introduction to Geochemistry ES Prescribe Elective 1	BDE BDE	4 3	HW0218	ES Prescribe Elective 2	BDE	3
	Broadening and Deepening Elective 1	BDE	3		ES Prescribe Elective 3	BDE	3
	broadening and beepening freeze i	552			ES Prescribe Elective 4	BDE	3
			19				20
			-3				20
Year 4 Sem Course	nester 1	Туре	AU	Year 4 Sen Course	nester 2	Туре	AU
CM4081	Professional Internship	FC	10	CM4XXX	CHEM MPE	MPE	3
5171-1501			10	CM4XXX	CHEM MPE	MPE	3
				CM4XXX	CHEM MPE	MPE	3
				CM4XXX	CHEM MPE	MPE	3
				S.11-700A	Broadening and Deepening Elective 2	BDE	3
					Broadening and Deepening Elective 3	BDE	3
			10				18
							146
					Total (AU)		

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

AY2021 - 2022 Intake

with Professional Internship and FYP

		Number of Academic Units (AU)							
B	Year of	Major Re	quirement	Interdis	ciplinary	Broadening			
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	and Deepening Electives	Total		
	1	24		9		8	41		
Chemistry and	2	21		8	3	6	38		
Biological	3	18	3		2	16	39		
Chemistry	4		19		10	·	29		
	Total	63	22	17	15	30	147		

BSc in Chemistry and Biological Chemistry with 2nd Major in Environmental Science (CHES) Category **Total AU** ΑU Common Core (University-level) CC0001 Inquiry and Communication in the Interdisciplinary World 2 2 CC0002 Navigating the Digital World CC0003 Ethics & Civics in a Multi-Cultural World 2 17 CC0005 Healthy Living & Wellbeing 3 CC0006 Sustainability: Society, Economy & Environment 3 Interdisciplinary 3 CC0007 Science & Technology for Humanity Collaborative ML0004 Career and Entrepreneurial Development for the Future Core (ICC) 2 World Foundational Core (College-level) 2 HW0218 Communication Across the Sciences 15 PS0002 Introduction to Data Science and Artificial Intelligence 3 CM4081 Professional Internship 10 **CHEM Core** Basic Inorganic Chemistry with Laboratory CM1021 4 CM1031 Basic Organic Chemistry with Laboratory 4 MH1802 Calculus for the Sciences 4 CM1041 Basic Physical Chemistry with Laboratory 4 CM1051 **Basic Biological Chemistry** 3 MH1804 Mathematics for Chemistry 2 PH1801 Foundation of Physics 1 3 CM2011 **Analytical Chemistry** 3 Inorganic and Bioinorganic Chemistry CM2021 3 CM2061 Chemistry & Biological Chemistry Laboratory 1 3 63 3 Major PS0001 Introduction to Computational Thinking Requirement CM2031 Organic and Bioorganic Chemistry 3 3 CM2041 Physical and Biophysical Chemistry 1 Chemistry & Biological Chemistry Laboratory 2 3 CM2062 **Chemical Spectroscopy and Applications** CM3011 3 Physical and Biophysical Chemistry 2 3 CM3041 CM3062 Chemistry & Biological Chemistry Laboratory 4 3 CM3021 Organometallic Chemistry 3 Organic Reaction Mechanisms and Synthesis CM3031 3 Chemistry & Biological Chemistry Laboratory 3 CM3061 3 **CHEM Major Prescribed Electives (MPE)** Honours Project 1 10 CM4080 22 4 x MPEs 12

	Environmental Science Compulsory Courses		
	1) ES1001 E2S2 Environment and Society	4	
	2) ES2003 E2S2 Biosphere	4	
	3) ES3009 Introduction to Geochemistry	4	
	4) ES5001 Natural Hazards, Climate Change and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 4 Courses from the following list		
	1) ES1007 Climate Change	3	
	2) ES3801 Biogeochemistry	3	
2nd Major in	3) ES3802 The Urban Environment: Issue, Assessment, and	3	
Environmental	Management	3	30
Science (CHES)	4) ES5002 Emergent Life	3	30
	5) ES5003 Blue Planet: How the Oceans Work	3	
	6) ES5005 (ES8005) Environmental Earth Systems Science	3	
	7) ES9003 The Genome and Society	3	
	8) EM5101 (EM9101)Environmental Quality	3	
	9) EM5103 Water Resource Management	3	
	10) EM5104 (EM9104) Air Quality Management	3	
	11) EM5105 (EM9105) Energy Resources Management	3	
	12) EM 5107 (EM9107) Environmental Health and Safety	3	
	Management	3	
	13) EM5109 Environmental Issues and Sustainability	3	
	Students are responsible to plan for their 2nd major courses		
Total			147

Suggested	mistry and Biological Chemistry with 2nd M Study Plan for AY2021-2022 intake ssional Internship and FYP	ajor in Er	vironmenta	l Science (CHES)			
	/ear 1 Semester 1			Year 1 Sen	T		
Course	Basic Inorganic Chemistry with	Туре	AU	Course		Type	AU
CM1021	Laboratory	С	4	CM1041	Basic Physical Chemistry with Laboratory	С	4
CM1031	Basic Organic Chemistry with Laboratory	С	4	CM1051	Basic Biological Chemistry	С	3
MH1802	Calculus for the Sciences	С	4	MH1804	Mathematics for Chemistry	С	2
CC0001	Inquiry and Communication in an Interdisciplinary World	CC	2	PH1801	Foundation of Physics 1	С	3
CC0002	Navigating the Digital World	CC	2	CC0003	Ethics & Civics in a Multicultural World	CC	2
ES1001	Environment and Society	BDE	4	CC0005 ES2003	Healthy Living and Wellbeing	CC BDE	3 4
HW0001	Introduction to Academic Communication	*		E32005	E2S2 Biosphere	BDE	4
			20				21
*for stude	nts who have not cleared QET						
Year 2 Sen	nester 1			Year 2 Sen	nester 2		
Course		Type	AU	Course		Туре	AU
CM2011	Analytical 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	ML0004	Career & Entrepreneurial Development for the Future World	CC	2
CC0006	Sustainability: Society, Economy & Environment	CC	3	PS0002	Introduction to Data Science and Artificial Intelligence	FC	3
CC0007	Science & Technology for Humanity	CC	3	ES5006 (ES8006)	Environmental Sustainability	BDE	3
ES5001 (ES8001)	Natural Hazards and Society	BDE	3				
			21				17
Year 3 Sem	nester 1	T		Year 3 Sen	nester 2	T	
Course		Туре	AU	Course	Organia Dagatian Machaniana and	Type	AU
CM3011	Chemical Spectroscopy and Applications	С	3	CM3031	Organic Reaction Mechanisms and Synthesis	С	3
CM3021	Organometallic Chemistry	С	3	CM3061	Chemistry & Biological Chemistry Laboratory 3	С	3
CM3041	Physical and Biophysical Chemistry 2	С	3	HW0218	Effective Communication 2	FC	2
CM3062	Chemistry & Biological Chemistry Laboratory 4	С	3		ES Prescribe Elective 2	BDE	3
ES3009	Introduction to Geochemistry	BDE	4		ES Prescribe Elective 3	BDE	3
	ES Prescribe Elective 1	BDE	3		ES Prescribe Elective 4	BDE	3
				CM4XXX	CHEM MPE	MPE	3
			19				20
Year 4 Sem	nester 1			Year 4 Sen	nester 2		
Course		Type	AU	Course		Type	AU
CM4081	Professional Internship	FC	10	CM4080	Honours Project 1	MPE	10
				CM4XXX	CHEM MPE	MPE	3
				CM4XXX CM4XXX	CHEM MPE CHEM MPE	MPE MPE	3 3
				CIVIANA	CHEWINE L	IVIFL	<u> </u>
			10				19
					Total (AU)		147
					, ,		-