

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

AY2022 - 2023 Intake onwards

with Professional Internship

Programme	Year of Study	Number of Academic Units (AU)					Total
		Major		Interdisciplinary		Broadening and Deepening Electives (BDE)	
		Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)		
Chemistry and Biological Chemistry	1	17		9		8	34
	2	21		8	3	6	38
	3	18			2	19	39
	4		12		10	6	28
	Total	56	12	17	15	39	139

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

Category		AU	Total AU
Interdisciplinary Collaborative Core (ICC)	<b>Common Core (University-level)</b>		
	CC0001 Inquiry and Communication in the	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 &	3	
	CC0007 Science & Technology for Humanity	3	
	ML0004 Career and Entrepreneurial Development for	2	
	<b>Foundational Core (College-level)</b>		
	HW0218 Communication Across the Sciences	2	10
	PS0002 Introduction to Data Science and Artificial	3	
	CM4082 Professional Attachment	5	

Major Requirement	<b>CHEM Core</b>			
	CM1001	Foundations of Chemistry I	4	23
	CM1002	Foundations of Chemistry II	4	
	MH1802	Calculus for the Sciences	4	
	MH1804	Mathematics for Chemistry	2	
	PH1801	Foundations of Physics I	3	
	CM2021	Inorganic and Bioinorganic Chemistry	3	
	CM2011	Analytical Chemistry	3	

Major Requirement	CM2061	Chemistry & Biological Chemistry	3	33
	PS0001	Introduction to Computational Thinking	3	
	CM2031	Organic and Bioorganic Chemistry	3	
	CM2041	Physical and Biophysical Chemistry 1	3	
	CM2062	Chemistry & Biological Chemistry	3	
	CM3011	Chemical Spectroscopy and Applications	3	
	CM3041	Physical and Biophysical Chemistry 2	3	
	CM3062	Chemistry & Biological Chemistry	3	
	CM3031	Organic Reaction Mechanisms and Synthesis	3	
	CM3021	Organometallic Chemistry	3	
	CM3061	Chemistry & Biological Chemistry	3	
	<b>CHEM Major Prescribed Electives (MPE)</b>			
	CM4080	Honours Project 1	10	22
	4 x MPEs		12	

2nd Major in Environmental Science (CHES)	<b>Environmental Science Compulsory Courses</b>				
	1) ES1001 E2S2 Environment and Society		4	30	
	2) ES2003 E2S2 Biosphere		4		
	3) ES3003 Introduction to Geochemistry		4		
	4) ES8001 Natural Hazards, Climate Change and Society		3		
	5) ES8005 Environmental Earth Systems Science		3		
	6) ES8006 Environmental Sustainability		3		
	<b>Choose 3 Courses from the following list</b>				
	1) ES1007 Climate Change		3		
	2) ES3801 Biogeochemistry		3		
	3) EM9101 Environmental Quality		3		
	4) EM9104 Air Quality Management		3		
	5) EM9105 Energy Resources Management		3		
	6) EM9107 Environmental Health and Safety		3		

BDE	Any 2 BDE	4	4
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**Total**

**139**

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

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 an interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
ES1001 Environment and Society	BDE	4
HW0001 Introduction to Academic Communication*		

**16**

\*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
CC0007 Science & Technology for Humanity	CC	3
ES8001 Natural Hazards, Climate Change and Society	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
ES3003 Introduction to Geochemistry	BDE	4
ES8005 Environmental Earth Systems Science	BDE	3
BDE 1	BDE	3

**19****Year 4 Semester 1**

Course	Type	AU
CHEM MPE1	MPE	3
CHEM MPE2	MPE	3
CHEM MPE3	MPE	3
CHEM MPE4	MPE	3
BDE 2	BDE	3
BDE 3	BDE	3

**18****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
CC0005 Healthy Living & Wellbeing	CC	3
ES2003 Biosphere	BDE	4

**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
ML0004 Career and Entrepreneurial Development for the Future World	CC	2
ES8006 Environmental Sustainability	BDE	3

**17****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
CBC-ES Elective 1	BDE	3
CBC-ES Elective 1	BDE	3
CBC-ES Elective 1	BDE	3
HW0218 Communication Across the Sciences	FC	2

**20****Year 4 Semester 2**

Course	Type	AU
CM4081 Professional Internship	FC	10

**10****Total (AU)****139**

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

AY2022 - 2023 Intake onwards

*FYP with Professional Attachment*

Programme	Year of Study	Number of Academic Units (AU)					Total
		Major		Interdisciplinary		Broadening and Deepening Electives (BDE)	
		Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)		
Chemistry and Biological Chemistry	1	17		9		8	34
	2	21		8	3	6	38
	3	18			7	18	43
	4		22			2	24
	Total	56	22	17	10	34	139

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

Category	AU	Total AU	
Interdisciplinary Collaborative Core (ICC)	<b>Common Core (University-level)</b>		
	CC0001 Inquiry and Communication in the	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	2	
	<b>Foundational Core (College-level)</b>		10
	HW0218 Communication Across the Sciences	2	
PS0002 Introduction to Data Science and Artificial	3		
CM4082 Professional Attachment	5		

CHEM Core		AU	Total AU	
Major Requirement	CM1001	Foundations of Chemistry I	4	23
	CM1002	Foundations of Chemistry II	4	
	MH1802	Calculus for the Sciences	4	
	MH1804	Mathematics for Chemistry	2	
	PH1801	Foundations of Physics I	3	
	CM2021	Inorganic and Bioinorganic Chemistry	3	
	CM2011	Analytical Chemistry	3	

Major Requirement	CM2061	Chemistry & Biological Chemistry Laboratory 1	3	33
	PS0001	Introduction to Computational Thinking	3	
	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	
	CM3031	Organic Reaction Mechanisms and Synthesis	3	
	CM3021	Organometallic Chemistry	3	
	CM3061	Chemistry & Biological Chemistry Laboratory 3	3	
	<b>CHEM Major Prescribed Electives (MPE)</b>			
	CM4080	Honours Project 1	10	22
	4 x MPEs		12	

2nd Major in Environmental Science (CHES)	<b>Environmental Science Compulsory Courses</b>				
	1) ES1001 E2S2 Environment and Society		4	30	
	2) ES2003 E2S2 Biosphere		4		
	3) ES3003 Introduction to Geochemistry		4		
	4) ES8001 Natural Hazards, Climate Change and Society		3		
	5) ES8005 Environmental Earth Systems Science		3		
	6) ES8006 Environmental Sustainability		3		
	<b>Choose 3 Courses from the following list</b>				
	1) ES1007 Climate Change		3		
	2) ES3801 Biogeochemistry		3		
	3) EM9101 Environmental Quality		3		
	4) EM9104 Air Quality Management		3		
	5) EM9105 Energy Resources Management		3		
6) EM9107 Environmental Health and Safety Management		3			

BDE	Any 2 BDE		4	4
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**Total**

**139**

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

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 an interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
ES1001 Environment and Society	BDE	4

HW0001 Introduction to Academic Communication\*

**16**

\*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
CC0007 Science & Technology for Humanity	CC	3
ES8001 Natural Hazards, Climate Change and Society	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
ES3003 Introduction to Geochemistry	BDE	4
ES8005 Environmental Earth Systems Science	BDE	3
BDE 1	BDE	2

**18****Year 4 Semester 1**

Course	Type	AU
CHEM MPE1	MPE	3
CHEM MPE2	MPE	3
CHEM MPE3	MPE	3
CHEM MPE4	MPE	3

**12****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
CC0005 Healthy Living & Wellbeing	CC	3
ES2003 Biosphere	BDE	4

**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
ML0004 Career and Entrepreneurial Development for the Future World	CC	2
ES8006 Environmental Sustainability	BDE	3

**17****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
CBC-ES Elective 1	BDE	3
CBC-ES Elective 1	BDE	3
CBC-ES Elective 1	BDE	3
HW0218 Communication Across the Sciences	FC	2

**Year 3 Special Sem**

CM4082 Professional Attachment	FC	5
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**25****Year 4 Semester 2**

Course	Type	AU
CM4080 Honours Project 1	MPE	10
BDE 2	BDE	2

**12****Total (AU)****139**