

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

AY2025 - 2026 Intake onwards

FYP with Professional Internship

Programme	Year of Study	Number of Academic Units (AU)						
		Major Requirement		Interdisciplinary Collaborative Core			Broadening and Deepening Electives (BDE)	
		Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve and Learn (CSL)		
Chemistry and Biological Chemistry	1	18/19*		8			9	35/36*
	2	22		6	3	3	6	40
	3	18	3		3		15	39
	4		19		10			29
	Total	58/59*	22	14	16	3	30	143/144*

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

Category	AU	Total AU
Interdisciplinary Collaborative Core (ICC)		
Common Core (University-level)		
CC0001 Inquiry & Communication in an Interdisciplinary World	2	
CC0003 Ethics & Civics in a Multi-Cultural World	2	
ML0004 Career Design & Workplace Readiness in the V.U.C.A World	2	
CC0015 Health & Wellbeing	2	
CC0006 Sustainability: Society, Economy & Environment	3	
CC0007 Science & Technology for Humanity	3	14
Professional Series (College-level)		
HW0218 Communication Across the Sciences	2	
PS0002 Introduction to Data Science and Artificial Intelligence	3	
CM4081 Professional Internship	10	
MLXXXX Profession Preparation	1	16
XXXXXX Care, Serve, Learn (University-level)	3	3
Major Requirement		
CHEM Core		
CM1001 Foundations of Chemistry I	4	
CM1002 Foundations of Chemistry II	4	
CB1102 Introduction to Chemistry, Chemical and Biomedical	1	
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	
CM2031 Organic and Bioorganic Chemistry	3	
CM2041 Physical and Biophysical Chemistry 1	3	
CM2062 Chemistry & Biological Chemistry Laboratory 2	3	
CB2002 Introduction to Chemical and Biological Safety	1	
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	58/59*
CHEM Major Prescribed Electives (MPE)		
CM4080 Honours Project 1	10	
4 x MPEs	12	22

2nd Major in Environmental Science (CHES)	Environmental Science Compulsory Courses		
	1) ES1007 Climate Change or ES5007 Climate and Climate Change	3	
	2) ES3003 Introduction to Geochemistry	3	
	3) ES3802 The Urban Environment: Issue, Assessment, and	3	
	4) ES5001 Natural Hazards and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 5 Courses from the following list		
	1) ES2003 [#] E2S2 Biosphere	4	
	2) ES3801 Biogeochemistry	3	
	3) ES5002 Emergent Life	3	30 [#]
	4) ES5003 Blue Planet: How the Oceans Work	3	
	5) ES5005 Environmental Earth Systems Science	3	
	6) ES3203 (ES9003) The Genome and Society	3	
	7) EM5101 Environmental Quality	3	
	8) EM5103 Water Resource Management	3	
	9) EM5104 Air Quality Management	3	
	10) EM5105 Energy Resources Management	3	
	11) EM 5107 Environmental Health and Safety Management	3	
	12) EM5109 Environmental Issues and Sustainability	3	
<i>Students are responsible to plan for their 2nd major courses</i>			

Total

143/144*

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

[#] Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.

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

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

Suggested Study Plan for AY2025-2026 intake

FYP with Professional Internship

Year 1 Semester 1

Course		Type	AU
CM1001	Foundations of Chemistry I	C	4
MH1802	Calculus for the Sciences	C	4
CB1102	Introduction to Chemistry, Chemical and Biomedical Engineering	C	1
CC0001	Inquiry & Communication in an Interdisciplinary World	CC	2
CC0015	Health & Wellbeing	CC	2
ES5001	Natural Hazards and Society	BDE	3
HW0001	<i>Introduction to Academic Communication</i> [#]		

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for students who have not cleared QET

Year 1 Semester 2

Course		Type	AU
CM1002	Foundations of Chemistry II	C	4
CM1804	Mathematics for Chemistry	C	2
PH1011/	<i>Physics or</i>	C	3
PH1012*	<i>Physics A (For students without 'A' Level Physics)</i>	C	4
CC0003	Ethics & Civics in a Multi-Cultural World	CC	2
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2
ES1007	Climate Change	BDE	3
	CHES Elective 1	BDE	3

19/20*

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
XXXXXX	Care, Serve, Learn	CSL	3
ES3003	Introduction to Geochemistry	BDE	3

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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
CB2002	Introduction to Chemical and Biological Safety	C	1
PS0002	Introduction to Data Science and Artificial Intelligence	PS	3
CC0007	Science & Technology for Humanity	CC	3
ES3802	The Urban Environment: Issue, Assessment and Management	BDE	3

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Year 3 Semester 1

Course		Type	AU
CM3xx ^{&}	CHEM-Core	C	3
CM3xx ^{&}	CHEM-Core	C	3
CM3xx ^{&}	CHEM-Core	C	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	C	3
MLxxxx	Profession Preparation	PS	1
	CHES Elective 2	BDE	3
	CHES Elective 3	BDE	3

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Year 3 Semester 2

Course		Type	AU
CM3xx ^{&}	CHEM-Core	C	3
CM3061	Chemistry & Biological Chemistry Laboratory 3	C	3
HW0218	Communication Across the Sciences	PS	2
ES5006	Environmental Sustainability	BDE	3
	CHEM MPE 1	MPE	3
	CHES Elective 4	BDE	3
	CHES Elective 5 [#]	BDE	3

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Year 4 Semester 1

Course		Type	AU
CM4081	Professional Internship	PS	10

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Year 4 Semester 2

Course		Type	AU
CM4080	Honours Project 1	MPE	10
	CHEM MPE 2	MPE	3
	CHEM MPE 3	MPE	3
	CHEM MPE 4	MPE	3

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Total (AU)

143/144*

This study plan is meant as a guide.

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

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

Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.

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

AY2025 - 2026 Intake onwards

FYP with Professional Attachment

Programme	Year of Study	Number of Academic Units (AU)						
		Major Requirement		Interdisciplinary Collaborative Core			Broadening and Deepening Electives (BDE)	Total
		Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve and Learn (CSL)		
Chemistry and Biological Chemistry	1	18/19*		8			9	35/36*
	2	22		6	3	3	6	40
	3	18			8		15	41
	4		22				1	23
	Total	58/59*	22	14	11	3	31	139/140*

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

Category	AU	Total AU
Interdisciplinary Collaborative Core (ICC)		
	Common Core (University-level)	
	CC0001 Inquiry & Communication in an Interdisciplinary World	2
	CC0003 Ethics & Civics in a Multi-Cultural World	2
	ML0004 Career Design & Workplace Readiness in the V.U.C.A World	2
	CC0015 Health & Wellbeing	2
	CC0006 Sustainability: Society, Economy & Environment	3
	CC0007 Science & Technology for Humanity	3
	Professional Series (College-level)	
	HW0218 Communication Across the Sciences	2
	PS0002 Introduction to Data Science and Artificial Intelligence	3
	CM4082 Professional Attachment	5
	MLXXXX Profession Preparation	1
	XXXXXX Care, Serve, Learn (University-level)	3
Major Requirement		
	CHEM Core	
	CM1001 Foundations of Chemistry I	4
	CM1002 Foundations of Chemistry II	4
	CB1102 Introduction to Chemistry, Chemical and Biomedical Engineering	1
	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
	CM2031 Organic and Bioorganic Chemistry	3
	CM2041 Physical and Biophysical Chemistry 1	3
	CM2062 Chemistry & Biological Chemistry Laboratory 2	3
	CB2002 Introduction to Chemical and Biological Safety	1
	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

2nd Major in Environmental Science (CHES)	Environmental Science Compulsory Courses		
	1) ES1007 Climate Change or ES5007 Climate and Climate Change	3	
	2) ES3003 Introduction to Geochemistry	3	
	3) ES3802 The Urban Environment: Issue, Assessment, and Management	3	
	4) ES5001 Natural Hazards and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 5 Courses from the following list		
	1) ES2003 [#] E2S2 Biosphere	4	
	2) ES3801 Biogeochemistry	3	
	3) ES5002 Emergent Life	3	30 [#]
	4) ES5003 Blue Planet: How the Oceans Work	3	
	5) ES5005 Environmental Earth Systems Science	3	
	6) ES3203 (ES9003) The Genome and Society	3	
	7) EM5101 Environmental Quality	3	
	8) EM5103 Water Resource Management	3	
	9) EM5104 Air Quality Management	3	
	10) EM5105 Energy Resources Management	3	
	11) EM 5107 Environmental Health and Safety Management	3	
	12) EM5109 Environmental Issues and Sustainability	3	
<i>Students are responsible to plan for their 2nd major courses</i>			
BDE	Any 1 BDE	1	1
Total			139/140*

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

[#] Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.

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

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

Suggested Study Plan for AY2025-2026 intake

FYP with Professional Attachment

Year 1 Semester 1

Course		Type	AU
CM1001	Foundations of Chemistry I	C	4
MH1802	Calculus for the Sciences	C	4
CB1102	Introduction to Chemistry, Chemical and Biomedical Engineering	C	1
CC0001	Inquiry & Communication in an Interdisciplinary World	CC	2
CC0015	Health & Wellbeing	CC	2
ES5001	Natural Hazards and Society	BDE	3
HW0001	<i>Introduction to Academic Communication</i> #		

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for students who have not cleared QET

Year 1 Semester 2

Course		Type	AU
CM1002	Foundations of Chemistry II	C	4
CM1804	Mathematics for Chemistry	C	2
PH1011/	Physics <u>or</u>	C	3
PH1012*	Physics A (For students without 'A' Level Physics)	C	4
CC0003	Ethics & Civics in a Multi-Cultural World	CC	2
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2
ES1007	Climate Change	BDE	3
	CHES Elective 1	BDE	3

19/20*

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
XXXXXX	Care, Serve, Learn	CSL	3
ES3003	Introduction to Geochemistry	BDE	3

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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
CB2002	Introduction to Chemical and Biological Safety	C	1
PS0002	Introduction to Data Science and Artificial Intelligence	PS	3
CC0007	Science & Technology for Humanity	CC	3
ES3802	The Urban Environment: Issue, Assessment and Management	BDE	3

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Year 3 Semester 1

Course		Type	AU
CM3xx&	CHEM-Core	C	3
CM3xx&	CHEM-Core	C	3
CM3xx&	CHEM-Core	C	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	C	3
MLxxxx	Profession Preparation	PS	1
	CHES Elective 2	BDE	3
	CHES Elective 3	BDE	3

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Year 3 Semester 2

Course		Type	AU
CM3xx&	CHEM-Core	C	3
CM3061	Chemistry & Biological Chemistry Laboratory 3	C	3
ES5006	Environmental Sustainability	BDE	3
	CHES Elective 4	BDE	3
HW0218	CHES Elective 5#	BDE	3
	Communication Across the Sciences	PS	2

Year 3 Special Sem

CM4082	Professional Attachment	PS	5
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Year 4 Semester 1

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

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Year 4 Semester 2

Course		Type	AU
CM4080	Honours Project 1	MPE	10
		BDE	1

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Total (AU) **139/140***

This study plan is meant as a guide.

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

Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.

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

AY2025 - 2026 Intake onwards

with Professional Internship

Programme	Year of Study	Number of Academic Units (AU)						
		Major Requirement		Interdisciplinary Collaborative Core			Broadening and Deepening Electives (BDE)	
		Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve and Learn (CSL)		
Chemistry and Biological Chemistry	1	18/19*		8			9	35/36*
	2	22		6	3	3	6	40
	3	18			3		17	38
	4		12		10		4	26
	Total	58/59*	12	14	16	3	36	139/140*

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

Category	AU	Total AU
Interdisciplinary Collaborative Core (ICC)	Common Core (University-level) CC0001 Inquiry & Communication in an Interdisciplinary World CC0003 Ethics & Civics in a Multi-Cultural World ML0004 Career Design & Workplace Readiness in the V.U.C.A World CC0015 Health & Wellbeing CC0006 Sustainability: Society, Economy & Environment CC0007 Science & Technology for Humanity	2 2 2 2 3 3
	Professional Series (College-level) HW0218 Communication Across the Sciences PS0002 Introduction to Data Science and Artificial Intelligence CM4081 Professional Internship MLXXXX Profession Preparation	2 3 10 1
	XXXXXX Care, Serve, Learn (University-level)	3
		3
Major Requirement	CHEM Core CM1001 Foundations of Chemistry I CM1002 Foundations of Chemistry II CB1102 Introduction to Chemistry, Chemical and Biomedical Engineering MH1802 Calculus for the Sciences CM1804 Mathematics for Chemistry PH1011 Physics <u>or</u> PH1012* Physics A CM2021 Inorganic and Bioinorganic Chemistry CM2011 Analytical Chemistry CM2061 Chemistry & Biological Chemistry Laboratory 1 PS0001 Introduction to Computational Thinking CM2031 Organic and Bioorganic Chemistry CM2041 Physical and Biophysical Chemistry 1 CM2062 Chemistry & Biological Chemistry Laboratory 2 CB2002 Introduction to Chemical and Biological Safety CM3011 ^{&} Chemical Spectroscopy and Applications CM3041 ^{&} Physical and Biophysical Chemistry 2 CM3062 Chemistry & Biological Chemistry Laboratory 4 CM3031 ^{&} Organic Reaction Mechanisms and Synthesis CM3021 ^{&} Organometallic Chemistry CM3061 Chemistry & Biological Chemistry Laboratory 3	4 4 1 4 2 3/4* 3 3 3 3 3 3 3 3 1 3 3 3 3
	CHEM Major Prescribed Electives (MPE) 4 x MPEs	12
		12

2nd Major in Environmental Science (CHES)	Environmental Science Compulsory Courses		
	1) ES1007 Climate Change or ES5007 Climate and Climate Change	3	
	2) ES3003 Introduction to Geochemistry	3	
	3) ES3802 The Urban Environment: Issue, Assessment, and Management	3	
	4) ES5001 Natural Hazards and Society	3	
	5) ES5006 Environmental Sustainability	3	
	Choose 5 Courses from the following list		
	1) ES2003 [#] E2S2 Biosphere	4	
	2) ES3801 Biogeochemistry	3	
	3) ES5002 Emergent Life	3	30 [#]
	4) ES5003 Blue Planet: How the Oceans Work	3	
	5) ES5005 Environmental Earth Systems Science	3	
	6) ES3203 (ES9003) The Genome and Society	3	
<i>Students are responsible to plan for their 2nd major courses</i>			
BDE	Any 3 BDE	6	6
Total			139/140*

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

[#] Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.

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

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

Suggested Study Plan for AY2025-2026 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
CB1102	Introduction to Chemistry, Chemical and Biomedical Engineering	C	1
CC0001	Inquiry & Communication in an Interdisciplinary World	CC	2
CC0015	Health & Wellbeing	CC	2
ES5001	Natural Hazards and Society	BDE	3
HW0001	<i>Introduction to Academic Communication</i> #		

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#for students who have not cleared QET

Year 1 Semester 2

Course		Type	AU
CM1002	Foundations of Chemistry II	C	4
CM1804	Mathematics for Chemistry	C	2
PH1011/	Physics <u>or</u>	C	3
PH1012*	Physics A (<i>For students without 'A' Level Physics</i>)	C	4
CC0003	Ethics & Civics in a Multi-Cultural World	CC	2
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2
ES1007	Climate Change	BDE	3
	CHES Elective 1	BDE	3

19/20*

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
XXXXXX	Care, Serve, Learn	CSL	3
ES3003	Introduction to Geochemistry	BDE	3

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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
CB2002	Introduction to Chemical and Biological Safety	C	1
PS0002	Introduction to Data Science and Artificial Intelligence	PS	3
CC0007	Science & Technology for Humanity	CC	3
ES3802	The Urban Environment: Issue, Assessment and Management	BDE	3

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Year 3 Semester 1

Course		Type	AU
CM3xxx ^{&}	CHEM-Core	C	3
CM3xxx ^{&}	CHEM-Core	C	3
CM3xxx ^{&}	CHEM-Core	C	3
CM3062	Chemistry & Biological Chemistry Laboratory 4	C	3
MLxxxx	Profession Preparation	PS	1
	CHES Elective 2	BDE	3
	CHES Elective 3	BDE	3

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Year 3 Semester 2

Course		Type	AU
CM3xxx ^{&}	CHEM-Core	C	3
CM3061	Chemistry & Biological Chemistry Laboratory 3	C	3
ES5006	Environmental Sustainability	BDE	3
	CHES Elective 4	BDE	3
HW0218	CHES Elective 5 [#]	BDE	3
	Communication Across the Sciences	PS	2
	BDE 1	BDE	2

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Year 4 Semester 1

Course		Type	AU
CM4081	Professional Internship	PS	10

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Year 4 Semester 2

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

16

Total (AU)

139/140*

This study plan is meant as a guide.

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

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

[#] Students taking ES2003 E2S2 Biophere (4AU) will clock 31AU under 2nd major courses.