

Double Major in Process Engineering and Synthetic Chemistry
B.Eng.Sc (Hons) in Process Engineering and Synthetic Chemistry (PESC)
 AY2026 - 2027 Intake onwards
 with FYDP/FYP Option

Programme	Year of Study	Number of Academic Units (AU)						
		Major Requirement		Interdisciplinary Collaborative Core			Broadening and Deepening Electives (BDE)	Total
		CHEM/CBE Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve, Learn (CSL)		
Process Engineering and Synthetic Chemistry	1	25/26*		6	3		3	37/38*
	2	30		8				38
	3	20			11			31
	4	8/10^	18		2	3	5/3^	36
	Total	83/84*^ or 85/86*^	18	14	16	3	8/6^	142/143*

Category		AU	Total AU
Interdisciplinary Collaborative Core (ICC)	Common Core (CC)		
	CC0001 Inquiry and Communication in the Interdisciplinary World	2	14
	CC0003 Ethics & Civics in a Multi-Cultural World	2	
	CC0006 Sustainability: Society, Economy & Environment	3	
	CC0007 Science & Technology for Humanity	3	
	CC0015 Health & Wellbeing	2	
	ML0004 Career Design & Workplace Readiness in a Dynamic World	2	16
	Professional Series (PS)		
	PS0002 Introduction to Data Science and Artificial Intelligence	3	
	HW0288 Engineering Communication	2	
Major Requirement	MLXXXX Professional Preparation	1	8
	CH3920 Professional Internship	10	
	Care, Service, Learn (CSL)		
	Service Learning	3	

Major Requirement	CBE Core		
	CB1117 Engineering Mathematics	4	
	CH1104 Materials & Energy Balance	3	
	CH2103 Fluid Systems	3	
	CH2010 Engineering Statistics	3	
	CH2112 Chemical Reaction Engineering	3	
	CH2114 Heat & Mass Transfer in Chemical and Biological Systems	3	
	CH2123 Chemical Thermodynamics	3	
	CH2151 Unit Operations: Fluid-Solid Separation	3	
	CH3111 Process Control and Dynamics	3	
	CH3121 Chemical, Biological & Plant Safety	2	
	CH3140 Unit Operations: Fluid-Fluid Separation	3	
	CH3802 Chemical & Biomolecular Engineering Laboratory 5	3	67
	CHEM Core		
	MH1802 Calculus for the Sciences	4	
	PS0001 Introduction to Computational Thinking	3	
	CM2021 Inorganic and Bioinorganic Chemistry	3	
	CM2011 Analytical Chemistry	3	
	CM2031 Organic and Bioorganic Chemistry	3	
	CM2061 Chemistry and Biological Chemistry Laboratory 1	3	
	CM3011 Chemical Spectroscopy and Applications	3	
	CM3031 Organic Reaction Mechanisms and Synthesis	3	
	CM3061 Chemistry and Biological Chemistry Laboratory 3	3	
	CM3021 Organometallic Chemistry	3	
	CH4801 Final Year Design Project (FYDP)^ or CM4080 Final Year Project (FYP)		8/10^
	Major Prescribed Electives (MPE)		
	3 x CBE MPEs	9	18
	3 x CHEM MPEs	9	
Broadening and Deepening Electives (BDE)			8/6^
Total			142/143*

*Students without 'A' Level/Senior High School Physics will take 'PH1012 Physics A' (4AU)

^Students reading CH4801 FYDP (8AUs) to take 3 BDEs (total 8AU), students reading CM4080 FYP (10AU) to take 2 BDEs (total 6AU)

B.Eng.Sc (Hons) in Process Engineering and Synthetic Chemistry (PESC)**Suggested Study Plan for AY2026-2027 intake***with FYDP Option***Year 1 Semester 1**

Course	Type	AU
PH1011 / PH1012*	Physics / Physics A	C 3
CY1101	Molecules	C 4
MH1802	Calculus for the Sciences	C 4
PS0001	Introduction to Computational Thinking	C 3
CB1102	Intro to Chemistry, Chem Eng & Biomed Eng	C 1
CC0001	Inquiry and Communication in the Interdisciplinary World	CC 2

Year 1 Semester 2

Course	Type	AU
CB1117	Engineering Mathematics	C 4
CH1104	Materials & Energy Balance	C 3
CM2031	Organic and Bioorganic Chemistry	C 3
CC0007	Science & Technology for Humanity	CC 3
ML0004	Career Design & Workplace Readiness in a Dynamic World	CC 2
PS0002	Introduction to Data Science and Artificial Intelligence	PS 3
	Service Learning	CSL 3

* 17 18

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For students who fail QET and not exempted from English Proficiency

Year 2 Semester 1

Course	Type	AU
CH2103	Fluid Systems	C 3
CH2010	Engineering Statistics	C 3
CM2011	Analytical Chemistry	C 3
CM2021	Inorganic and Bioinorganic Chemistry	C 3
CM2061	Chem and Biochem Laboratory 1 (Synthetic Lab 1)	C 3
CC0003	Ethics & Civics in a Multi-Cultural World	CC 2

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Year 2 Semester 2

Course	Type	AU
CH2112	Chemical Reaction Engineering	C 3
CH2114	Heat & Mass Transfer in Chemical and Biological Systems	C 3
CH2123	Chemical Thermodynamics	C 3
CH2151	Unit Operations: Fluid-Solid Separation	C 3
CM3061	Chemistry and Biological Chemistry Laboratory 3 (Synthetic Lab 3)	C 3
CC0006	Sustainability: Society, Economy & Environment	CC 3
CC0015	Health & Wellbeing	CC 2

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Year 3 Semester 1

Course	Type	AU
CH3111	Process Control and Dynamics	C 3
CH3121	Chemical, Biological & Plant Safety	C 2
CH3140	Unit Operations: Fluid-Fluid Separation	C 3
CH3802	Chemical & Biomolecular Engineering Laboratory 5	C 3
CM3011	Chemical Spectroscopy and Applications	C 3
CM3021	Organometallic Chemistry	C 3
CM3031	Organic Reaction Mechanisms and Synthesis	C 3
MLXXXX	Professional Preparation	PS 1

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Year 3 Semester 2

Course	Type	AU
CH3920	Professional Internship	PS 10

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Year 4 Semester 1

Course	Type	AU
CH4801^	Final Year Design Project	C 4
	CBE MPE1	MPE 3
	CHEM MPE1	MPE 3
HW0288	Engineering Communications	PS 2
	BDE 1	BDE 3
	BDE 2	BDE 3

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Year 4 Semester 2

Course	Type	AU
CH4801	Final Year Design Project	C 4
	CBE MPE2	MPE 3
	CBE MPE3	MPE 3
	CHEM MPE2	MPE 3
	CHEM MPE3	MPE 3
	BDE 3^	BDE 2

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Total (AU)**142****143***

* Students without 'A' Level/Senior High School Physics will take 'PH1012 Physics A' (4AU)

^ Students reading FYDP to take 3 BDEs (8AU), students reading FYP to take 2 BDEs (6AU).

B.Eng.Sc (Hons) in Process Engineering and Synthetic Chemistry (PESC)**Suggested Study Plan for AY2026-2027 intake***with FYP Option***Year 1 Semester 1**

Course	Type	AU
PH1011 / PH1012 [*] Physics / Physics A	C	3
CY1101 Molecules	C	4
MH1802 Calculus for the Sciences	C	4
PS0001 Introduction to Computational Thinking	C	3
CB1102 Intro to Chemistry, Chem Eng & Biomed Eng	C	1
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2

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17 18**Year 1 Semester 2**

Course	Type	AU
CB1117 Engineering Mathematics	C	4
CH1104 Materials & Energy Balance	C	3
CM2031 Organic and Bioorganic Chemistry	C	3
CC0007 Science & Technology for Humanity	CC	3
ML0004 Career Design & Workplace Readiness in a Dynamic World	CC	2
PS0002 Introduction to Data Science and Artificial Intelligence	PS	3
Service Course	CSL	3

21**Year 2 Semester 1**

Course	Type	AU
CH2103 Fluid Systems	C	3
CH2010 Engineering Statistics	C	3
CM2011 Analytical Chemistry	C	3
CM2021 Inorganic and Bioinorganic Chemistry	C	3
CM2061 Chem and Biochem Laboratory 1 (Synthetic Lab 1)	C	3
CC0003 Ethics & Civics in a Multi-Cultural World	CC	2

17**Year 2 Semester 2**

Course	Type	AU
CH2112 Chemical Reaction Engineering	C	3
CH2114 Heat & Mass Transfer in Chemical and Biological Systems	C	3
CH2123 Chemical Thermodynamics	C	3
CH2151 Unit Operations: Fluid-Solid Separation	C	3
CM3061 Chemistry and Biological Chemistry Laboratory 3 (Synthetic Lab 3)	C	3
CC0006 Sustainability: Society, Economy & Environment	CC	3
CC0015 Health & Wellbeing	CC	2

20**Year 3 Semester 1**

Course	Type	AU
CH3111 Process Control and Dynamics	C	3
CH3121 Chemical, Biological & Plant Safety	C	2
CH3140 Unit Operations: Fluid-Fluid Separation	C	3
CH3802 Chemical & Biomolecular Engineering Laboratory 5	C	3
CM3011 Chemical Spectroscopy and Applications	C	3
CM3021 Organometallic Chemistry	C	3
CM3031 Organic Reaction Mechanisms and Synthesis	C	3
MLXXXX Professional Preparation	PS	1

21**Year 3 Semester 2**

Course	Type	AU
CH3920 Professional Internship	PS	10

10**Year 4 Semester 1**

Course	Type	AU
CM4080 [^] Final Year Project (Honours Project 1) (Research)	C	10
CHEM MPE1	MPE	3
CBE MPE1	MPE	3
HW0288 Engineering Communications	PS	2

18**Year 4 Semester 2**

Course	Type	AU
CBE MPE 2	MPE	3
CBE MPE 3	MPE	3
CHEM MPE 2	MPE	3
CHEM MPE 3	MPE	3
BDE 1	BDE	3
BDE 2 [^]	BDE	3

18**Total (AU)****142****143***^{*} Students without 'A' Level/Senior High School Physics will take 'PH1012 Physics A' (4AU)[^] Students reading FYDP to take 3 BDEs (8AU), students reading FYP to take 2 BDEs (6AU).