Double Major in Process Engineering and Synthetic Chemistry B.Eng.Sc (Hons) in Process Engineering and Synthetic Chemistry (PESC)

AY2025 - 2026 Intake onwards

with FYDP/FYP Option

		Number of Academic Units (AU)								
Programme	Year of Study	Major Requirement		Interdi	sciplinary Col Core	Broadening and				
		CHEM/CBE Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve, Learn (CSL)	Deepening Electives (BDE)	Total		
	1	25/26 [*]		6	3		3	37/38 [*]		
Process Engineering and Synthetic Chemistry	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		
	Common	Core (CC)		
	Common Core (CC) CC0001 Inquiry and Communication in the Interdisciplinary World CC0003 Ethics & Civics in a Multi-Cultural World CC0006 Sustainability: Society, Economy & Environment CC0007 Science & Technology for Humanity CC0015 Health & Wellbeing ML0004 Career Design & Workplace Readiness in the V.U.C.A World Professional Series (PS) PS0002 Introduction to Data Science and Artificial Intelligence HW0288 Engineering Communication MLXXXX Professional Preparation CH3920 Professional Internship Care, Service, Learn (CSL) Service Learning Common CB1102 Intro to Chemistry, Chem Eng & Biomed Eng		2	
	CC0003	Ethics & Civics in a Multi-Cultural World	2	
	CC0006	Sustainability: Society, Economy & Environment	3	
	CC0007	Science & Technology for Humanity	3	14
	CC0015	Health & Wellbeing	2	
	ML0004	•	2	
Interdisciplinar	1			
Core (ICC)				
	PS0002	Introduction to Data Science and Artificial Intelligence	3	
	HW0288	Engineering Communication	2	16
	MLXXXX	Professional Preparation	1	
	CH3920	Professional Internship	10	
	Cara Sam	vice Leave (CSI)		
	Care, serv		3	3
	Common			
Major	CB1102	Intro to Chemistry, Chem Eng & Biomed Eng	1	
Requirement	PH1011*	Physics / Physics A	3	8
	CY1101	Molecules	4	

Total				142/143 [*]
Broadening an	d Deepenir	g Electives (BDE)		8/6^
	1		l .	
	3 x CHEM	MPEs	9	
	3 x CBE N		9	18
	1 -	escribed Electives (MPE)		
	CIVI4080 I	Final Year Project (FYP)		
		inal Year Design Project (FYDP)^ or		8/10^
	CM3021	Organometallic Chemistry	3	
	CM3061	Chemistry and Biological Chemistry	3	
	CM3031	Organic Reaction Mechanisms and Synthesis	3	
	CM3011	Laboratory 1 Chemical Spectroscopy and Applications	3	
	CM2061	Chemistry and Biological Chemistry		
	CM2031	Organic and Bioorganic Chemistry	3	
	CM2011	Analytical Chemistry	3	
	CM2021	Inorganic and Bioinorganic Chemistry	3	
·	PS0001	Calculus for the Sciences Introduction to Computational Thinking	3	
Major Requirement	CHEM Co		A	
		, -	3	
	CH3802	Chemical & Biomolecular Engineering Laboratory 5	3	67
	CH3140	Unit Operations: Fluid-Fluid Separation	3	67
	CH3121	Chemical, Biological & Plant Safety	2	
	CH3111	Process Control and Dynamics	3	
	CH2151	Unit Operations: Fluid-Solid Separation	3	
	CH2123	Chemical Thermodynamics	3	
	CH2114	Heat & Mass Transfer in Chemical and Biological Systems	3	
	CH2112	Chemical Reaction Engineering	3	
	CH2010	Engineering Statistics	3	
	CH2103	Fluid Systems	3	
	CH1104	Materials & Energy Balance	3	
	CB1117	Engineering Mathematics	4	
	CBE Core			

^{*}Students read PH1011 Physics (3AU) if they have H2 physics, otherwise they will read 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)

	Study Plan for AY2025-2026 intake							
with FYDP (Option							
Year 1 Semester 1			•••		Year 1 Ser	mester 2	-	
Course PH1011 /		Туре	AU	-	Course		Туре	AU
PH10117 PH1012*	Physics / Physics A	С	3/4*		CB1117	Engineering Mathematics	С	4
CY1101	Molecules	С	4		CH1104	Materials & Energy Balance	С	3
MH1802	Calculus for the Sciences	C	4		CM2031	Organic and Bioorganic Chemistry	C	3
PS0001	Introduction to Computational	С	3		CC0003	Ethics and Civics in a Multi-Cultural	СС	2
P30001	Thinking	C	3		CC0003	World	CC	2
CB1102	Intro to Chemistry, Chem Eng & Biomed Eng	С	1		CC0015	Health & Wellbeing	CC	2
CC0001	Inquiry and Communication in an interdisciplinary World	СС	2		PS0002	Introduction to Data Science and Artificial Intelligence	PS	3
	meralsolphiary world					BDE 1	BDE	3
			17	-* 18				20
[#] For studer	nts who fail QET and not exempted from I	English P	roficienc	у				
Year 2 Sem	nester 1	_	•••		Year 2 Ser	mester 2	_	•
Course	Fluid Customs	Туре	AU	-	Course	Chamical Boarties Essiveries	Type	AU
CH2103	Fluid Systems	С	3		CH2112	Chemical Reaction Engineering Heat & Mass Transfer in Chemical	С	3
CH2010	Engineering Statistics	С	3		CH2114	Heat & Mass Transfer in Chemical and Biological Systems	С	3
CM2011	Analytical Chemistry	С	3		CH2123	Chemical Thermodynamics	С	3
CM2021	Inorganic and Bioinorganic Chemistry	С	3		CH2151	Unit Operations: Fluid-Solid Separation	С	3
CM2061	Chem and Biochem Laboratory 1 (Synthetic Lab 1)	С	3		CM3061	Chemistry and Biological Chemistry Laboratory 3 (Synthetic Lab 3)	С	3
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2		CC0007	Science & Technology for Humanity	CC	3
CC0006	Sustainability: Society, Economy & Environment	СС	3					
			20	-				18
Year 3 Semester 1					Year 3 Ser	mester 2		
Course		Туре	AU	_	Course		Type	AU
CH3111	Process Control and Dynamics	С	3		CH3920	Professional Internship	PS	10
CH3121	Chemical, Biological & Plant Safety	С	2					
CH3140	Unit Operations: Fluid-Fluid	С	3					
	Separation							
CH3802	Chemical & Biomolecular Engineering Laboratory 5	С	3					
CM3011	Chemical Spectroscopy and Applications	С	3					
CM3021	Organometallic Chemistry	С	3					
CM3031	Organic Reaction Mechanisms and	С	3					
MLXXXX	Synthesis Professional Preparation	PS	1					
			21	-				10
Year 4 Sem	nester 1				Year 4 Ser	mastar 2		
Course	icate: 1	Туре	AU		Course	nester 2	Туре	AU
course	Final Year Design Project	С	4	-	CH4801	Final Year Design Project	C	4
CH4801^	CBE MPE1	MPE	3		2	CBE MPE2	MPE	3
CH4801^		MPE	3			CBE MPE3	MPE	3
CH4801^	CHEM MPE1					CHEM MPE2	MPE	3
	CHEM MPE1 Engineering Communications	PS	2					
		PS CSL	3			CHEM MPE3	MPE	3
CH4801^ HW0288	Engineering Communications					CHEM MPE3 BDE 3^		3 2
	Engineering Communications Service Learning	CSL	3				MPE	

^{*}Students read PH1011 Physics (3AU) if they have H2 physics, otherwise they will read PH1012 Physics A (4AU).

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

Year 1 Semester 1 Course			AU		Year 1 Sen Course	nester 2	Туре	AU
PH1011 /		Туре		-				
H1012	Physics / Physics A	С	3/4*		CB1117	Engineering Mathematics	С	4
Y1101	Molecules	С	4		CH1104	Materials & Energy Balance	С	3
ИН1802	Calculus for the Sciences	С	4		CM2031	Organic and Bioorganic Chemistry	С	3
S0001	Introduction to Computational Thinking	С	3		CC0003	Ethics and Civics in a Multi-Cultural World	СС	2
CB1102	Intro to Chemistry, Chem Eng & Biomed Eng	С	1		CC0015	Health & Wellbeing	CC	2
CC0001	Inquiry and Communication in an interdisciplinary World	CC	2		PS0002	Introduction to Data Science and Artificial Intelligence	PS	3
				*		BDE 1	BDE	3
			17	18				20
ear 2 Sem	ester 1				Year 2 Sen	nester 2		
Course		Туре	AU	_	Course		Туре	AU
CH2103	Fluid Systems	С	3	_	CH2112	Chemical Reaction Engineering	С	3
CH2010	Engineering Statistics	С	3		CH2114	Heat & Mass Transfer in Chemical and Biological Systems	С	3
CM2011	Analytical Chemistry	С	3		CH2123	Chemical Thermodynamics	С	3
CM2021	Inorganic and Bioinorganic Chemistry	С	3		CH2151	Unit Operations: Fluid-Solid Separation	С	3
CM2061	Chem and Biochem Laboratory 1 (Synthetic Lab 1)	С	3		CM3061	Chemistry and Biological Chemistry Laboratory 3 (Synthetic Lab 3)	С	3
ЛL0004	Career Design & Workplace Readiness in the V.U.C.A World	СС	2		CC0007	Science & Technology for Humanity	СС	3
CC0006	Sustainability: Society, Economy & Environment	CC	3					
	Liviloninen			_				- 40
			20					18
ear 3 Sem	ester 1				Year 3 Sen	nester 2		
Course		Type	ΑU		Course		Type	ΑU
H3111	Process Control and Dynamics	С	3		CH3920	Professional Internship	PS	10
H3121	Chemical, Biological & Plant Safety	С	2					
CH3140	Unit Operations: Fluid-Fluid Separation	С	3					
CH3802	Chemical & Biomolecular Engineering Laboratory 5	С	3					
CM3011	Chemical Spectroscopy and	С	3					
CM3021	Applications Organometallic Chemistry	С	3					
	Organic Reaction Mechanisms and							
CM3031	Synthesis	С	3					
MLXXXX	Professional Preparation	PS	1					
			21	_				10
ear 4 Sem	ester 1				Year 4 Sen	nester 2		
Course		Туре	AU	_	Course		Туре	AU
CM4080^	Final Year Project	С	10	_		CBE MPE 2	MPE	3
141 4 000	(Honours Project 1) (Research)							
	CHEM MPE1	MPE	3			CBE MPE 3	MPE	3
114/0200	CBE MPE1	MPE	3			CHEM MPE 2	MPE	3
HW0288	Engineering Communications Service Course	PS CSL	2 3			CHEM MPE 3 BDE 2^	MPE BDE	3
			21					15
						Total (AU)		142