## B.Eng (Hons) in Chemical and Biomolecular Engineering with 2nd Major in Data Analytics

with Professional Internship

AY2025 - 2026 Intake onwards (CBDA)

Programme				Numbe	r of Acade	mic Units (	AU)				
	Year of	Major Requirement		Interdisc	iplinary Col Core	laborative	Broadening and				
	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Professional Series (PS)	Care, Serve, Learn (CSL)	Deepening Electives (BDE)	Total			
Chemical &	1	24/25* [4]		6				30/31* [4]			
Biomolecular	2	28 [6]		8	3			39 [6]			
Engineering with Second	3	17			13			30			
Major in Data	4	8	6			3	22	39			
Analytics	Total	77/78* [10]	6	14	16	3	22	138/139* [10]			

Category			AU	Total AU
	Common	Core (CC)		
	CC0001	Inquiry and Communication in the Interdisciplinary World	2	
	CC0003	Ethics & Civics in a Multi-Cultural World	2	
	CC0006	Sustainability: Society, Economy & Environment	3	14
	CC0007	Science & Technology for Humanity	3	14
	CC0015	Health & Wellbeing	2	
	ML0004	Career Design & Workplace Readiness in the V.U.C.A World	2	
Interdisciplinar	Durafa saila	nol Corios (DC)		
y Collaborative	Protessio	• •		
Core (ICC)	CD0404	Introduction to Data Science and Artificial	3	
	CB0494	Intelligence		
	HW/0288	Engineering Communication	2	16
	MLXXXX		1	
	CH3920	Professional Internship	10	
	Care. Serv	vice, Learn (CSL)		
		Service Learning	3	3
	CBE Core			
	EG1001	Engineers In Society	2	
Major	MH1810	Math 1	3	
Requirement	PH1011*	Physics	3	12
•	CB1102	Introduction to Chemical and Biomedical Engineering	1	
	CB1103	Organic Chemistry For Engineers	3	

	CB1117^	Engineering Mathematics	4	
	CB1131	Introduction to Biomolecular Engineering	3	
	CH1104	Materials & Energy Balance	3	
	CH1801	Chemical & Biomolecular Engineering Laboratory 1A	1	
	CH1802	Chemical & Biomolecular Engineering Laboratory 2	1	
	CH2010^	Engineering Statistics	3	
	CH2103	Fluid Systems	3	
	CH2107^	Introduction to Computational Thinking	3	
	CH2108	Thermodynamics	3	
	CH2112	Chemical Reaction Engineering	3	
CH211	CH2114	Heat & Mass Transfer in Chemical and Biological Systems	3	65
	CH2123	Chemical Thermodynamics	3	65
Major	CH2151	Unit Operations: Fluid-Solid Separation	3	
Requirement	CH2801	Chemical & Biomolecular Engineering Laboratory 2A	2	
	CH2802	Chemical & Biomolecular Engineering Laboratory 2B	2	
	CH3104	Biochemical Engineering	3	
	CH3109	Decision Tools for Business & Engineering	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	
	CH4801	Final Year Design Project	8	
		- " (		
	1	r Prescribed Electives (MPE)	_	
	CBE PE 1		3	6
	CBE PE 2		3	
	Data Anal	ytics Compulsory Courses		
	1) Linear A	Algebra: CB1117 Engineering Mathematics	NA	
	1 '	ting Skills: BG2211 Introduction to ional Thinking	NA	
		ility and Statistics: CH2010 Engineering		
2nd Major in	Statistics	.,	NA	
Data Analytics (BDEs)	4) Algorith	nms: MH1403 Algorithms & Computing	3	13
	5) Databas	se: EE4791 Database Systems (3AU)	3	
	6) Data M Mining	ining: EE4483 Artificial Intelligence & Data	3	
	1	sualisation/Management: BC2406 Analytics I: I Predictive Techniques	4	

	Electives		
	CH4244 Numerical Method and Data Analytics	3	
	CB4246 Optimisation Using Artificial Intelligence	3	
2nd Major in Data Analytics (BDEs)	CB4247 Statistics & Computational Inference to Big Other Available Electives: EE4414 Machine Learning Design & Application (3AU)  EE4497 Pattern Recognition & Machine Learning (3AU)  MA4830 Real Time Software for Mechatronics System MA4832 Microprocessor System (3AU) MS4671 Introduction to Materials Simulation (3AU)	3	9
otal			138

<sup>139\*</sup> 

[] AU of courses that could be used to fulfil Core/MPE requirment and 2nd Major requirment concurrently

<sup>\*</sup>Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).

<sup>^</sup>Counted towards 2nd Major in Data Analytics requirement (total 10AU)

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Year 1 So Course	emester 1	Туре	AU	_	Year 1 Se Course	emester 2	Type	AU
CB1102	Introduction to Chemical and Biomedical Engineering	С	1	_	CB1103	Organic Chemistry For Engineers	С	3
CB1131	Introduction to Biomolecular Engineering	С	3		^CB1117	Engineering Mathematics	С	4
CH1801	Chemical & Biomolecular Engineering Laboratory 1A	С	1		CH1104	Materials & Energy Balance	С	3
MH1810	Math 1	С	3		CH1802	Chemical & Biomolecular Engineering Laboratory 2	С	1
PH1011	Physics	С	3		EG1001 CC0003	Engineers in Society	C CC	2
PH1012	or Physics A (* For students without 'A' Level Physics)	С	4			Health & Wellbeing	CC	2
CC0001	Inquiry and Communication in the Interdisciplinary World	CC	2	_				
			13	-* 14				17
Year 2 S	emester 1				Year 2 Se	emester 2		
Course	Filip	Туре	AU	_	Course	0	Type	AU
CH2103	Fluid Systems	С	3		CH2112	Chemical Reaction Engineering Heat & Mass Transfer in Chemical and	С	3
^CH2107	Introduction to Computational Thinking	С	3		CH2114	Biological Systems	С	3
CH2108	Thermodynamics	С	3		CH2123	Chemical Thermodynamics	С	3
^CH2010	Engineering Statistics	С	3		CH2151	Unit Operations: Fluid-Solid Separation	С	3
CH2801	Chemical & Biomolecular Engineering Laboratory 2A	С	2		CH2802	Chemical & Biomolecular Engineering Laboratory 2B	С	2
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	CC	3		CB0494	Introduction to Data Science and Artificial Intelligence	PS	3
						ge.i.ge		
			19	_				20
V 2 C			19	_				20
	emester 1	Type		-		emester 2	Type	
Year 3 So Course CH3104		Type C	19 AU 3	-	Course		Type PS	<b>20 AU</b> 10
<b>Course</b> CH3104 CH3109	emester 1  Biochemical Engineering  Decision Tools for Business & Engineering	C C	<b>AU</b> 3 3	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111	emester 1  Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics	C C C	<b>AU</b> 3 3 3 3	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121	emester 1  Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety	C C C	<b>AU</b> 3 3 3 2	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121 CH3140	emester 1  Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation	0000	<b>AU</b> 3 3 3 2 3	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121	emester 1  Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety	C C C	<b>AU</b> 3 3 3 2	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication	0000	<b>AU</b> 3 3 3 2 3	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5	00000	AU 3 3 3 2 3 3 3	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication	C C C C C	<b>AU</b> 3 3 3 2 3 2	-	Course	emester 2		AU
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C C	AU 3 3 3 2 3 3 2 1	-	CH3920	Professional Internship		<b>AU</b> 10
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication	C C C C C	AU 3 3 3 2 3 3 2 1	-	CH3920	emester 2		<b>AU</b> 10
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C C PS PS	AU 3 3 3 2 3 3 1	-	CH3920  Year 4 Se	Professional Internship	PS	<b>AU</b> 10
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sr Course	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C C PS PS	AU 3 3 3 2 3 3 2 1 20 AU	-	Course CH3920  Year 4 Se Course	emester 2 Professional Internship	PS	AU 10 AU
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sc Course CH4801	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C PS PS C MPE CSL	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3 3 3	-	Course CH3920  Year 4 Se Course CH4801	Professional Internship  Pemester 2  Final Year Design Project	Type C	10 10 AU 4
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Si Course	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C C PS PS	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3	-	Course CH3920  Year 4 Se Course CH4801	emester 2  Professional Internship  emester 2  Final Year Design Project  CBE PE 2	Type C MPE	10 10 4 3
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sc Course CH4801	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation	C C C C PS PS C MPE CSL	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3 3 3	-	Year 4 Se Course CH4801 MH1403	Professional Internship  Professional Internship  Professional Internship  Professional Internship  Professional Internship	Type C MPE BDE	10 AU 4 3 3
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sc Course CH4801	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation  emester 1  Final Year Design Project CBE PE 1 Service Learning Artificial Intelligence & Data Mining	C C C C C C PS PS PS	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3 3 3 3	-	Year 4 Se Course CH4801 MH1403 EE4791	Professional Internship  Pemester 2  Final Year Design Project CBE PE 2 Algorithms & Computing Database Systems	Type C MPE BDE BDE	10 10 AU 4 3 3 3
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sc Course CH4801  EE4483 BC2406	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation  emester 1  Final Year Design Project CBE PE 1 Service Learning Artificial Intelligence & Data Mining  Analytics I: Visual and Predictive Techniques	C C C C C PS PS PS C MPE CSL BDE BDE	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3 3 3 3 4 3 3	-	Year 4 Se Course CH3920 Year 4 Se Course CH4801 MH1403 EE4791 CB4246	Professional Internship  Professional Internship	Type C MPE BDE BDE BDE BDE	10 AU 4 3 3 3 3 3
Course CH3104 CH3109 CH3111 CH3121 CH3140 CH3802 HW0288 MLXXXX  Year 4 Sc Course CH4801  E4483 BC2406	Biochemical Engineering Decision Tools for Business & Engineering Process Control and Dynamics Chemical, Biological & Plant Safety Unit Operations: Fluid-Fluid Separation Chemical & Biomolecular Engineering Laboratory 5 Engineering Communication Professional Preparation  emester 1  Final Year Design Project CBE PE 1 Service Learning Artificial Intelligence & Data Mining  Analytics I: Visual and Predictive Techniques	C C C C C PS PS PS C MPE CSL BDE BDE	AU 3 3 3 2 3 3 2 1 1 20 AU 4 3 3 3 3 4		Year 4 Se Course CH3920 Year 4 Se Course CH4801 MH1403 EE4791 CB4246	Professional Internship  Professional Internship	Type C MPE BDE BDE BDE BDE	100 AU 4 3 3 3 3 3 3

<sup>\*</sup>Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU). ^Counted towards 2nd Major in Data Analytics requirement (total 10AU)