B.Eng (Hons) in Bioengineering with 2nd Major in Pharmaceutical Engineering

*with Professional Internship

AY2023 - 2024 Intake onwards (BEPE)

		Number of Academic Units (AU)							
Drogrammo	Year of	Major Red	quirement		sciplinary rative Core	Broadening			
Programme	Study	Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)	and Deepening Electives (BDE)	Total		
Bioengineering	1	21/22*		9		3	33/34*		
with Second	2	26		8	3	6	43		
Major in	3	13			12	6	31		
Pharmaceutical	4	17	6			15	38		
Engineering	Total	77/78*	6	17	15	30	145/146*		

Category			AU	Total AU			
	CC0001 In	Core (University-level) equiry and Communication in the	2				
	1	olinary World					
	I	avigating the Digital World	2				
		thics & Civics in a Multi-Cultural World	2				
	I	ealthy Living & Wellbeing	3	17			
		ustainability: Society, Economy &	3				
Interdisciplinary	Environme						
Collaborative		cience & Technology for Humanity	3				
Core (ICC)	ML0004 C the Future	areer and Entrepreneurial Development for e World	2				
	Foundation	onal Core (College-level)					
		Engineering Communication	2				
		stroduction to Data Science and Artificial		15			
	Intelligend		3				
	_	rofessional Internship	10				
	BIE Core		Ι	<u> </u>			
	EG1001	Engineers In Society	2				
	MH1810	•	3				
	PH1011*		3				
	1111011	Introduction to Chemical and Biomedical					
Major	CB1102	Engineering	1				
Requirement	CB1102	Organic Chemistry For Engineers	3	21			
Requirement	CB1103	Engineering Mathematics	4				
		Cellular & Molecular Biology for					
	BG1141	Bioengineers	3				
	BG1801	Bioengineering Lab 1A	1				
	BG1801	Bioengineering Lab 1B	1				
	1001005	piocuginecting rap 10	1 1				

Total				145/146*
	C114100	ingredients bosage roitiis	5	
	CH4106	Formulation of Active Pharmaceutical Ingredients Dosage Forms	3	
	CH4306	Bioanalytical Techniques	3	
(BDEs)		Laboratory 5	3	
	0.16.5.5.5	Chemical & Biomolecular Engineering		
Engineering	CH4213	Pharmacokinetics & Biopharmaceutics	3	
Pharmaceutical		Bioseparations Rharmanakination & Rianharmanautics	3	30
Bioengineering with Second Major in	CH3111	,	3	
		Unit Operations: Fluid-Solid Seperation	3	
		Chemical Reaction Engineering	3	
		Biological Systems	3	
		Heat & Mass Transfer in Chemical &		
	CH1104	Materials & Energy Balance	3	
	1	ulsory Courses		
	BIE Major	Prescribed Electives (MPE)		6
		• · · ·		
	BG4801	Final Year Project	8	
	BG4122	Medical Device Design	6	
	BG4104	Bioengineers	3	
		Machine Learning and Optimization for		
	BG3801	Bioengineering Lab 3	1	
	BG3112	Cardiovascular Engineering	3	
Major Requirement	BG3105	Biomedical Instrumentation	3	
	BG3104	Biomedical Imaging	3	
	BG3102	Control in Biosystems	3	
	BG2802	Bioengineering Lab 2B	1	56
	BG2211	Bioengineering Lab 2A	1	
	BG2203	Introduction to Computational Thinking	3	
	BG2142 BG2209	Mechanics for Bioengineers	3	
	BG2131	Biological Thermodynamics	3	
	BG2119	Anatomy and Physiology Biomaterials	3	
	BG2110 BG2119	Bioelectricity	3 3	
	BG2104	Electronics for Biomedical Engineering	3	
	BG2103	Signal Processing in Biosystems	3	

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

B.Eng (F	Bioengineering) with 2nd Major in Pharmaceutica	l Engine	erina					
	ed Study Plan for AY2023-2024 intake (BEPE)	Liigiile	Joining					
	essional Internship							
V 1 C					V 4 C-			
Year 1 Se Course	emester 1	Туре	AU		Year 1 Se	emester 2	Туре	Α
	Introduction to Chemical and Biomedical			_				
CB1102	Engineering	С	1		BG1103	Organic Chemistry For Engineers	С	3
BG1141	Cellular & Molecular Biology for Bioengineers	С	3		CB1117	Engineering Mathematics	С	
BG1801		С	1		BG1802		С	
MH1810	Math 1	С	3		EG1001	Engineers in Society	С	
PH1011	Physics	С	3		CC0003	Ethics & Civics in a Multi-Cultural World	CC	
	<u>or</u>				CC0005	Healthy Living & Wellbeing	CC	;
PH1012	Physics A (* For students without 'A' Level Physics)	С	4		CH1104	Materials & Energy Balance	BDE	;
CC0001	Inquiry and Communication in the Interdisciplinary	СС	2					
	World							
CC0002	Navigating the Digital World	CC	2	*				
			15	16				1
					v			
	emester 1	T				emester 2	7	
Course	Anatomy and Dhysicles	Type	AU	_	Course	Cinnal December in Discontinu	Type	A
	Anatomy and Physiology	С	3		BG2103	Signal Processing in Biosystems	С	:
3G2131		C C	3 3		BG2104 BG2110	Electronics for Biomedical Engineering	C C	
	Biological Thermodynamics Introduction to Computational Thinking					*	C	;
BG2211 BG2801		C C	3 1		BG2209 BG2802	Mechanics for Bioengineers Bioengineering Lab 2B	C	
CC0006	3 3	CC	3		CC0007	Science & Technology for Humanity	CC	:
50000	, , ,	00	3		CC0007		CC	•
ML0004	Career and Entrepreneurial Development for the Future World	CC	2		CB0494	Introduction to Data Science and Artificial Intelligence	FC	:
					CH2112	Chemical Reaction Engineering	BDE	
					CH2151	Unit Operations: Fluid-Solid Seperation	BDE	
			40	_				
			18					2
					v			
rear 3 Se Course	emester 1	Туре	AU		Year 3 Se	emester 2	Туре	Α
	Control in Biosystems	С	3	_	BG3920	Professional Internship	FC	
BG3102		C	3		DG3920	i Tolessional internship	10	
	Biomedical Instrumentation	Č	3					
	Cardiovascular Engineering	С	3					
BG3801		С	1					
HW0288	Engineering Communication	FC	2					
	Dragge Central and Duranian	BDE	3					
	•							
	Chem Eng Lab 5	BDE	3					
CH3111 CH3802	•		3 21	_				1
CH3802	Chem Eng Lab 5			_	Year 4 So	emester 2		1
CH3802 Year 4 Se	•			_	Year 4 Se Course	emester 2	Туре	
CH3802 Year 4 Se Course	emester 1 Machine Learning and Optimization for	BDE	21	-		emester 2 Medical Device Design	Type C	Α
Year 4 Se Course 3G4104	emester 1 Machine Learning and Optimization for Bioengineers	Type C	21 AU 3	-	Course BG4122	Medical Device Design	С	<u>A</u>
Year 4 Se Course 3G4104 3G4122	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design	Type C C	21 AU 3 3	-	Course	Medical Device Design Final Year Project	C C	A
Year 4 Se Course 3G4104 3G4122	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project	Type C C C	21 AU 3 3 4	-	Course BG4122 BG4801	Medical Device Design Final Year Project BIE PE 2	C C MPE	<u>Α</u> :
Year 4 Se Course 3G4104 3G4122	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project BIE PE 1	Type C C	21 AU 3 3	-	Course BG4122	Medical Device Design Final Year Project	C C	<u>Α</u> :
Year 4 Se Course BG4104 BG4122 BG4801	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project	Type C C C	21 AU 3 3 4	-	Course BG4122 BG4801	Medical Device Design Final Year Project BIE PE 2	C C MPE	<u>A</u> :
Year 4 Se Course 3G4104 3G4122 3G4801	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project BIE PE 1 Formulation of Active Pharmaceutical Ingredients	Type C C C MPE	21 AU 3 3 4 3	-	Course BG4122 BG4801 CH2114	Medical Device Design Final Year Project BIE PE 2 Heat and Mass Transfer	C C MPE BDE	: :
Year 4 Se Course 3G4104 3G4122 3G4801	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project BIE PE 1 Formulation of Active Pharmaceutical Ingredients Solid Dosage Form	Type C C C MPE BDE	21 AU 3 3 4 3 3 3	-	Education Course BG4122 BG4801 CH2114 CH4303	Medical Device Design Final Year Project BIE PE 2 Heat and Mass Transfer Bioseparations	C C MPE BDE BDE	A
Year 4 Se Course BG4104 BG4122	emester 1 Machine Learning and Optimization for Bioengineers Medical Device Design Final Year Project BIE PE 1 Formulation of Active Pharmaceutical Ingredients Solid Dosage Form	Type C C C MPE BDE	21 AU 3 3 4 3 3	-	Education Course BG4122 BG4801 CH2114 CH4303	Medical Device Design Final Year Project BIE PE 2 Heat and Mass Transfer Bioseparations	C C MPE BDE BDE	; ;

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