

B.Eng (Hons) in Bioengineering with 2nd Major in Data Analytics

with Professional Internship

AY2022- 2023 Intake onwards (BEDA)

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)	Foundational Core (FC)		
Bioengineering with Second Major in Data Analytics	1	21/22*	3	9			33/34*
	2	26		8	3		37
	3	13			12	6	31
	4	17	3			16	36
	Total	77/78*	6	17	15	22	137/138*

Category		AU	Total AU
Interdisciplinary Collaborative Core (ICC)	Common Core (University-level)		
	CC0001 Inquiry and Communication in the Interdisciplinary	2	17
	CC0002 Navigating the Digital World	2	
	CC0003 Ethics & Civics in a Multi-Cultural World	2	
	CC0005 Healthy Living & Wellbeing	3	
	CC0006 Sustainability: Society, Economy & Environment	3	
	CC0007 Science & Technology for Humanity	3	
	ML0004 Career and Entrepreneurial Development for the	2	
	Foundational Core (College-level)		
Major Requirement	HW0288 Engineering Communication	2	15
	CB0494 Introduction to Data Science and Artificial Intelligence	3	
	BG3880 Professional Internship	10	
	BIE Core		36
	EG1001 Engineers In Society	2	
	MH1810 Math 1	3	
	PH1011* Physics	3	
	CB1102 Introduction to Chemical and Biomedical	1	
	CB1103 Organic Chemistry For Engineers	3	
	CB1117^ Engineering Mathematics	4	
	BG1141 Fundamental Biology for Bioengineers	3	
	BG1801 Bioengineering Lab 1A	1	
	BG1802 Bioengineering Lab 1B	1	
	BG2103 Signal Processing in Biosystems	3	
	BG2104 Electronics for Biomedical Engineering	3	
	BG2110 Bioelectricity	3	
	BG2119 Anatomy and Physiology	3	
	BG2131 Biomaterials	3	

Major Requirement	BG2142	Biological Thermodynamics	3	41
	BG2209	Mechanics for Bioengineers	3	
	BG2211^	Introduction to Computational Thinking	3	
	BG2801	Bioengineering Lab 2A	1	
	BG2802	Bioengineering Lab 2B	1	
	BG3102	Control in Biosystems	3	
	BG3104	Biomedical Imaging	3	
	BG3105	Biomedical Instrumentation	3	
	BG3112	Biofluid Mechanics and Medical Devices	3	
	BG3801	Bioengineering Lab 3	1	
	BG4104	Machine Learning and Optimization for	3	
	BG4122	Medical Device Design	6	
	BG4801	Final Year Project	8	
	BIE Major Prescribed Electives (MPE)			
CH2010^	Engineering Statistics	3	6	
BIE PE 2		3		
2nd Major in Data Analytics (BDEs)	Data Analytics Compulsory Courses			22
	1) Linear Algebra: CB1117 Engineering Mathematics		NA	
	2) Computing Skills: BG2211 Introduction to Computational		NA	
	3) Probability and Statistics: CH2010 Engineering Statistics		NA	
	4) Algorithms: MH1403 Algorithms & Computing		3	
	5) Database: EE4791 Database Systems		3	
	6) Data Mining: EE4483 Artificial Intelligence & Data Mining		3	
	7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques		4	
	Electives			
	CH4244 Numerical Method and Data Analytics		3	
	<i>Choose from the following:</i>			
	EE4414 Machine Learning Design & Application (3AU)		6	
	EE4497 Pattern Recognition & Machine Learning (3AU)			
	MA4829 Machine Intelligence (3AU)			
MA4830 Real Time Software for Mechatronics System (3AU)				
MA4832 Microprocessor System (3AU)				
MS4671 Introduction to Materials Simulation (3AU)				
Total			137/138*	

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

^Counted towards 2nd Major in Data Analytics requirement (total 10AU)

B.Eng. (Bioengineering) with 2nd Major in Data Analytics

Suggested Study Plan for AY2022-2023 intake (BEDA)

with Professional Internship**Year 1 Semester 1**

Course	Type	AU
CB1102 Introduction to Chemical and Biomedical Engineering	C	1
BG1141 Fundamental Biology for Bioengineers	C	3
BG1801 Bioengineering Lab 1A	C	1
MH1810 Math 1	C	3
PH1011 Physics	C	3
PH1012 <i>Physics A (*For students without 'A' Level Physics)</i>	C	4
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
CH2010 Engineering Statistics	MPE	3

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18 19**Year 2 Semester 1**

Course	Type	AU
BG2119 Anatomy and Physiology	C	3
BG2131 Biomaterials	C	3
BG2142 Biological Thermodynamics	C	3
BG2211 Introduction to Computational Thinking	C	3
BG2801 Bioengineering Lab 2A	C	1
CC0006 Sustainability: Society, Economy & Environment	CC	3
ML0004 Career and Entrepreneurial Development for the Future World	CC	2

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Year 3 Semester 1

Course	Type	AU
BG3102 Control in Biosystems	C	3
BG3104 Biomedical Imaging	C	3
BG3105 Biomedical Instrumentation	C	3
BG3112 Biofluid Mechanics and Medical Devices	C	3
BG3801 Bioengineering Lab 3	C	1
HW0288 Engineering Communication	FC	2
CH4244 Numerical Method and Data Analytics	BDE	3
DA Elective 2	BDE	3

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Year 4 Semester 1

Course	Type	AU
BG4104 Machine Learning and Optimization for Bioengineers	C	3
BG4122 Medical Device Design	C	3
BG4801 Final Year Project	C	4
EE4483 Artificial Intelligence & Data Mining	BDE	3
BC2406 Analytics I: Visual and Predictive Techniques	BDE	4
DA Elective 3	BDE	3

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Year 1 Semester 2

Course	Type	AU
CB1103 Organic Chemistry For Engineers	C	3
CB1117 Engineering Mathematics	C	4
BG1802 Bioengineering Lab 1B	C	1
EG1001 Engineers in Society	C	2
CC0003 Ethics & Civics in a Multi-Cultural World	CC	2
CC0005 Healthy Living & Wellbeing	CC	3

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Year 2 Semester 2

Course	Type	AU
BG2103 Signal Processing in Biosystems	C	3
BG2104 Electronics for Biomedical Engineering	C	3
BG2110 Bioelectricity	C	3
BG2209 Mechanics for Bioengineers	C	3
BG2802 Bioengineering Lab 2B	C	1
CC0007 Science & Technology for Humanity	CC	3
CB0494 Introduction to Data Science and Artificial Intelligence	FC	3

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Year 3 Semester 2

Course	Type	AU
BG3880 Professional Internship	FC	10

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Year 4 Semester 2

Course	Type	AU
BG4122 Medical Device Design	C	3
BG4801 Final Year Project	C	4
BIE PE 2	MPE	3
MH1403 Algorithms & Computing	BDE	3
EE4791 Database Systems	BDE	3

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Total (AU)**137****138***

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