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

with Professional Internship
AY2025- 2026 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)	Professional Series (PS)	Care, Serve, Learn (CSL)		
Bioengineering with Second Major in Data Analytics	1	21/22* [4]		6				27/28* [4]
	2	27 [3]	3 [3]	8	3			41 [6]
	3	13	3		13		3	32
	4	17				3	19	39
	Total	**78/79* [7]**	**6 [3]**	**14**	**16**	**3**	**22**	**139/140* [10]**

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 the V.U.C.A World	2	
	Professional Series (PS)			
	CB0494	Introduction to Data Science and Artificial Intelligence	3	16
	HW0288	Engineering Communication	2	
	MLXXXX	Professional Preparation	1	
	BG3920	Professional Internship	10	
	Care, Service, Learn (CSL)			
		Service Learning	3	3
Major Requirement	**BIE Core**			
	EG1001	Engineers In Society	2	12
	MH1810	Math 1	3	
	PH1011*	Physics	3	
	CB1102	Introduction to Chemical and Biomedical Engineering	1	
	CB1103	Organic Chemistry For Engineers	3	

Major Requirement	CB1117^	Engineering Mathematics	4	
	BG1141	Cellular & Molecular Biology for Bioengineers	3	
	BG1801	Bioengineering Lab 1A	1	
	BG1802	Bioengineering Lab 1B	1	
	CB2002	Introduction to Chemical and Biological Safety	1	
	BG2103	Signal Processing in Biosystems	3	
	BG2104	Electronics for Biomedical Engineering	3	
	BG2110	Bioelectricity	3	
	BG2119	Anatomy and Physiology	3	
	BG2131	Biomaterials	3	
	BG2142	Biological Thermodynamics	3	
	BG2209	Mechanics for Bioengineers	3	66
	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	Cardiovascular Engineering	3	
	BG3801	Bioengineering Lab 3	1	
	BG4104	Machine Learning and Optimization for Bioengineers	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**			
	1) Linear Algebra: CB1117 Engineering Mathematics		NA	
	2) Computing Skills: BG2211 Introduction to Computational Thinking		NA	
	3) Probability and Statistics: CH2010 Engineering Statistics		NA	13
	4) Algorithms: MH1403 Algorithms & Computing		3	
	5) Database: EE4791 Database Systems		3	
	6) Data Mining: IE4483 Artificial Intelligence & Data Mining		3	
	7) Data Visualisation/Management: BC2406 Analytics I: Visual and Predictive Techniques		4	

2nd Major in Data Analytics (BDEs)	**Electives**		
	CH4244 Numerical Method and Data Analytics	3	
	CB4246 Optimisation Using Artificial Intelligence	3	
	CB4247 Statistics & Computational Inference to Big	3	
	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)		9
Total			**139**
			140*

Students without 'A' Level Physics will take 'PH1012 Physics A' (4AU).
^Counted towards 2nd Major in Data Analytics requirement (total 10AU)
[] AU of courses that could be used to fulfil Core/MPE requirment and 2nd Major requirment concurrently

B.Eng. (Bioengineering) with 2nd Major in Data Analytics
Suggested Study Plan for AY2025-2026 intake (BEDA)
with Professional Internship

Year 1 Semester 1

Course		Type	AU
CB1102	Introduction to Chemical and Biomedical Engineering	C	1
BG1141	Cellular & Molecular Biology for Bioengineers	C	3
BG1801	Bioengineering Lab 1A	C	1
MH1810	Math 1	C	3
PH1011	Physics *or*	C	3
PH1012	Physics A *(*For students without 'A' Level Physics)*	C	4
CC0001	Inquiry and Communication in the Interdisciplinary World	CC	2
			13 14*

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
CC0015	Health & Wellbeing	CC	2
			14

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
ML0004	Career Design & Workplace Readiness in the V.U.C.A World	CC	2
CC0006	Sustainability: Society, Economy & Environment	CC	3
^CH2010	Engineering Statistics	MPE	3
			21

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
CB2002	Introduction to Chemical and Biological Safety	C	1
CC0007	Science & Technology for Humanity	CC	3
CB0494	Introduction to Data Science and Artificial Intelligence	PS	3
			20

Year 3 Semester 1

Course		Type	AU
BG3102	Control in Biosystems	C	3
BG3104	Biomedical Imaging	C	3
BG3105	Biomedical Instrumentation	C	3
BG3112	Cardiovascular Engineering	C	3
BG3801	Bioengineering Lab 3	C	1
	BIE PE 2	MPE	3
HW0288	Engineering Communication	PS	2
MLXXXX	Professional Preparation	PS	1
CH4244	Numerical Method and Data Analytics	BDE	3
			22

Year 3 Semester 2

Course		Type	AU
BG3920	Professional Internship	PS	10
			10

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
	Service Learning	CSL	3
IE4483	Artificial Intelligence & Data Mining	BDE	3
BC2406	Analytics I: Visual and Predictive Techniques	BDE	4
			20

Year 4 Semester 2

Course		Type	AU
BG4122	Medical Device Design	C	3
BG4801	Final Year Project	C	4
MH1403	Algorithms & Computing	BDE	3
EE4791	Database Systems	BDE	3
CB4246	Optimisation Using Artificial Intelligence	BDE	3
CB4247	Statistics & Computational Inference to Big Data	BDE	3
			19
Total (AU)			**139**
			140*

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