

B.Eng (Hons) in Bioengineering with 2nd Major in Future Foods

with Professional Internship
AY2024 - 2025 Intake onwards (BEFF)

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 FF_Track 1 (Global Immersion in WUR)	1	21		9			30
	2	29	3 [3]	8	3	3	46
	3	0			10	12	22
	4	27	3 [3]		2	9	41
	Total	77	6 [6]	17	15	24	139

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Programme	Year of Study	Number of Academic Units (AU)					
		Major Requirement		Interdisciplinary		Broadening and Deepening Electives (BDE)	Total
		Core (C)	Major PE (MPE)	Common Core (CC)	Foundational Core (FC)		
Bioengineering with Second Major in FF_Track 2 (NTU Based)	1	21		9			30
	2	28	3 [3]	8	3	3	43
	3	13			12	6	31
	4	17	3 [3]			15	35
	Total	79	6 [6]	17	15	24	139

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with Professional Internship

AY2024 - 2025 Intake onwards (BEFF)

Category		AU	Total AU
Interdisciplinary Collaborative Core (ICC)	Common Core (University-level)		
	CC0001 Inquiry and Communication in the Interdisciplinary World	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 Future World	2	
	Foundational Core (College-level)		
Major Requirement	HW0288 Engineering Communication	2	15
	CB0494 Introduction to Data Science and Artificial Intelligence	3	
	BG3920 Professional Internship	10	
	BIE Core		36
	EG1001 Engineers In Society	2	
	MH1810 Math 1	3	
	PH1011* Physics	3	
	CB1102 Introduction to Chemical and Biomedical Engineering	1	
	CB1103 Organic Chemistry For Engineers	3	
	CB1117 Engineering Mathematics	4	
	BG1141 Cellular & Molecular 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	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)			
CH5220^	Food Standard - Food Safety & Risk Assessment	3^	6	
CH5222^	Future Foods - Introduction to Advanced Meat	3^		
2nd Major in Future Foods (BDEs)	FF Core Courses			24
	CH5210	Food Process Technologies and New Production Systems	3	
	CH5211	Data Analytics in Food Systems	3	
	CH5220^	Food Standard - Food Safety & Risk Assessment	–	
	CH5222^	Future Foods - Introduction to Advanced Meat	–	
	CM5101	Food Chemistry & Nutrition	3	
	Electives (Choose 5, min 15AU)			
	4 WUR Electives (Track 1) or 4 NTU Elective (Track 2)		12	
1 NTU Elective		3		
Total				139

140*

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

^Counted towards 2nd Major in FF requirement (total 6AU)

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

B.Eng. (Bioengineering) with 2nd Major in Future Foods

Suggested Study Plan for AY2024-2025 intake (BEFS)

Track 1 (Global Immersion in WUR)

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	C	3
PH1012 Physics A (* For students without 'A' Level Physics)	C	4
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
		15
		16

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
BG3104 Biomedical Imaging	C	3
CC0006 Sustainability: Society, Economy & Environment	CC	3
ML0004 Career and Entrepreneurial Development for the Future World	CC	2
CM5101 Food Chemistry & Nutrition	BDE	3
		24

Year 3 Semester 1

Course	Type	AU
FF WUR Elective 1	BDE	3
FF WUR Elective 2	BDE	3
FF WUR Elective 3	BDE	3
FF WUR Elective 4	BDE	3
		12

Year 4 Semester 1

Course	Type	AU
BG3102 Control in Biosystems	C	3
BG3105 Biomedical Instrumentation	C	3
BG3112 Cardiovascular Engineering	C	3
BG3801 Bioengineering Lab 3	C	1
BG4104 Machine Learning and Optimization for Bioengineers	C	3
BG4122 Medical Device Design	C	3
BG4801 Final Year Project	C	4
CH5210 Food Process Technologies and New Production System	BDE	3
		23

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
		15

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
^CH5220 Food Standard - Food Safety and Risk Assessment	MPE	3
		22

Year 3 Semester 2

Course	Type	AU
BG3920 Professional Internship	FC	10
		10

Year 4 Semester 2

Course	Type	AU
BG4122 Medical Device Design	C	3
BG4801 Final Year Project	C	4
HW0288 Engineering Communication	FC	2
CH5211 Data Analytics in Food Systems	BDE	3
^CH5222 Future Foods - Introduction to Advanced Meet Alternative	MPE	3
FF NTU Elective	BDE	3
		18

Total (AU)**139****140***

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

^Counted towards 2nd Major in FF requirement (total 6U)

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Suggested Study Plan for AY2024-2025 intake (BEFF)

Track 2 (NTU Based)

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	C	3
PH1012 Physics A (* For students without 'A' Level Physics)	C	4
CC0001 Inquiry and Communication in the Interdisciplinary World	CC	2
CC0002 Navigating the Digital World	CC	2
		15
		16*

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
		15

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
CM5101 Food Chemistry & Nutrition	BDE	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
CC0007 Science & Technology for Humanity	CC	3
CB0494 Introduction to Data Science and Artificial Intelligence	FC	3
CH5220 ^A Food Standard - Food Safety and Risk Assessment	MPE	3
		22

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
HW0288 Engineering Communication	FC	2
FF NTU Elective 1	BDE	3
FF NTU Elective 2	BDE	3
		21

Year 3 Semester 2

Course	Type	AU
BG3920 Professional Internship	FC	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
CH5210 Food Process Technologies and New Production System	BDE	3
FF NTU Elective 3	BDE	3
FF NTU Elective 4	BDE	3
		19

Year 4 Semester 2

Course	Type	AU
BG4122 Medical Device Design	C	3
BG4801 Final Year Project	C	4
CH5211 Data Analytics in Food Systems	BDE	3
CH5222 ^A Future Foods - Introduction to Advanced Meet Alternative	MPE	3
FF NTU Elective 5	BDE	3
		16

Total (AU)**139****140***

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

^ACounted towards 2nd Major in FST requirement (total 6U)