BE (Honours) in Quantum Engineering (Program code: 3707 Plan code: ELECCH3707)

Duration: 4 years - Total 192uoc are required for the completion of this single degree program.

This is a recommended study plan.

Course Code (each 6uoc)	Course Name	Terms offered	Pre-requisite course required to pass
Year 1/ Term 1			
MATH1131 or MATH1141	Maths1A or Higher Maths1A	T1, T2, T3 T1, T3	
ELEC1111	Introduction to Electrical Engineering	T1, T3	
ENGG1000	Introduction to Engineering Design & Innovation	T1, T3	
Year 1/ Term 2			
MATH1231 or MATH1241	Maths1B or Higher Maths1B	T1, T2, T3 T1, T2	MATH1131 or MATH1141
COMP1511	Introduction to Programming	T2, T3	
PHYS1131	Higher Physics 1A	T1, T2, T3	
Year 1/ Term 3			
PHYS1231	Higher Physics 1B	T1, T3	PHYS1131
MATH2069	Maths 2A	T3	MATH1231
Year 2/ Term 1			
ELEC2141	Digital Circuit Design	T1, T2	ELEC1111 (or co-requisite)
ELEC2134	Circuits and Signals	T1, T3	ELEC1111
ELEC3115	Electromagnetic Engineering	T1	PHYS1231 and MATH2069
Year 2/ Term 2			
ELEC2133	Analogue Electronics	T2	ELEC2134
DESN2000	Engineering Design and Professional Practice	T2	ENGG1000 & ELEC2141 & (COMP1511 or COMP1521)
MATH2099	Maths 2B	T2	MATH1231 or MATH1241
Year 2/ Term 3			
ELEC3104	Digital Signal Processing	T1, T3	ELEC2134
ELEC3705	Fundamentals of Quantum Engineering	T3	MATH2099 & PHYS1231
GENxxxxx	6uoc of General Education course	T1, T2, T3	
Year 3/ Term 1			
ELEC3106	Electronics	T1	ELEC2133 and ELEC2141
TELE9757	Quantum Communications	T1	
GENxxxxx	6uoc of General Education course	T1, T2, T3	
Year 3/ Term 2			
ELEC3114	Control Systems	T2	ELEC2134 and MATH2099
ELEC3117	Electrical Engineering Design	T2	ELEC2133
PHYS3118	Quantum Physics of Solids and Devices	T2	ELEC3705

Year 3/ Term 3			
ELEC4123	Electrical Design Proficiency	T1, T3	Passed all L3 core courses
L3/L4 elective	choose from L3/L4 list or ELEC4635 Quantum Control		
Year 4/ Term 1			
ELEC4951	Thesis A (4uoc)	T1, T2, T3	126 uoc & completion of 3rd year's core courses
ELEC4122	Strategic Leadership and Ethics	T1	Passed 120 uoc
L4 elective	ELEC4604 RF Electronics (or L4 list)	T1	ELEC3106
Year 4/ Term 2			
ELEC4952	Thesis B (4uoc)	T1, T2, T3	ELEC4951
L4 elective	choose from L4 elective list or cross-institutional study		shown in L4 elective list
Year 4/ Term 3			
ELEC4953	Thesis C (4uoc)	T1, T2, T3	ELEC4951 & co-req: ELEC4952
ELEC4605	Quantum Devices and Computers	T3	ELEC3705
L4 elective	choose from L4 elective list or cross-institutional study		shown in L4 elective list

L3 elective courses list

ELEC2146	Engineering Modelling and Simulation	T3	COMP1511 & ELEC2134
ELEC3105	Electrical Energy	T2	ELEC3115 and ELEC2134
ELEC3111	Distributed Energy Generation	T3	ELEC2134
ELEC3145	Real Time Instrumentation	T2	COMP1511 & ELEC2134
TELE3113	Analogue & Digital Communications	T1	ELEC2134
TELE3118	Network Technologies	T3	DESN2000 or ELEC2142
TELE3119	Trusted Networks	T1	TELE3118
MATH3411	Information, Codes and Ciphers	T3	MATH1231 or MATH1241
MATH3101	Computational Mathematics	T3	MATH2069(CR) & MATH2099
MATH3121	Mathematical Methods and Partial Differential Equations	T1	MATH2069(DN) & MATH2099
MATH3161	Optimization	T1	MATH2069(CR) & MATH2099
MATH3201	Dynamical Systems and Chaos	T3	MATH2069(CR) & MATH2099
MATH3261	Fluids, Oceans and Climate	T1	MATH2069(DN) & MATH2099
COMP2041	Software Construction	T2	COMP1511
COMP3211	Computer Architecture	T1	ELEC2141 or COMP3222
COMP3231	Operating Systems	T1	(COMP1521 or DESN2000 or ELEC2142) & COMP2521
ENGG3001	Fundamentals of Humanitarian Engineering	T2	96uoc
ENGG3060	Maker Games	T2, T3	66uoc

ENGG2600	Engineering Vertically Integrated Project	T1, T2, T3	ENGG1000 & 42uoc
ENGG3600	Engineering Vertically Integrated Project	T1, T2, T3	ENGG1000 & 90uoc

L4 elective courses list

EET Disciplinary Courses: Student must take at least 12uoc of EET Disciplinary courses			
	Microelectronics		
ELEC4601	Digital and Embedded Systems	T2	ELEC3106
ELEC4602	Microelectronics Design and Technology	T3 every 2 yrs	ELEC3106
ELEC4603	Solid-State Electronics	T3	ELEC2133
ELEC4604	RF Electronics	T1	ELEC3106
	Energy Systems		
ELEC4611	Power System Equipment	T1	ELEC3105
ELEC4612	Power System Analysis	T1	ELEC3105
ELEC4613	Electrical Drive Systems	T2	ELEC3105
ELEC4614	Power Electronics	T1	ELEC2133
ELEC4617	Power System Protection	T2	ELEC4612
	Signal Processing		
ELEC4621	Advanced Digital Signal Processing	T1	ELEC3104
ELEC4622	Multimedia Signal Processing	T2	ELEC3104
ELEC4623	Biomedical Instrumentation, Measurement and Design	T3	ELEC3104
	Systems and Control		
ELEC4631	Continuous-Time Control System Design	T2	ELEC3114
ELEC4632	Computer Control Systems	T3	ELEC3114
ELEC4633	Real Time Engineering	T1	ELEC3114
	Data and Mobile Communications		
TELE4642	Network Performance	T2	TELE3118
TELE4651	Wireless Communication Technologies	T3	TELE3113
TELE4652	Mobile and Satellite Communication Systems	T2	TELE3113
TELE4653	Digital Modulation and Coding	T1	TELE3113
	Photonics		
PHTN4661	Optical Circuits and Fibres	T1	ELEC3115
PHTN4662	Photonic Networks	T2	ELEC3115 or TELE3113
ELEC4445	Entrepreneurial Engineering	T3 only	Pre-requisite: 132 uoc
L4 Engineering electives (but not EET Disciplinary)			
ENGG4102	Humanitarian Engineering Project	T3	ENGG3001 and ARTS2755
ENGG4600	Engineering Vertically Integrated Project	T1, T2, T3	ENGG1000 & 136uoc

Notes:

For enrolment rules, please see:

https://www.engineering.unsw.edu.au/students/student-resources/faculty-enrolment-rules

Industrial Training

All students are required to undertake 60 full days of mandatory industrial training. Each student is personally responsible for arranging and completing the compulsory industrial training. Please find detailed information in this site:

https://www.engineering.unsw.edu.au/electrical-engineering/resources/shared-resources/industrial-training

Other Notes

Not all courses are offered in every term. You need to view the timetable website to find out each course's availability in each term:

https://www.engineering.unsw.edu.au/electrical-engineering/resources/shared-resources/timetables

For further information regarding the honours rules, please view:

https://www.engineering.unsw.edu.au/bachelor-of-engineering-honours-detail