

## Draft dpt for BEng Electronics and Computer Science

### Year 1

Code	Course Name	Credits
INFR08012	Informatics 1 - Computation and Logic	10
INFR08013	Informatics 1 - Functional Programming	10
INFR08014	Informatics 1 - Object-Oriented Programming	10
INFR08015	Informatics 1 - Data and Analysis	10
SCEE08001	Engineering 1	20
ELEE08001	Electrical Engineering 1	20
MATH08060	Mathematics for Science and Engineering 1a	20
MATH08061	Mathematics for Science and Engineering 1b	20

### Year 2

Code	Course Name	Credits
INFR08009	Informatics 2B - Algorithms, Data Structures, Learning	20
INFR08018	Informatics 2C - Introduction to Computer Systems	10
INFR08019	Informatics 2C - Introduction to Software Engineering	10
ELEE08016	Analogue Circuits 2	10
ELEE08015	Digital System Design 2	10
SCEE08007	Signals and Communication Systems 2	10
ELEE08020	Microelectronics 2	10
MATH08066	Probability	10
SCEE08009	Engineering Mathematics 2A	10
SCEE08010	Engineering Mathematics 2B	10
ELEE08019	Electronics Project Laboratory 2C	10

### Year 3

Select a minimum of 40 credits and a maximum of 80 credits of Electronics courses from the following two groups as follows:

Select a minimum of 30 credits and a maximum of 70 credits from:

Code	Course Name	Credits
ELEE09026	Analogue Circuits 3	10
ELEE09024	Digital System Design 3	10
ELEE09022	Engineering Design Analysis & Manufacturability 3	10
ELEE09016	Engineering Software 3	10
ELEE09023	Electromagnetics 3: Signal Transmission	10
ELEE09021	Microelectronics 3	10
SCEE09002	Control and Instrumentation Engineering 3	10
ELEE09017	Signal and Communication Systems 3	10

Select a minimum of 10 credits and a maximum of 20 credits from:

Code	Course Name	Credits
ELEE09018	Digital Systems Laboratory 3	10
ELEE09025	Analogue Mixed Signal Laboratory 3	10

Select a minimum of 40 credits and a maximum of 80 credits of Computer Science courses from the following two groups as follows:

These lists include courses at level 9 (code INFR09xxx) and level 10 (code INFR10xxx). In general, level 10 courses will contain more advanced material and be taught at a higher level than level 9 courses and you should take account of this fact when planning your course combinations. Each entry links to a matching page in the University course catalogue, where you can find a description of the course content and information about any specific entry requirements.

Select a minimum of 10 credits and a maximum of 70 credits from:

Code	Course Name	Credits
INFR10052	Algorithms and Data Structures	10
INFR09009	Computer Architecture	10
INFR09010	Computer Design *	10 (20)
INFR09027	Computer Communications and Networks	10
INFR10058	Computer Security *	10 (20)
INFR10053	Compiling Techniques	20
INFR10055	Database Systems	20
INFR09031	Logic Programming	10
INFR09015	Operating Systems	20
Not known	Software Design and Modelling	20
INFR10057	Software Testing	10
INFR10059	Introduction to Theoretical Computer Science	10
INFR10063	Introductory Applied Machine Learning	10
INFR10061	Elements of Programming Languages	10

Select a minimum of 20 credits and a maximum of 40 credits from:

Code	Course Name	Credits
INFR09032	System Design Project	20
INFR09040	Computer Science Large Practical	20
INFR09039	Software Engineering Large Practical	20

\* These courses might change to 20 credits

Note: Informatics are changing some 3<sup>rd</sup> year courses to 20 credits from 2016/17. Where this is known they are indicated as such in the 3<sup>rd</sup> year section above. Text highlighted in red represents unknown information or possible changes. We don't currently have information on which semester the course will be delivered in, but if all the 20 credit courses are in a single semester, course choices will obviously be impacted.

## Year 4

Code	Course Name	Credits
ELEE10017	Professional Issues for Engineers 4	10

Select either:

Code	Course Name	Credits
ELEE10011	BEng Electronics and Electrical Engineering Project 4	40

AND

Select a minimum of 20 credits and a maximum of 30 credits from:

Code	Course Name	Credits
ELEE10020	Analogue Electronics (Circuits) 4	10
ELEE10010	Digital Signal Analysis 4	10
ELEE10006	Digital Communications 4	10
ELEE10003	Microelectronic Device Principles 4	10
ELEE10007	Digital System Design 4	10
ELEE10023	Digital Systems Laboratory	10
ELEE10021	Analogue Electronics (Project) 4	20
ELEE10025	Electromagnetics 4: RF Engineering	10
ELEE11081	Introduction to Bioelectronics 4	10
ELEE11094	Biosensors 4	10

AND

These lists include courses at level 10 (code INFR10xxx) and level 11 (code INFR11xxx). In general, level 11 courses will contain more advanced material and be taught at a higher level than level 10 courses and you should take account of this fact when planning your course combination. Each entry links to a matching page in the University course catalogue, where you can find a description of the course content and information about any specific entry requirements.

Select a minimum of 40 credits and a maximum of 50 credits from:

Code	Course Name	Credits
INFR10052	Algorithms and Data Structures	10
INFR11020	Algorithmic Game Theory and its Applications	10
INFR11074	Automated Reasoning (Level 11)	10
INFR11067	Computer Animation & Visualisation (Level 11)	10
INFR11021	Computer Graphics (Level 11)	10
INFR11102	Computational Complexity	10
INFR11049	Computer Networking (Level 11)	10
INFR11032	Compiler Optimisation (Level 11)	10
INFR10058	Computer Security	10
INFR10053	Compiling Techniques	10
INFR10055	Database Systems	10
INFR11022	Distributed Systems (Level 11)	10
INFR11017	Human-Computer Interaction (Level 11)	10

INFR10059	Introduction to Theoretical Computer Science	10
INFR11073	Machine Learning & Pattern Recognition (Level 11)	10
INFR11024	Parallel Architectures (Level 11)	10
INFR11023	Parallel Programming Languages and Systems (Level 11)	10
INFR11038	Software Architecture, Process, and Management (Level 11)	10
INFR10056	Software Engineering with Objects and Components	10
INFR10042	System Level Integration Practical	10
INFR10057	Software Testing	10
INFR11088	Extreme Computing	10
INFR11111	Computer Algebra	10
INFR11099	Introduction to Quantum Computing	10
INFR11098	Secure Programming	10
INFR11120	Embedded Systems	10
INFR10061	Elements of Programming Languages	10
INFR11124	Social and Technological Networks	10
INFR10063	Introductory Applied Machine Learning	10
INFR11114	Types and Semantics for Programming Languages	10

OR select

Code	Course Name	Credits
INFR10044	Honours Project (Informatics)	40

AND

Select a minimum of 40 credits and a maximum of 50 credits from:

Code	Course Name	Credits
ELEE10020	Analogue Electronics (Circuits) 4	10
ELEE10010	Digital Signal Analysis 4	10
ELEE10006	Digital Communications 4	10
ELEE10003	Microelectronic Device Principles 4	10
ELEE10007	Digital System Design 4	10
ELEE10023	Digital Systems Laboratory	10
ELEE10021	Analogue Electronics (Project) 4	20
ELEE10025	Electromagnetics 4: RF Engineering	10
ELEE11081	Introduction to Bioelectronics 4	10
ELEE11094	Biosensors 4	10

These lists include courses at level 10 (code INFR10xxx) and level 11 (code INFR11xxx). In general, level 11 courses will contain more advanced material and be taught at a higher level than level 10 courses and you should take account of this fact when planning your course combination. Each entry links to a matching page in the University course catalogue, where you can find a description of the course content and information about any specific entry requirements.

## AND

Select a minimum of 20 credits and a maximum of 30 credits from:

Code	Course Name	Credits
INFR10052	Algorithms and Data Structures	10
INFR11020	Algorithmic Game Theory and its Applications	10
INFR11074	Automated Reasoning (Level 11)	10
INFR11067	Computer Animation & Visualisation (Level 11)	10
INFR11021	Computer Graphics (Level 11)	10
INFR11102	Computational Complexity	10
INFR11049	Computer Networking (Level 11)	10
INFR11032	Compiler Optimisation (Level 11)	10
INFR10058	Computer Security	10
INFR10053	Compiling Techniques	10
INFR10055	Database Systems	10
INFR11022	Distributed Systems (Level 11)	10
INFR11017	Human-Computer Interaction (Level 11)	10
INFR10059	Introduction to Theoretical Computer Science	10
INFR11073	Machine Learning & Pattern Recognition (Level 11)	10
INFR11024	Parallel Architectures (Level 11)	10
INFR11023	Parallel Programming Languages and Systems (Level 11)	10
INFR11038	Software Architecture, Process, and Management (Level 11)	10
INFR10056	Software Engineering with Objects and Components	10
INFR10042	System Level Integration Practical	10
INFR10057	Software Testing	10
INFR11088	Extreme Computing	10
INFR11111	Computer Algebra	10
INFR11099	Introduction to Quantum Computing	10
INFR11098	Secure Programming	10
INFR11120	Embedded Systems	10
INFR10061	Elements of Programming Languages	10
INFR11124	Social and Technological Networks	10
INFR10063	Introductory Applied Machine Learning	10
INFR11114	Types and Semantics for Programming Languages	10

## Notes

- There is a 65:55 credit imbalance toward S1 in 2<sup>nd</sup> year. This is a consequence of including Electronics Project Laboratory 2C that spans both semesters. Project Lab 2B cannot be included because project Lab 2A is a co-requisite, and including Project Lab 2A would increase the imbalance.
- Power Options could be offered by including an option for Signals and Comms 2/Power Systems 2 in S2 of 2<sup>nd</sup> year. However, 2<sup>nd</sup> year options for lecture courses are discouraged.