

Computer Science and Maths wIE BSc (Hons) options 2022-2023

You will be automatically enrolled on these six course units which total 100 credits.

For the remaining 20 credits:

You need to select one course unit from Option Pool 1 totalling 10 credits and one course unit from Option Pool 2 totalling 10 credits.

Level 1 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits
COMP10120	First Year Team Project	20
COMP16321	Introduction to Programming 1	20
COMP16412	Introduction to Programming 2	10
MATH11022	Linear Algebra	20
MATH11121	Math Foundations & Analysis	20
MATH11711	Probability 1	10

Level 1 - option pool 1

From this option pool choose 10 credits.

Code	Title	Credits
COMP11212	Fundamentals of Computation	10
COMP13212	Data Science	10
COMP15212	Operating Systems	10

Level 1 - option pool 2

From this option pool choose 10 credits.

Code	Title	Credits
MATH11412	Introduction to ODEs	10
MATH11712	Statistics 1	10

Level 2 options

You will be automatically enrolled on MATH21120 Groups and Geometry which totals 20 credits.

For the remaining 100 credits:

You need to select a minimum of 2 courses totalling 40 credits or a maximum of 3 courses totalling 60 credits from Option Pool 1. COMP23311 and COMP23412 must be taken together and therefore count as one unit.

You may select a minimum of zero units and a maximum of one course unit totalling 10 credits from Option Pool 2.

You may select a minimum of zero units and a maximum of one course unit totalling 10 credits from Option Pool 3.

You need to select one course unit totalling 20 credits from Option Pool 4. The choice of course unit is determined by the choice made in Year 1 from Option Pool 2.

You need to select one course unit totalling 10 credits from Option Pool 5 (Semester 1).

You need to select one course unit totalling 10 credits from Option Pool 6 (Semester 2).

If you take a 20 credit whole year course unit you are not permitted to drop this unit when course unit selection reopens at the start of semester 2.

You must ensure your credits are balanced over the academic year (60 credits in each semester).

Level 2 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits		Theme
MATH20111	Real Analysis	10	None	
MATH20201	Algebraic Structures 1	10	None	

Level 2 - option pool 1

From this option pool choose 40 credits.

Code	Title	Credits		Theme
COMP23311	Software Engineering 1	10	Agile Methods	
COMP23412	Software Engineering 2	10	Agile Methods	
COMP26120	Algorithms and Data Structures	20	Computer Languages	
COMP26020	Programming Languages & Paradigms	20	None	

COMP23311 and COMP23412 must be taken together.

Level 2 - option pool 2

From this option pool choose 10 credits.

Code	Title	Credits		Theme
COMP21111	Logic and Modelling	10	Rigorous Development	
COMP23111	Database Systems	10	Web and Distributed Systems	
COMP24011	Introduction to AI	10	None	

Level 2 - option pool 3

From this option pool choose 10 credits.

Code	Title	Credits		Theme
COMP24112	Machine Learning	10	None	
COMP24412	Knowledge-based AI	10	Natural Language, Representation and Reasoning	
COMP27112	Introduction to Visual Computing	10	Visual Computing	
COMP28112	Distributed Systems	10	Web and Distributed Systems	

Level 2 - option pool 4

From this option pool choose 10 credits.

Code	Title	Credits		Theme
MATH11711	Probability 1	10	None	
MATH20411	Partial Differential Equations and Vector Calculus B	10	None	

Level 2 - option pool 5

From this option pool choose 30 credits.

Code	Title	Credits		Theme
MATH20122	Metric Spaces	10	None	
MATH20132	Calculus and Several Variables	10	None	
MATH20212	Algebraic Structures 2	10	None	
MATH20222	Introduction to Geometry	10	None	
MATH20502	Fluid Mechanics	10	None	
MATH20602	Numerical Analysis 1	10	None	
MATH20902	Discrete Mathematics	10	None	
MATH20912	Introduction to Financial Mathematics	10	None	
MATH29142	Complex Analysis	10	None	

Level 3 options

You will be automatically enrolled on the Third Year Project course unit which totals 30 credits.

For the remaining 90 credits:

You need to select a minimum of one course unit totalling 10 credits or a maximum of three course units totalling 30 credits from Option Pool 1.

You need to select a minimum of one course unit totalling 10 credits or a maximum of three course units totalling 30 credits from Option Pool 2.

You need to select a minimum of two course units totalling 20 credits and a maximum of four course units totalling 40 credits from CM Option Pool 3.

You need to select a minimum of two course units totalling <u>20 credits</u> and a maximum of four course units totalling <u>40 credits</u> from CM Option Pool 4.

Please note that some combinations of course units may not be possible due to timetable clashes.

If you wish to enrol on optional units (COMP or MATH) that are not listed below you must have permission from the Programme Tutor - Dr Andrea Schalk.

At least <u>40 credits</u> of MATH units in Year 3 must be at level 3.

You must ensure your credits are balanced over the academic year (<u>60 credits</u> in each semester).

If you take a <u>20 credit</u> whole year course unit you are not permitted to drop this unit when course unit selection reopens at the start of semester 2.

Level 3 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits		Theme
COMP30030	3rd Year Project (Joint Hons 30 Credits)	30	None	

Level 3 - option pool 1

From this option pool choose a maximum of 30 credits and a minimum of 10 credits.

Code	Title	Credits		Theme
COMP31311	Giving meaning to programs	10	None	
COMP33511	User Experience	10	Interactive Systems Design	
COMP34111	AI & Games	10	None	
COMP34711	Natural Language Processing	10	None	
COMP36111	Algorithms and Complexity	10	Programming and Algorithms	
COMP37111	Graphics and Virtual Environments	10	Visual Computing	
COMP38311	Advanced Distributed Systems	10	None	

Level 3 - option pool 2

From this option pool choose a maximum of 30 credits and a minimum of 10 credits.

Code	Title	Credits		Theme
COMP33312	Agile Software Pipelines	10	None	
COMP34812	Natural Language Understanding	10	None	
COMP36212	Mathematical Systems and Computation	10	Programming and Algorithms	
COMP37212	Computer Vision	10	Visual Computing	
COMP39112	Quantum Computing	10	None	
COMP32412	The Internet of Things: Architectures and Applications	10	Web and Distributed Systems	
COMP34212	Cognitive Robotics	10	None	
COMP34312	Mathematical Topics in Machine Learning	10	None	

Level 3 - option pool 3

From this option pool choose a maximum of 70 credits and a minimum of 50 credits.

Code	Title	Credits		Theme
MATH30002	Mathematics Education	10	None	
MATH31042	Fractal Geometry	10	None	
MATH31051	Topology	10	None	
MATH32001	Group Theory	10	None	
MATH32012	Commutative Algebra	10	None	
MATH32031	Coding Theory	10	None	
MATH32052	Hyperbolic Geometry	10	None	
MATH32062	Introduction to Algebraic Geometry	10	None	
MATH32072	Introduction to Number Theory	10	None	
MATH32091	Combinatorics and Graph Theory	10	None	
MATH33021	Mathematical Logic	20	None	
MATH34001	Applied Complex Analysis	10	None	
MATH35012	Wave Motion	10	None	
MATH35032	Mathematical Biology	10	None	

MATH35082	Symmetry in Nature	10	None
MATH36001	Matrix Analysis	10	None
MATH36022	Numerical Analysis II	10	None
MATH36031	Problem Solving by Computer	10	None
MATH36062	Convex Optimization	10	None
MATH39032	Mathematical Modelling in Finance	10	None
