Computer Science and Maths BSc (Hons) options 2018-2019

You will be automatically enrolled on these six course units which total <u>100 credits</u>.

For the remaining <u>20 credits</u>:

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

Level 1 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits
COMP10120	First Year Team Project	20
COMP16121	Object Oriented Programming with Java 1	20
COMP16212	Object Oriented Programming with Java 2	10
MATH10111	Foundations of Pure Mathematics B	15
MATH10131	Calculus and Vectors B	15
MATH10212	Linear Algebra	15
MATH10232	Calculus and Applications	15

Level 1 - option pool 1

From this option pool choose 10 credits.

Code	Title	Credits
COMP11212	Fundamentals of Computation	10
COMP14112	Fundamentals of Artificial Intelligence	10
COMP18112	Fundamentals of Distributed Systems	10

Level 2 options

You will be automatically enrolled on MATH21120 Groups and Geometry which totals <u>20 credits</u>.

For the remaining <u>100 credits</u>:

You need to select a minimum of 2 courses totalling <u>40 credits</u> or a maximum of 3 courses totalling <u>60 credits</u> 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 <u>10 credits</u> from Option Pool 2.

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

You need to select one course unit totalling <u>20 credits</u> 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 <u>10 credits</u> from Option Pool 5 (Semester 1).

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

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.

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

Level 2 - compulsory units

All of the units in this pool are mandatory.

Code	Title	Credits	Theme
COMP23311	Software Engineering 1	10	Agile Methods
COMP23412	Software Engineering 2	10	Agile Methods
COMP26120	Algorithms and Imperative Programming	20	Computer Languages
MATH20111	Real Analysis	10	None
MATH20142	Complex Analysis	10	None

MATH20201	Algebraic Structures 1	10	None

Level 2 - option pool 1

From this option pool choose 10 credits.

Code	Title	Credits	Theme
COMP21111	Logic and Modelling	10	Rigorous Development
COMP23111	Fundamentals of Databases	10	Web and Distributed Systems
COMP24111	Machine Learning and Optimisation	10	Learning and Search in Artificial Intelligence
COMP25111	Operating Systems	10	Computer Architecture

Level 2 - option pool 2

From this option pool choose 10 credits.

Code	Title	Credits	Theme
MATH10141	Probability 1	10	None
MATH20411	Partial Differential Equations and Vector Calculus B	10	None

Level 2 - option pool 3

From this option pool choose 10 credits.

Code	Title	Credits	Theme
COMP24412	Symbolic AI	10	Natural Language, Representation and Reasoning
COMP27112	Computer Graphics and Image Processing	10	Visual Computing
COMP28112	Distributed Computing	10	Web and Distributed Systems

Level 2 - option pool 4

From this option pool choose 20 credits.

Code	Title	Credits	Theme
MATH20122	Metric Spaces	10	None
MATH20212	Algebraic Structures 2	10	None
MATH20302	Introduction to Logic	10	None
MATH20502	Fluid Mechanics	10	None
MATH20512	Classical Mechanics	10	None
MATH20602	Numerical Analysis 1	10	None
MATH20902	Discrete Mathematics	10	None
MATH20912	Introduction to Financial Mathematics	10	None

Level 3 options

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

For the remaining <u>90 credits</u>:

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

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

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 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 40 credits
and a minimum of 20 credits.

Code	Title	Credits	Theme
COMP33511	User Experience	10	Interactive Systems Design
COMP33711	Agile Software Engineering	10	Agile Methods
COMP34120	AI and Games	20	Learning and Search in Artificial Intelligence
COMP34412	Natural Language Systems	10	Natural Language, Representation and Reasoning
COMP36111	Advanced Algorithms 1	10	Programming and Algorithms
COMP36212	Advanced Algorithms 2	10	Programming and Algorithms
COMP36512	Compilers	10	Computer Languages
COMP37111	Advanced Computer Graphics	10	Visual Computing
COMP37212	Computer Vision	10	Visual Computing
COMP38120	Documents, Services and Data on the Web	20	Web and Distributed Systems
COMP38411	Cryptography and Network Security	10	Mobile Computing and Networks
COMP39112	Quantum Computing	10	None

Level 3 - option pool 2

From this option pool choose a maximum of 70 credits
and a minimum of 40 credits.

Code	Title	Credits	Theme
MATH30002	Mathematics Education	10	None
MATH31001	Linear Analysis	10	None
MATH31052	Topology	10	None
MATH32001	Group Theory	10	None
MATH32011	Commutative Algebra	10	None
MATH32032	Coding Theory	10	None
MATH32052	Hyperbolic Geometry	10	None
MATH32062	Introduction to Algebraic Geometry	10	None
MATH32071	Introduction to Number Theory	10	None
MATH32091	Combinatorics and Graph Theory	10	None
MATH33011	Mathematical Logic	10	None
MATH34001	Applied Complex Analysis	10	None
MATH34011	Asymptotic Expansions and Perturbation Methods	10	None
MATH35032	Mathematical Biology	10	None
MATH36001	Matrix Analysis	10	None
MATH36022	Numerical Analysis II	10	None
MATH36032	Problem Solving by Computer	10	None
MATH36061	Convex Optimisations	10	None
MATH39032	Mathematical Modelling in Finance	10	None