BSC (HONS) MATHEMATICAL SCIENCES

Programme Requirements

Code	Title	Credits
Year 1		
Students take **60** credits as follows – all listed core modules (**40** credits) and **20** credits of elective modules:		
Core Modules		
AM1052	Introduction to Mechanics	5
AM1053	Introduction to Mathematical Modelling	5
AM1054	Mathematical Software	5
MA1057	Introduction to Abstract Algebra	5
MA1058	Introduction to Linear Algebra	5
MA1059	Calculus	5
MA1060	Introduction to Analysis	5
ST1051	Introduction to Probability and Statistics	5
Elective Modules		
Students take modules to the value of **20** credits from the following (subject to corequisites):		20
AC1107	Investment in Capital Assets	
AC1108	Introduction to Valuation and Risk	
BL1006	Habitats and Ecosystems	
CM1006	Introduction to Chemistry for Physicists and Mathematicians	
CS1061	Programming in C	
CS1069	Network and Internet Technologies	
MS2013	Geometry	
PA1003	Principles of Market Analysis	
PY1052	Introductory Physics I	
PY1053	Introductory Physics II	
ST1050	Statistical Programming in R	
Year 2		
Students take **60** credits as follows:		
Core Modules		
AM2052	Mathematical Modelling	5
AM2060	Object Oriented Programming with Applications	5
AM2061	Computer Modelling and Numerical Techniques	5
AM2071	Transform and Variational Methods	5
MA2051	Mathematical Analysis I	5
MA2054	Ordinary Differential Equations	5
MA2055	Linear Algebra	5
MA2071	Multivariable Calculus	5
ST2053	Introduction to Regression Analysis	5
MA2072	Complex Analysis	5
ST2054	Probability and Mathematical Statistics	10
Year 3		
Students take **60** credits as follows - all listed core modules (**35** credits) and **25** credits of elective modules:		
Core Modules		
MA3064	Measure Theory and Integration	5
AM3051	Vector and Tensor Methods	5
AM3063	Partial Differential Equations with Applications I	5
AM3064	Topics in Applied Mathematics	5
MA3052	Ring and Field Theory	5
ST3061	Statistical Theory of Estimation	5
ST3055	Generalised Linear Models	5
Elective Modules		
Students take modules to the value of **25** credits from List A (subject to co/prerequisites):		25
List A		
AM3052	Introduction to Fluid Mechanics and Wave Theories (5)	
AM3065	Dynamical Systems and Bifurcation Theory (5)	
MA3056	Metric Spaces and Topology (5)	
MA3062	Introduction to Modern Algebra (5)	
MA3063	Introduction to Differential Geometry (5)	
ST3053	Stochastic Modelling I (5)	
ST3054	Survival Analysis (5)	
ST4060	Statistical Methods for Machine Learning I (5)	
Year 4		
Students take **60** credits as follows - all listed core modules (**10** credits) and at least **40** credits of elective modules from List B and at most **10** credits of elective modules from List A (not previously taken): [1]		
Core Modules		
MS4090	Mathematical Sciences Project	10
Elective Modules		*50*
Students take, at most, modules to the value of **10** credits from the following (not previously taken):		
List A		
AM3052	Introduction to Fluid Mechanics and Wave Theories (5)	
AM3065	Dynamical Systems and Bifurcation Theory (5)	
MA3056	Metric Spaces and Topology (5)	
ST3053	Stochastic Modelling I (5)	
ST3054	Survival Analysis (5)	
ST4060	Statistical Methods for Machine Learning I (5)	
Students take modules to the value of at least **40** credits from the following (subject to co/prerequisite):		
List B		
AM4063	Partial Differential Equations with Applications II (5)	
AM4064	Perturbation and Asymptotic Methods (5)	
AM4065	Network Science with Applications (5)	
AM4067	Machine Learning with Applications (5)	
MA4052	Functional Analysis (5)	
MA4058	Measure Theory and Martingales (5)	
MA4062	Topics in Modern Algebra (5)	
MA4063	Topics in Differential Geometry (5)	
MF4054	Stochastic Analysis (5)	
ST4061	Statistical Methods for Machine Learning II (5)	
ST4064	Time Series (5)	

PY4112	Gravitation and Cosmology (5)
Total Credits	**240**

[1] Any elective module selected in Fourth Year must not have been taken in the previous year.

Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.