

Majors: Statistics

Statistics (specialisation in Data Science)

Statistics (specialisation in Finance and Business Statistics)

Applicable to cohorts: AY 2016/2017 and after

Levels	Major Requirements	Cum MCs
Level 1000 (16 MCs)	Pass – ST1131 Introduction to Statistics or ST1232 Statistics for Life Sciences – MA1101R Linear Algebra I – MA1102R Calculus – CS1010/—E/—S/—X Programming Methodology	16
Level 2000 (16–17 MCs)	Pass – ST2131/MA2216 Probability – ST2132 Mathematical Statistics – ST2137 Computer Aided Data Analysis – MA2311 Techniques in Advanced Calculus or MA2108 Mathematical Analysis I or MA2108S Mathematical Analysis I (S)	32–33
Level 3000 (28 MCs)	Pass – ST3131 Regression Analysis – ST3236/MA3238 Stochastic Processes I – Three other modules from ST32xx (except ST328x) or ST4xxx modules – Two additional modules from ST32xx (except ST328x), ST4xxx, List A or List B modules	60–61
Level 4000 (32 MCs)	Pass – ST4199 Honours Project in Statistics – ST4231 Computer Intensive Statistical Methods – ST4233 Linear Models – Two other modules from ST4xxx modules – One additional module from ST4xxx, ST5xxx or List B modules	92–93

Honours students majoring in Statistics have the option to qualify for specialisation in (A) **Data Science** or (B) **Finance and Business Statistics**.

(A) To be awarded a specialisation in **Data Science**, at least 24 MCs of the required 92–93 MCs given in the above **Major Requirements** table must belong to the following two lists, with at least 8 MCs from list DS 1:

DS 1

- ST3240 Multivariate Statistical Analysis
- CS3244 Machine Learning †
- ST4240 Data Mining

DS 2

- ST3247 Simulation
- CS3210 Parallel Computing †
- MA3252 Linear and Network Optimisation
- ST4234 Bayesian Statistics
- CS4231 Parallel and Distributed Algorithms †
- DSA4211 High-Dimensional Statistical Analysis
- DSA4212 Optimisation for Large-Scale Data-Driven Inference
- MA4268 Mathematics for Visual Data Processing †

† Students who wish to read these modules would have to read *additional* pre-requisite modules and should consult the Faculty/Department for academic advice on their study plans.

(B) To be awarded a specialisation in **Finance and Business Statistics**, at least 24 MCs of the required 92–93 MCs given in the above **Major Requirements** table must belong to the following two lists, with at least 8 MCs from each of the lists:

FBS 1

- ST3233 Applied Times Series Analysis
- ST3234 Actuarial Statistics
- ST3246 Statistical Models for Actuarial Science
- MA3269 Mathematical Finance I
- ST4245 Statistical Methods for Finance
- MA4269 Mathematical Finance II

FBS 2

- ST3232 Design and Analysis of Experiments
- ST3239 Survey Methodology
- ST3242 Introduction to Survival Analysis
- ST3244 Demographic Methods
- ST4238 Stochastic Processes II

Summary of Requirements	B.Sc.	B.Sc. (Hons.)
University Requirements	20 MCs	20 MCs
Faculty Requirements *	8 MCs	8 MCs
Major Requirements	60–61 MCs	92–93 MCs
Unrestricted Elective Modules	31–32 MCs	39–40 MCs
Total	120 MCs	160 MCs

* Faculty requirements of 12 MCs and 16 MCs [required for the B.Sc. and B.Sc. (Hons.) programmes respectively] are partially fulfilled through the reading of CS/MA modules within the major. Students undertaking the B.Sc. and B.Sc. (Hons.) programmes are required to fulfil the remaining 8 MCs of Faculty requirements from any two (2) of the following subject groups: Chemical Sciences, Life Sciences, Physical Sciences and Multidisciplinary & Interdisciplinary Sciences; but not from the following groups: Computing Sciences and Mathematical & Statistical Sciences.

List A

- CS3223 Database Systems Implementation
- CS3230 Design and Analysis of Algorithms
- CS3243 Introduction to Artificial Intelligence
- CS3244 Machine Learning
- EC3304 Econometrics II
- MA3209 Mathematical Analysis III
- MA3218 Applied Algebra
- MA3227 Numerical Analysis II
- MA3229 Introduction to Geometric Modelling
- MA3233 Combinatorics and Graphs I
- MA3236 Nonlinear Programming
- MA3252 Linear and Network Optimisation
- MA3256 Applied Cryptography
- MA3259 Mathematical Methods in Genomics
- MA3269 Mathematical Finance I
- QF3101 Investment Instruments: Theory and Computation

List B

- CS4220 Knowledge Discovery Methods in Bioinformatics
- CS4231 Parallel and Distributed Algorithms
- DSA4211 High-Dimensional Statistical Analysis
- DSA4212 Optimisation for Large-Scale Data-Driven Inference
- EC4303 Econometrics III
- MA4211 Functional Analysis
- MA4229 Approximation Theory
- MA4230 Matrix Computation
- MA4233 Dynamical Systems
- MA4253 Mathematical Programming
- MA4254 Discrete Optimisation
- MA4260 Stochastic Operations Research
- MA4261 Coding and Cryptography
- MA4262 Measure and Integration
- MA4269 Mathematical Finance II