## Majors: Statistics

**Statistics (specialisation in Data Science)**

Statistics (specialisation in Finance and Business Statistics)

### Levels

<table>
<thead>
<tr>
<th>Levels</th>
<th>Major Requirements</th>
<th>Cum MCs</th>
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</table>
| 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** MA2104 Multivariable Calculus  
  **or** MA2108/—S Mathematical Analysis I/— (S)  | 32–33    |
| Level 3000 (28–29 MCs) | Pass  
- ST3131 Regression Analysis  
- ST3236/MA3238 Stochastic Processes I  
- Three other modules from ST32xx (except ST328x)  
- ST4xxx modules  
- Two additional modules from ST32xx (except ST328x), ST4xxx, List A or List B modules  | 60–62    |
| Level 4000 (32–33 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  | 92–94    |

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 92–94 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
- ST3248 Statistical Learning I  
  **#2**: ST3248 and ST4248 (new modules) replace ST4240
- CS3244 Machine Learning  
  **†**
- ST4248 Statistical Learning II  
  **#2**

### 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  
  **†**

(B) To be awarded a specialisation in **Finance and Business Statistics**, at least 24 MCs of the required 92–94 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

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* 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.

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**Major Requirements**

- University Requirements  
  - 20 MCs  
- Faculty Requirements  
  - 8 MCs  
- Major Requirements  
  - 60–62 MCs  
  - 92–94 MCs  
- Unrestricted Elective Modules  
  - 30–32 MCs  
  - 38–40 MCs  
- Total  
  - 120 MCs  
  - 160 MCs

**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

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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.

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**Click on the module codes for module information**

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Version: July 2017