## Majors: Statistics

**(specialisation in Data Science)**

**(specialisation in Finance and Business Statistics)**

### Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Major Requirements</th>
<th>Cum MCs</th>
</tr>
</thead>
</table>
| **Level 1000**<br>(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**<br>(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**<br>(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**<br>(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  
MAA4268 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

<table>
<thead>
<tr>
<th>B.Sc.</th>
<th>B.Sc. (Hons.)</th>
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</thead>
<tbody>
<tr>
<td><strong>University Requirements</strong></td>
<td>20 MCs</td>
</tr>
<tr>
<td><strong>Faculty Requirements †</strong></td>
<td>8 MCs</td>
</tr>
<tr>
<td><strong>Major Requirements</strong></td>
<td>60–61 MCs</td>
</tr>
<tr>
<td><strong>Unrestricted Elective Modules</strong></td>
<td>31–32 MCs</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>120 MCs</td>
</tr>
</tbody>
</table>

* 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 fulfill 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.

### Lists

**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

### Notes

- **Pass**
- **E/—S/—X** Programming Methodology
- † 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