Major: Data Science and Analytics

Applicable to cohorts: AY 2017/2018 and after

* Faculty requirements of 16 MCs are partially fulfilled through the reading of CS/MA/ST modules within the major. Students 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.

**Levels**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Major Requirements</th>
</tr>
</thead>
</table>
| Level 1000 (16 MCs) | Pass  
- CS1010/—S/—X Programming Methodology  
- DSA1101 Introduction to Data Science  
- MA1101R Linear Algebra I  
- MA1102R Calculus |
| Level 2000 (24 MCs) | Pass  
- CS2040 Data Structures and Algorithms  
- DSA2101 Essential Data Analytics Tools: Data Visualisation  
- DSA2102 Essential Data Analytics Tools: Numerical Computation  
- MA2311 Techniques in Advanced Calculus  
- Or MA2104 Multivariate Calculus  
- ST2131/MA2216 Probability  
- ST2132 Mathematical Statistics |
| Levels 3000 and 4000 (56 MCs) | Pass  
- CS3244 Machine Learning  
- DSA3101 Data Science in Practice  
- DSA3102 Essential Data Analytics Tools: Convex Optimisation  
- ST3131 Regression Analysis  
- Either DSA4199 Honours Project in Data Science  
- Or DSA4299 Applied Project in Data Science  
- Six additional modules from List A and List B subject to the following restrictions:  
+ There must be at least two modules each from List A and from List B1/List B2  
+ There must be at least four modules at level 4000 |

**Summary of Requirements**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>MCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Requirements</td>
<td>20 MCs</td>
</tr>
<tr>
<td>Faculty Requirements *</td>
<td>8 MCs</td>
</tr>
<tr>
<td>Major Requirements</td>
<td>96 MCs</td>
</tr>
<tr>
<td>Unrestricted Elective Modules</td>
<td>36 MCs</td>
</tr>
<tr>
<td>Total</td>
<td>160 MCs</td>
</tr>
</tbody>
</table>

**List A — DSA modules**

- DSA4211 High-Dimensional Statistical Analysis
- DSA4212 Optimisation for Large-Scale Data-Driven Inference

**List B1 — DSA-recognised modules (no hidden pre-requisites)**

- MA3236 Nonlinear Programming
- MA3252 Linear and Network Optimisation
- ST3232 Design and Analysis of Experiments
- ST3233 Applied Time Series Analysis
- ST3239 Survey Methodology
- ST3240 Multivariate Statistical Analysis
- ST3247 Simulation
- ST3248 Statistical Learning I
- ST4231 Computer Intensive Statistical Methods
- ST4234 Bayesian Statistics
- ST4248 Statistical Learning II

**List B2 — DSA-recognised modules (with hidden pre-requisites) †**

- CS3210 Parallel Computing
- CS3223 Database Systems Implementation
- CS3230 Design and Analysis of Algorithms
- CS4224 Distributed Databases
- CS4225 Massive Data Processing Techniques in Data Science
- CS4231 Parallel and Distributed Algorithms
- CS4234 Optimisation Algorithms
- MA4230 Matrix Computation
- MA4270 Data Modelling and Computation

* 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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Students in cohorts AY 2017/2018 and after have the option to participate in co-operative education. [Download the co-op factsheet.]

**Version: May 2017**

Click on the module codes for module information