**Major: Data Science and Analytics**

**Applicable to cohorts: AY 2017/2018 and after**

<table>
<thead>
<tr>
<th>Levels</th>
<th>Major Requirements</th>
<th>Cum MCs</th>
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</thead>
</table>
| Level 1000 (16 MCs) Pass | CS1010/—S/—X Programming Methodology  
DSA1101 Introduction to Data Science  
MA1101R Linear Algebra I  
MA1102R Calculus | 16 |
| 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 | 40 |
| 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 B**/**List B2**  
+ There must be at least four modules at level 4000 | 96 |

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

### Summary of Requirements

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

* 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.

**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.