# Second Major: Data Analytics

**Applicable to cohort: AY 2017/2018**

<table>
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<tr>
<th>Levels</th>
<th>Second Major Requirements</th>
<th>Cum MCs</th>
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| **Level 1000** (16 MCs) | Pass  
- CS1010/E-J-S-X Programming Methodology  
- IT1007 Introduction to Programming with Python and C  
- One of the following modules:  
  + MA1101R Linear Algebra I  
  + MA1311 Matrix Algebra  
  + MA1508E Linear Algebra for Engineering  
  + MA1513 Linear Algebra with Differential Equations (2 MCs) †  
  - One of the following modules:  
    + MA1102R Calculus  
    + MA1312 Calculus with Applications  
    + MA1505 Mathematics I  
    + MA1507 Advanced Calculus  
    + MA1511 Engineering Calculus (2 MCs) and MA1512 Differential Equations for Engineering  
    + MA1521 Calculus for Computing | 10–12 |
| **Level 2000** (16 MCs) | Pass  
- CS2040 Data Structures and Algorithms  
- ST2131/MA2216 Probability  
- ST2132 Mathematical Statistics  
- One of the following modules:  
  + DSA2101 Essential Data Analytics Tools: Data Visualisation  
  + DSA2102 Essential Data Analytics Tools: Numerical Computation | 26–28 |
| Levels 3000 and 4000 (20–24 MCs) | Pass  
- ST3131 Regression Analysis  
- One of the following modules:  
  + DSA3102 Essential Data Analytics Tools: Convex Optimisation*  
  + DBA3701 Introduction to Optimisation  
  + MA3236 Nonlinear Programming*  
  + MA3252 Linear and Network Optimisation  
- One module from List I  
- One module from List II  
- One other module from List I or List II  
- One additional module from List I or List II | 48–50 |

† Applicable only to students who use MA1513 Linear Algebra with Differential Equations (2 MCs) to fulfil the second major requirements.

This second major is **not** offered with the following primary majors: Applied Mathematics, Business Analytics, Computational Biology, Computer Engineering, Computer Science, Data Science and Analytics, Industrial and Systems Engineering, Information Security, Mathematics, Quantitative Finance, Statistics.

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

**List II**
- CS3244 Machine Learning
- ST3240 Multivariate Statistical Analysis
- ST3247 Simulation
- ST4240 Data Mining

Students who participate in credit-bearing full-time internships/industrial...
attachments/professional placements as part of their degree requirements may be approved to double-count up to 8 MCs into List I if their internships/industrial attachments/professional placements have substantial data-analytics content, provided the limit of 16 MCs of double-counting in primary and second major requirements is not exceeded.

* Students may need to read additional modules outside the second major requirements to satisfy the pre-requisites of these modules.

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