### 3.4.2.2 Second Major in Data Analytics

Host Department: Statistics

To be awarded a B.Sc. with a second major in Data Analytics, candidates must satisfy the following:

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>SECOND MAJOR REQUIREMENTS</th>
<th>CUMULATIVE MAJOR MCS</th>
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</thead>
</table>
| Level 1000(10 – 12 MCs) | Pass  
One of the following modules:  
CS1010/CS1010E/CS1010J/CS1010S/CS1010X 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 (2 MCs)  
• MA1521 Calculus for Computing | 10 – 12 |
<table>
<thead>
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</tr>
</thead>
</table>
| 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               |
| Level 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               |

* Students who passed EC3303 Econometrics I need not read ST3131. They are allowed to read and pass an additional module from List I or List II in lieu of ST3131. However, where a module in List I or List II requires ST3131 as pre-requisite, the pre-requisite may not be fulfilled by EC3303.

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

**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

ST3248 Statistical Learning I

ST4248 Statistical Learning II

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

^ (1) As part of the Data Science and Analytics programme, FoS is planning to co-develop modules on data analytics for functional areas such as business, healthcare and public policy making with other Faculties/Schools. These modules will be coded as DSA modules and added to List I. (2) 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.

This second major is not offered with the following primary majors and minors:
