3.4.2.4 Second Major in Mathematics

Arising from the recent revamp of the Engineering Mathematics curriculum, the Department of Mathematics has introduced four new modules MA1511 Engineering Calculus (2 MCs), MA1512 Differential Equations for Engineering (2 MCs), MA1513 Linear Algebra with Differential Equations (2 MCs) and MA1508E Linear Algebra for Engineering (4 MCs) to be offered from AY2017/18, for which students in different engineering departments will take prescribed combinations to suit their need. To allow flexibility for students from the Faculty of Engineering and other schools and faculties to take a Second Major in Mathematics, it is necessary to revise the relevant parts of the requirements of the programme.

To be awarded a BSc with a second major in Mathematics, candidates must satisfy at least 48 MCs from non-overlapping modules of the following:
<table>
<thead>
<tr>
<th>MODULE LEVEL</th>
<th>SECOND MAJOR REQUIREMENTS</th>
<th>CUMULATIVE MAJOR MCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level-1000</td>
<td>Pass</td>
<td>16 – 18</td>
</tr>
<tr>
<td>(16 – 18 MCs)</td>
<td>MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete Structures or MA1101R Linear Algebra I or MA1506 Mathematics II or MA1508 Linear Algebra with Applications or MA1508E Linear Algebra for Engineering or (MA1513 Linear Algebra with Differential Equations and one additional module from List II)</td>
<td>16 – 18</td>
</tr>
<tr>
<td></td>
<td>MA1102R Calculus or MA1505 Mathematics I or MA1507 Advanced Calculus or MA1521 Calculus for Computing or (MA1511 Engineering Calculus and MA1512 Differential Equations for Engineering) or MA1104/MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems</td>
<td></td>
</tr>
<tr>
<td>MODULE LEVEL</td>
<td>SECOND MAJOR REQUIREMENTS</td>
<td>CUMULATIVE MAJOR MCS</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Level-2000</td>
<td>Pass&lt;br&gt;MA2101/ Linear Algebra II&lt;br&gt;MA2101S&lt;br&gt;MA2108/ Mathematical Analysis I&lt;br&gt;MA2108S&lt;br&gt;MA2216/ Probability&lt;br&gt;ST2131&lt;br&gt;One additional module from List II, III, IV</td>
<td>32 – 37</td>
</tr>
<tr>
<td>Level-3000 &amp; Level-4000</td>
<td>Pass&lt;br&gt;MA3110/ Mathematical Analysis II&lt;br&gt;MA3110S&lt;br&gt;MA3111/ Complex Analysis I&lt;br&gt;MA3111S&lt;br&gt;Two additional modules from List III, IV</td>
<td>48 – 56</td>
</tr>
</tbody>
</table>

**List II:**
- All MA modules at Level-2000, except those coded MA23XX
- PC2130 Quantum Mechanics I
- PC2132 Classical Mechanics
- ST2132 Mathematical Statistics
- EC2101 Microeconomic Analysis I

**List III:**
- All MA modules at Level-3000, except MA3311 and MA3312
- BSE3703 Econometrics for Business I
- CS3230 Design & Analysis of Algorithms
- CS3234 Logic and Formal Systems
- DSA3102 Essential Data Analytics Tools: Convex Optimisation
- EC3101 Microeconomic Analysis II
- EC3303 Econometrics I
- PC3130 Quantum Mechanics II
- PC3236 Computational Methods in Physics
- PC3238 Fluid Dynamics
- ST3131 Regression Analysis
- ST3236 Stochastic Processes I

**List IV:**
- All MA modules at Level-4000 or higher
- CS4232 Theory of Computation
- CS4234 Optimisation Algorithms
- CS4236 Cryptography Theory and Practice
This second major is not offered with a primary major in Applied Mathematics, Mathematics, Quantitative Finance or Data Science and Analytics, and minor in Mathematics or Financial Mathematics.