3.4.2.4 Second Major in Mathematics

Students with strong interest in mathematics but majoring in other disciplines such as computer science, economics/business, engineering, physics or statistics, are encouraged to take up a Second Major in Mathematics. This programme offers a broad-based education in mathematics and covers the same nine core mathematics modules as in the primary Major in Mathematics/Applied Mathematics. The three more elective modules in the requirements, from a list of interdisciplinary subjects, allow flexibility and ample scope for the student to design a programme which complements his/her primary major and other interests.

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</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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></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)</td>
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<tr>
<td></td>
<td>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>
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</tbody>
</table>
| Level-2000 (16 – 19 MCs) | Pass  
MA2101/ Linear Algebra II  
MA2101S  
MA2108/ Mathematical Analysis I  
MA2108S  
MA2216/ Probability  
ST2131  
One additional module from List II, III, IV | 32 – 37 |
| Level-3000 & Level-4000 (16 – 19 MCs) | Pass  
MA3110/ Mathematical Analysis II  
MA3110S  
MA3111/ Complex Analysis I  
MA3111S  
Two additional modules from List III, IV | 48 – 56 |

**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.