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>
</table>
| Level-1000 (16 - 18 MCs) | Pass  
MA1100  Fundamental Concepts of Mathematics  
or  
CS1231  Discrete Structures  
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)  
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)  
MA1104/MA2104  Multivariable Calculus  
or  
MA2501  Differential Equations and Systems | 16 - 18 |
<table>
<thead>
<tr>
<th>MODULE LEVEL</th>
<th>SECOND MAJOR REQUIREMENTS</th>
<th>CUMULATIVE MAJOR MCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level-3000 &amp; Level-4000 (16 – 19 MCs)</td>
<td>Pass MA3110/ Mathematical Analysis II MA3110S MA3111/ Complex Analysis I MA3111S 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
- CS5230  Computational Complexity
- CS5237  Computational Geometry and Applications
- DSA4211  High-Dimensional Statistical Analysis
- DSA4212  Optimisation for Large-Scale Data-Driven Inference
- EC4101/EC4301  Microeconomic Analysis III
- EC5104/EC5104R  Mathematical Economics
- PC4248  Relativity
- PC4274  Mathematical Methods in Physics III
- ST4238  Stochastic Processes II
- ST4245  Statistical Methods for Finance

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.