Second Major in Mathematics

Graduation Requirements for students admitted from AY2019/2020

To be awarded a 2nd 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>2nd Major Requirements</th>
<th>Cumulative Major MCs</th>
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</thead>
</table>
| 1000 (12-14 MCs) | Pass  
• MA1100 Basic Discrete Mathematics or CS1231/CS1231S 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) | 12-14 |
| 2000 (20-23 MCs) | Pass  
• MA2101/MA2101S Linear Algebra II  
• MA2104 Multivariable Calculus or MA2501 Differential Equations and Systems  
• MA2108/MA2108S Mathematical Analysis I  
• MA2216/ST2131 Probability  
• One additional module from List II, III, IV | 32-37 |
| 3000 (16-18 MCs) | Pass  
• Four modules from List III, IV, where at least two of which are MA-coded | 48-52 |

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 those coded MA33XX
- 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 / ECS5104R Mathematical Economics
- PC4248 Relativity
- PC4274 Mathematical Methods in Physics III
- ST4238 Stochastic Processes II
- ST4245 Statistical Methods for Finance

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