# B.Sc. & B.Sc. (Hons) with Major in Mathematics

**Graduation Requirements for students admitted in AY2019/2020 or after**

To be awarded a B.Sc. or B.Sc.(Hons) with primary major in Mathematics, in addition to the University and Faculty requirements, a candidate must satisfy the following:

<table>
<thead>
<tr>
<th>Module Level</th>
<th>Major Requirements</th>
<th>Level MCs</th>
<th>Cumulative Major MCs</th>
</tr>
</thead>
</table>
| 1000         | 1. Pass all the following modules:  
• MA1100 Basic Discrete Mathematics or CS1231/CS1231S Discrete Structures  
• MA1101R Linear Algebra I  
• MA1102R Calculus  
• CS1010/CS1010E/CS1010S/CS1010X/CS1101S Programming Methodology | 16 | 16 |
| 2000         | 2. Pass all the following modules:  
• MA2101/MA2101S Linear Algebra II  
• MA2104 Multivariable Calculus  
• MA2108/MA2108S Mathematical Analysis I  
• MA2202/MA2202S Algebra I  
• MA2216/ST2131 Probability  
3. Pass one additional module from List II, III, IV | 24-28 | 40-44 |
| 3000         | 4. Pass three modules from List MA3  
5. Pass two additional modules from List III, IV | 20-23 | 60-66 |
| 4000         | 6. Pass MA4199 Honours Project in Mathematics  
7. Pass three modules from List MA4  
8. Pass two additional modules from List IV | 32-33 | 92-98 |
| UROPS        | At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Mathematics | | |

At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Mathematics.
### 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
- 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

### List MA3
- MA3110/MA3110S/MA3210 Mathematical Analysis II
- MA3111/MA3111S/MA3211/MA3211S Complex Analysis I
- MA3201 Algebra II
- MA3205 Set Theory
- MA3209 Metric and Topological Spaces
- MA3265 Introduction to Number Theory
List MA4

- MA4203 Galois Theory
- MA4207 Mathematical Logic
- MA4221 Partial Differential Equations
- MA4229 Fourier Analysis and Approximation
- MA4262 Measure and Integration
- MA4271 Differential Geometry of Curves and Surfaces
- MA4273 Algebraic Geometry of Curves and Surfaces

Modular Credit Cumulative Table

<table>
<thead>
<tr>
<th>Requirements</th>
<th>B.Sc.</th>
<th>B.Sc. (Hons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Requirements</td>
<td>20 MC</td>
<td>20 MC</td>
</tr>
<tr>
<td>Faculty Requirements</td>
<td>4-8 MC*</td>
<td>4-12 MC*</td>
</tr>
<tr>
<td>Major Requirements</td>
<td>60-66 MC</td>
<td>92-98 MC</td>
</tr>
<tr>
<td>Unrestricted Free Electives</td>
<td>26-36 MC</td>
<td>30-44 MC</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120 MC</strong></td>
<td><strong>160 MC</strong></td>
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</tbody>
</table>

*Faculty requirements of 12MCs and 16MCs (required for the B.Sc. and B.Sc.(Hons) programmes respectively) are partially fulfilled through the reading of CS/PC/ST modules within the major.

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