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

## Graduation Requirements for students admitted in AY2012/13

To be awarded a B.Sc. or B.Sc.(Hons) with primary major in Applied 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 the 4 modules in List I  
               2. Pass CS1010/CS1010E\(^*\) Programming Methodology  
               3. IT1006 MATLAB Programming for Mathematics | 20 | 20 |
| 2000         | 4. Pass all the following modules:  
               \- MA2101/MA2101S Linear Algebra II  
               \- MA2108/MA2108S Mathematical Analysis I  
               \- MA2213 Numerical Analysis I  
               \- MA2216/ST2131 Probability  
               5. Pass one additional module from List II, III, IV | 20-23 | 40-43 |
| 3000         | 6. Pass all the following modules:  
               \- MA3110/MA3110S Mathematical Analysis II  
               \- MA3111/MA3111S Complex Analysis I  
               7. Pass two modules from List AM3  
               8. Pass two additional modules from List III, IV | 24-26 | 64-69 |
| 4000         | 9. Pass MA4199 Honours Project in Mathematics  
               10. Pass four modules from List AM4  
               11. Pass two additional modules from List IV | 36 | 100-105 |
| **UROPS**    | At most one Mathematics UROPS module may be used to fulfil the requirements of Major in Mathematics | |

### List I

- MA1100 Fundamental Concepts of Mathematics or CS1231 Discrete Structures
- MA1101R Linear Algebra I
- MA1102R Calculus
- MA1104 Multivariable Calculus
List II
- All MA modules at level 2000, except those coded MA23XX
- PC2130 Quantum Mechanics I
- PC2132 Classical Mechanics
- ST2132 Mathematical Statistics

List III
- All MA modules at level 3000, except MA3311 and MA3312
- CS3230 Design & Analysis of Algorithms
- CS3234 Logic and Formal Systems
- CS4232 Theory of Computation
- 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
- CS4236 Cryptography Theory and Practice
- CS5230 Computational Complexity
- CS5237 Computational Geometry and Applications
- EC4101/EC4301** Microeconomics Analysis III
- EC5104 Mathematical Economics
- PC4248 Relativity
- PC4274 Mathematical Methods in Physics III
- ST4238 Stochastic Processes II

List AM3
- MA3209 Mathematical Analysis III
- MA3220 Ordinary Differential Equations
- MA3227 Numerical Analysis II
- MA3233 Combinatorics and Graph II
- MA3236 Nonlinear Programming
- MA3252 Linear and Network Optimization
- MA3264 Mathematical Modelling
- MA3269 Mathematical Finance I
List AM4

- MA4211 Functional Analysis
- MA4221 Partial Differential Equations
- MA4230 Matrix Computation
- MA4235 Topics in Graph Theory
- MA4254 Discrete Optimization
- MA4255 Numerical Methods in Differential Equations
- MA4268 Mathematics for Visual Data Processing
- MA4269 Mathematical Finance II

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>4-12 MC</td>
<td>4-16 MC</td>
</tr>
<tr>
<td>Major Requirements</td>
<td>64-69 MC</td>
<td>100-105 MC</td>
</tr>
<tr>
<td>Unrestricted Free Electives</td>
<td>32-19 MC</td>
<td>36-19 MC</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120 MC</strong></td>
<td><strong>160 MC</strong></td>
</tr>
</tbody>
</table>

*Updated 2 August 2013
**Updated 3 July 2015