

3.4.2.5 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:

MODULE LEVEL	SECOND MAJOR REQUIREMENTS	CUMULATIVE MAJOR MCS
Level-1000 (12 - 14 MCs)	Pass MA1100 Basic Discrete Mathematics <u>or</u> CS1231/CS1231S Discrete Structures MA1101R Linear Algebra I <u>or</u> MA1506 Mathematics II <u>or</u> MA1508 Linear Algebra with Applications <u>or</u> MA1508E Linear Algebra for Engineering <u>or</u> (MA1513 Linear Algebra with Differential Equations and one additional module from List II) MA1102R Calculus <u>or</u> MA1505 Mathematics I <u>or</u> MA1507 Advanced Calculus <u>or</u> MA1521 Calculus for Computing <u>or</u> (MA1511 Engineering Calculus and MA1512 Differential Equations for Engineering) MA1104/MA2104 Multivariable Calculus <u>or</u> MA2501 Differential Equations and Systems	12 - 14

MODULE LEVEL	SECOND MAJOR REQUIREMENTS	CUMULATIVE MAJOR MCS
Level-2000 (20 - 23 MCs)	Pass MA2101/ Linear Algebra II MA2101S MA2108/ Mathematical Analysis I MA2108S MA2216/ Probability ST2131 <u>One</u> additional module from List II, III, IV	32 - 37
Level-3000 & Level-4000 (16 - 18 MCs)	Pass <u>Four</u> modules from List III, IV, where at least two 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/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.

Students reading a primary major in Statistics with second major in Mathematics should refer to the FAQ at <http://ww1.math.nus.edu.sg/undergraduates.aspx?f=UP-MA2>.