

Orientation Talk on Mathematics Program

Preparing for Your *First Semester*

PROFESSOR VICTOR TAN
DEPARTMENT OF MATHEMATICS

Math Dept Webpage

The screenshot shows the NUS Department of Mathematics Faculty of Science website. The top navigation bar includes links for Home, About Us, People, Research, Undergraduates, Graduates, Modules & Timetables, Continuing Education, Events, Jobs, and Alumni. A red arrow points to the 'Undergraduates' link. A dropdown menu is open under 'Undergraduates', showing options like Prospective Students, Major/Minor Programmes, Honours Year Project, Special Programme in Mathematics (SPM), Undergraduate Research (UROPs), Study Abroad Programmes, Internship Opportunities, Independent Study Module (ISM), Maths Clinic, and Undergraduate Advisors. A blue arrow points to 'Major/Minor Programmes'. Another dropdown menu is open under 'Major/Minor Programmes', showing options for Cohort 2020/2021 and Cohort 2021/2022. A blue arrow points to 'Cohort 2021/2022'. A third dropdown menu is open under 'Cohort 2021/2022', showing options for Major in Mathematics, Major in Quantitative Finance, Major in Data Science & Analytics, Double Degree in Mathematics & Computer Science, Second Major in Mathematics, Second Major in Quantitative Finance, Second Major in Data Analytics, Minor in Mathematics, and Minor in Quantitative Finance. A blue arrow points to 'Major in Mathematics'. The background of the website features a blue and white geometric pattern and a quote from QUEK Ming Hao: "Studying mathematics interest in the interplay between theory and geometry. I am interested in the numerous opportunities the UROPs programme offers to pursue my research interests outside the curriculum, as well as the support I have had with my professors".

NUS National University of Singapore | Department of Mathematics Faculty of Science

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Special Programme in Mathematics (SPM)

Undergraduate Research (UROPs)

Study Abroad Programmes

Internship Opportunities

Independent Study Module (ISM)

Maths Clinic

Undergraduate Advisors

≤ Cohort 2020/2021 ▾

≥ Cohort 2021/2022 ▾

Major in Mathematics

Major in Quantitative Finance

Major in Data Science & Analytics

Double Degree in Mathematics & Computer Science

Second Major in Mathematics

Second Major in Quantitative Finance

Second Major in Data Analytics

Minor in Mathematics

Minor in Quantitative Finance

"Studying mathematics interest in the interplay between theory and geometry. I am interested in the numerous opportunities the UROPs programme offers to pursue my research interests outside the curriculum, as well as the support I have had with my professors"

QUEK Ming Hao

<https://www.math.nus.edu.sg/undergraduates/major-minor-programmes/cohort-2021-2022-and-later/b-sc-hons-with-major-in-mathematics-ma/>

Module Requirements

Essential Modules (8 modules)

By Year 1

- MA1100 Basic Discrete Mathematics
- MA2001 Linear Algebra I
- MA2002 Calculus

By Year 2

- MA2101 Linear Algebra II
- MA2104 Multivariable Calculus
- MA2108 Mathematical Analysis I
- MA2116/2216 Probability

By Year 4

- MA4198 Mathematics Capstone Project

Elective Modules **without specialization**

- choose 7 modules from MAx2xx
(at most 2 modules from MA22xx)

Elective Modules **with specialization**

- choose 7 modules from MAx2xx
(at most 2 modules from MA22xx)
- Additional 5 modules from
list PM/DMA/ORR

Go to Math page: Major in Mathematics > Sample Study Plans

Study Plan (w/o specialization)

Year 1		Year 2		Year 3		Year 4	
Sem 1	Sem 2	Sem 1	Sem 2	Sem 1	Sem 2	Sem 1	Sem 2
Pair 1: Integrated Module in Social Sciences Pair 2: Integrated Module in Humanities	Pair 1: Integrated Module in Humanities Pair 2: Integrated Module in Social Sciences	Scientific Inquiry II	Artificial Intelligence	Interdisciplinary I	Interdisciplinary II	MA32xx	UE 8
Pair 1: Scientific Inquiry I Pair 2: Integrated Module in Asian Studies	Pair 1: Integrated Module in Asian Studies Pair 2: Scientific Inquiry I	Writing (SP1541)	Communities and Engagement	MA2116/ST2131 Probability	MA32xx	MA32xx	UE 9
Pair A: Data Literacy Pair B: Design Thinking	Pair A: Design Thinking Pair B: Data Literacy	Digital Literacy (CS1010S)	MA2101/MA2101S Linear Algebra II	MA22xx	MA32xx	MA4198 Mathematics Capstone Project	UE 10
MA1100 /MA1100T Basic Discrete Mathematics	MA2002 Calculus	MA2001 Linear Algebra I	MA2104 Multivariable Calculus	MA22xx	MA32xx	UE 6	UE 11
UE 1	UE 2	UE 3	MA2108/MA2108S Mathematical Analysis I	UE 4	UE 5	UE 7	UE 12

Go to Math page: Major in Mathematics > Sample Study Plans

Study Plan (with specialization)

Year 1		Year 2		Year 3		Year 4	
Sem 1	Sem 2	Sem 1	Sem 2	Sem 1	Sem 2	Sem 1	Sem 2
Pair 1: Integrated Module in Social Sciences Pair 2: Integrated Module in Humanities	Pair 1: Integrated Module in Humanities Pair 2: Integrated Module in Social Sciences	Scientific Inquiry II	Artificial Intelligence	Interdisciplinary I	Interdisciplinary I	MA42xx in Specialisation List	MA42xx in Specialisation List
Pair 1: Scientific Inquiry I Pair 2: Integrated Module in Asian Studies	Pair 1: Integrated Module in Asian Studies Pair 2: Scientific Inquiry I	Digital Literacy (CS1010S)	MA2101/MA2101S Linear Algebra II	MA22xx	MA32xx	MA42xx in Specialisation List	MA42xx in Specialisation List
Pair A: Data Literacy Pair B: Design Thinking	Pair A: Design Thinking Pair B: Data Literacy	Communities and Engagement	MA2104 Multivariable Calculus	MA22xx	MA32xx	MA42xx in Specialisation List	UE 5
Writing (SP1541)	MA2002 Calculus	MA2001 Linear Algebra I	MA2108/MA2108S Mathematical Analysis I	MA32xx	MA32xx	UE 3	UE 6
MA1100/MA1100T Basic Discrete Mathematics	UE1	UE2	MA2116/ST2131 Probability	MA32xx	MA4198 Mathematics Capstone Project	UE 4	UE 7

Possible Combinations for Semester 1

Normal load (5 modules)

- 3 common core (pre-allocated) + MA1100(T) + MA2002
- 3 common core (pre-allocated) + MA1100(T) + another common core
- 3 common core (pre-allocated) + MA1100(T) + another gateway

Go to [CHS](#) page: Programmes > Overview

Common Core Modules

❖ Digital Literacy

- Must read [CS1010S Programming Methodology](#)

❖ Data Literacy

- Default: [GEA1000 Quantitative Reasoning with Data](#)
- If you intend to second major or minor in Statistics, read:
[ST1131 Introduction to Statistics and Statistical Computing](#)
- If you intend to second major in Data Analytic, read:
[DSA1101 Introduction to Data Science](#)

Go to Math page: Modules & Timetables > Modules Offered

Module List

Elective Modules

- choose 7 modules from M_{Ax2xx}
(at most 2 modules from MA22xx)

The screenshot shows the NUS Department of Mathematics website. The header includes the NUS logo, the department name, and navigation links like 'Quick Links', 'Contact Maths', 'Science', and 'NUS'. The main navigation bar lists various categories, with 'Modules & Timetables' highlighted. A red arrow points to the 'Modules Offered' link in the dropdown menu. Below the navigation bar, there is a large banner image with the word 'MODULES' overlaid. At the bottom, there are two sections: 'Important Notes' and 'Modules Offered'.

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Important Updates
Modules Offered
Module & Tutorial Registration
Class & Exam Timetables

MODULES

Important Notes

Modules Offered

Go to Math page: Modules & Timetables > Modules Offered

Module List

- Overview of all modules offered by Dept of Math
- Overview of modules offered in current academic year
- Names of the lecturers teaching the modules in current AY
- <https://www.math.nus.edu.sg/timetables-updates/modules-offered/>

For module details, go to
NUSMODS and **LumiNUS**

The screenshot displays the NUSMODS interface. On the left is a navigation menu with icons and labels for 'Today', 'Timetable', 'Modules', 'Venues', 'Settings', 'Contribute', and 'Whispers'. The main content area shows a search bar with 'MA' entered, indicating 1471 modules found. The selected module is 'MA1100 Basic Discrete Mathematics', categorized as 'Mathematics • 4 MCs'. A detailed description follows, explaining it as an entry-level module for modern mathematics. To the right, a tabbed interface shows 'Sem 1' as the active semester. Below this, the exam date is listed as '24-Nov-2021 1:00 PM • 2 hrs'. A workload section indicates a total of 10 hours, broken down into 'Lecture' (4 hrs), 'Tut' (2 hrs), and 'Preparation' (4 hrs), with a '6 hrs' label at the end. A visual bar chart represents this workload distribution.

Gateway Module

MA1100 vs MA1100T



	MA1100	MA1100T
Offered	Semester 1 and 2	Only in Semester 1
Topics	Based on textbook by Lakins	MA1100 topics + axiomatic set theory
Course material	Lecture slides	Pre-recorded lecture videos + lecture notes
Lecture same timeslot	1.5 hr x 2 sessions per week Live zoom lectures	1.5 hr x 2 sessions per week Live problem solving sessions
Tutorial	1 hour per week	none
Problem sets	To be submitted as HW	To be solved during live sessions
Assessment	HW + mid-term test + final exam	Class participation + quizzes + final exam
Approach	Emphasizes rigour and conceptual understanding	More in-depth and emphasizes axiomatic approach

Gateway Module

MA1100 vs MA1100T

Level of Difficulty	MA1100	MA1100T
Average students	Difficult	Super difficult
Good students	Not too difficult	Challenging
Math Whiz-kids	Not challenging	Fun

Gateway module pre-allocation (July 16)

- Students will be pre-allocated to MA1100 by default
- Write to AskMathUG askmathug@nus.edu.sg by July 15 to be pre-allocated MA1100T
- Students may do one-time switch from MA1100 to MA1100T (and vice versa) **before end of week 2**

Go to Math page: Special Program in Mathematics

Special Program in Mathematics



SPECIAL PROGRAMME IN MATHEMATICS (SPM)

[Enrolment Eligibility](#)

[Programme Structure - AY2018/2019 or earlier](#)

[Programme Structure - AY2019/2020 to 2020/2021](#)

[Programme Structure - AY2021/2022 and beyond](#)

[Sample Study Plans & Schedules](#)

[FAQ](#)

[Apply for this Programme](#)

Go to Math page: Special Program in Mathematics

Special Program in Mathematics

Students with good grades in:

MA1100T (start SPM in Sem 2 of their first year)

MA1100 & MA2001 & MA2002 (start SPM in Sem 1 of their second year)

Curriculum Requirements

- MA2101S Linear Algebra II (version S) [offered every sem 2]
- MA2108S Mathematical Analysis I (version S) [offered every sem 2]
- MA2202S Algebra I (version S) [offered every sem 1]
- MA3211S Complex Analysis I (version S) [offered every sem 1]
- Two modules coded MA42xx
- Two modules coded MA52xx

All these 8 modules can be counted towards math major requirement

Go to Math page: Second Major in Mathematics

Second Major

- ☐ Primary Major in Math, with 2nd major in other program
 - ☐ Primary Major in other program, with 2nd major in math
-
- Declare now or later (before 5th semester)
 - Upgrade to double degree
 - Downgrade to major/minor
 - Plan carefully to graduate on time

Past VS Present

Past	Present
Major requirement (96 MC)	Major requirement (60 MC)
CS1010S in major requirement	CS1010S count under CHS common core
MA, AM separate majors	MA major (no AM major)
Full year honours projects	One-semester capstone project (MA4198)
MA1100 [can be substituted by CS1231]	Gateway modules: MA1100/MA1100T [cannot be substituted by CS1231]
MA1101R Linear Algebra I MA1102R Calculus	MA2001 Linear Algebra I MA2002 Calculus
UROPS (MA2288 or MA3288) can be counted as major requirement	UROPS (MA2288 or MA3288) cannot be counted as major requirement

Advice on Module Selection

- From **lower to higher** level (check the prerequisites and preclusions in NUSMODS)
- Priority should be given to **essential** modules
- Take note of the modules which are offered **once a year**
- Take note of the modules with same **exam timeslot**
- Don't **overload** yourself
- Don't choose a module based on its **title**
- Don't choose a module because it is "**easy**"
- Choose modules that will "**add values**" to your longer term plan

Prerequisite and Preclusion

- MA1100(T), MA2001, MA2002 require GCE A-level H2 math (or equivalence) as **prerequisite**.
- All other higher level modules require certain lower level MAxxxx module/s as **prerequisite**.
- Some modules **preclude** certain other modules.

MA2311 Techniques in Advanced Calculus

Prerequisite

MA1102R or MA2002 or MA1312 or MA1421 or MA1521

Preclusion

MA1104, MA2104, MA1505, MA1507, MA1511, MA2108, MA2108S, MPE students, Mathematics majors, Applied Mathematics majors, Quantitative Finance majors, second major in Mathematics, second major in Financial Mathematics

Study Tips

- Big conceptual jump at the beginning
- Prepare to work hard
- Step out of comfort zone
- Changing mindset and learning approach
 - **Not just applying formula** to similar problems
 - Learning **rigorous approach** to problem solving using **mathematical logic**
 - Understanding concepts from **first principle**
 - A lot of **reflections** - What, Why, How...

Go to Math page: Undergraduate Advisors

Need to Talk to Someone?

Department email

AskMathUG@nus.edu.sg

Undergraduate Advisors

Module Level	Name	Office	Email ID
1000 & SPM	A/Prof Chin Chee Whye	S17-07-14	cheewhye@nus.edu.sg
2000	A/Prof Ma Siu Lun	S17-07-19	matmasl@nus.edu.sg
3000	A/Prof Tan Hwee Huat	S17-08-09	mattanh@nus.edu.sg
4000	Prof Yang Yue	S17-07-05	matyangy@nus.edu.sg



**Wish you all
a great semester ahead !**