NUS National University of Singapore

College of Humanities and Sciences

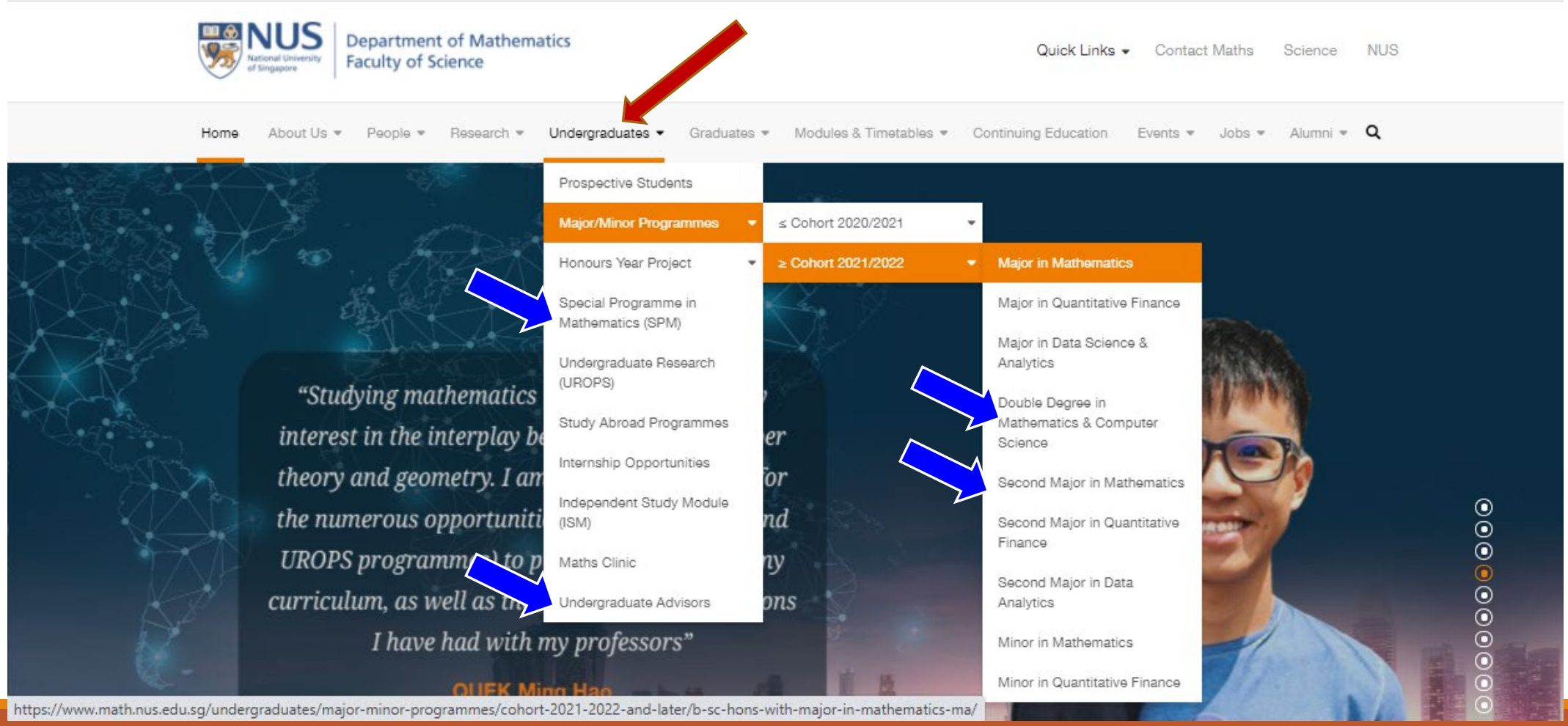
Orientation Talk on Mathematics Program

Preparing for Your

First Semester

PROFESSOR VICTOR TAN
DEPARTMENT OF MATHEMATICS

Math Dept Webpage



Go to Math page: Major in Mathematics > Graduation Requirements

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/ORA**

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

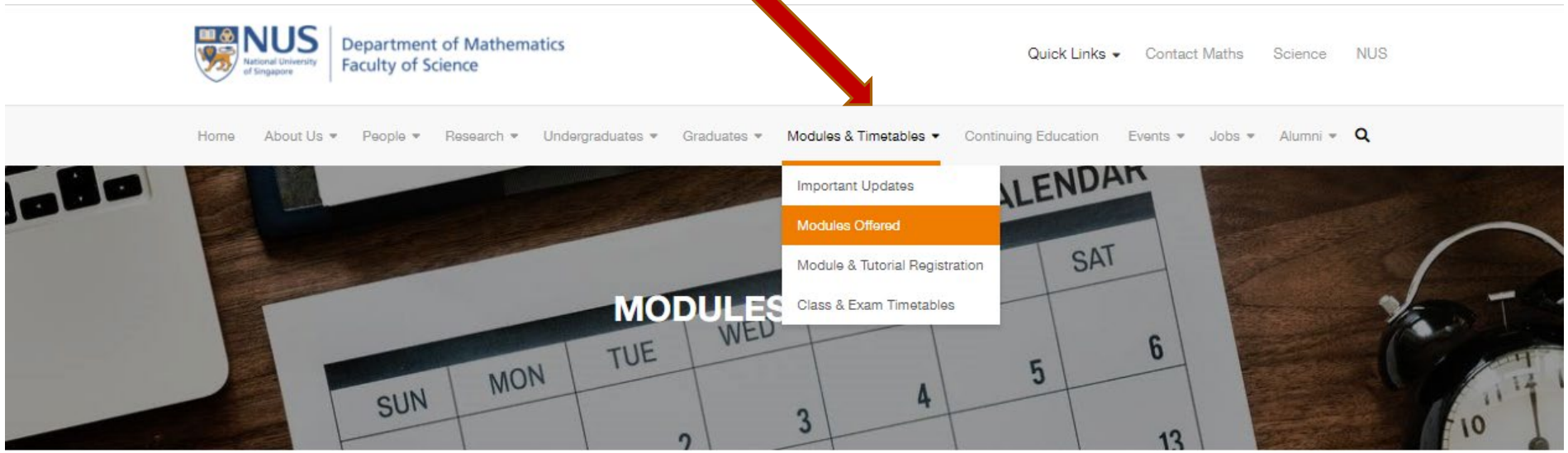
Common Core Modules

- 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

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

Module List



Important Notes

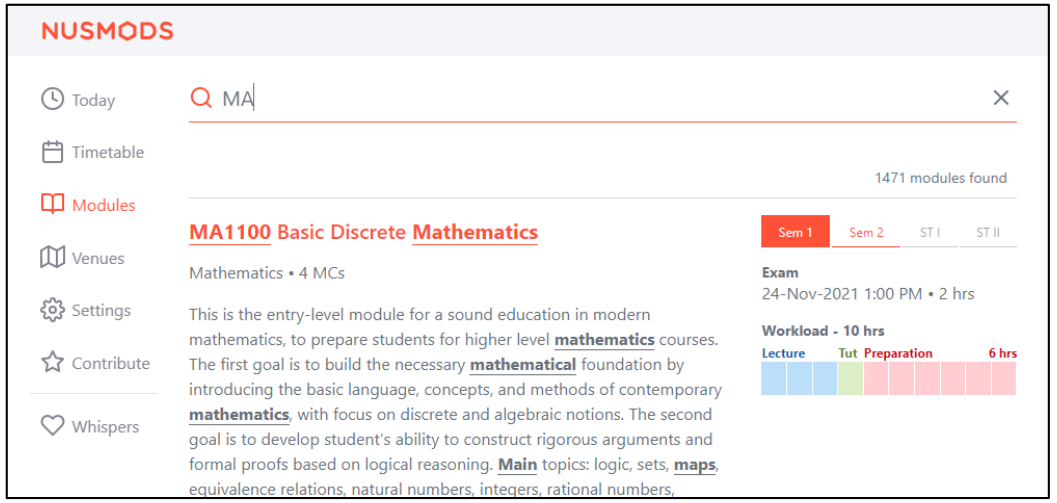
Modules Offered

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



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

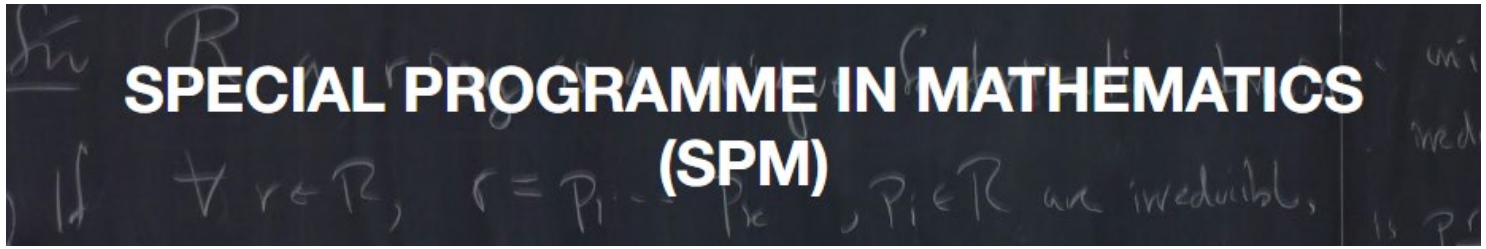
Level of Difficulty	MA1100	MA1100T
Average students	Difficult	Super difficult
Good students	Not too difficult	Challenging
Math Whiz-kids	Not challenging	Fun

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



- 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	mattanhh@nus.edu.sg
4000	Prof Yang Yue	S17-07-05	matyangy@nus.edu.sg

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Wish you all
a great semester ahead !