**MA1301 Introductory Mathematics (2024/2025 Semester 1)**

**Lecture Group L1 Hours (@LT26):** Mon and Thur 12:00-14:00.

**Lecture Group L2 Hours (@ LT27):** Tue and Fri 16:00-18:00.

**Lecturer for Group L1:** Tan Ban Pin Email: [mattbp@nus.edu.sg](mailto:mattbp@nus.edu.sg) Office: S17, #08-13 Tel: 6516 2748

**Lecturer for Group L2:** Yang Yue Email: [matyangy@nus.edu.sg](mailto:matyangy@nus.edu.sg) Office: S17, #07-05 Tel: 6516 2490

**Assessment:**

* Final examination 70%---9:00 am, 23 November (Saturday), 2024 (Closed book with one A4 helpsheet)
* Three assignments 10% each, total 30%. No late submission accepted unless there are valid reasons.
* Assignment 1 (Chapter 1) Problems upload in Canvas on 09 September 2024.  Submit before 15 September 2024 23:59.
* Assignment 2 (Chapter 2) Problems upload in Canvas on 07 October 2024.  Submit before 13 October 2024 23:59.
* Assignment 3 (Chapter 3) problems upload in Canvas on 28 October 2024.  Submit before 03 November 2024 23:59.
* Note: The presentation and pace of the two lecture groups might be slightly different. However, we will have the same set of tutorials and only the common parts will be tested in assignments and in final exam.

**Aims and objectives:**

From NUSMod: “This course serves as a bridging course for students without GCE Advanced (A) Level Mathematics. It aims to equip students with appropriate mathematical knowledge and skills so as to prepare them for further study of mathematics-related disciplines. At the end of the course, students are expected to attain a level of proficiency in algebra and calculus equivalent to GCE A Level Mathematics. Major topics include: Sets, functions and graphs, polynomials and rational functions, inequalities in one variable, logarithmic and exponential functions, trigonometric functions, sequences and series, techniques of differentiation, applications of differentiation, maxima and minima, increasing and decreasing functions, curve sketching, techniques of integration, applications of integration, areas, volumes of solids of revolution, solution of first-order ordinary differential equations by separation of variables and by integrating factor, complex numbers and vectors.”

**Main References:**

* Detailed lecture notes and/or slides will be provided on Canvas site

**Consultation booking**

* Lecturer is available for consultation on an ad-hoc basis. Prior appointment (via email) can be made for consultation/clarification of concepts.

**Lecture Plan (tentative)**

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| Week | Lecture | Tutorial / Lab | Remarks |
| Week 1  12 Aug – 16 Aug | Introduction and Preliminaries  Sequences I: Definition and arithmetic progression |  |  |
| Week 2  19 Aug – 23 Aug | Sequences II: Geometric progression and Binomial Theorem |  |  |
| Week 3  26 Aug – 30 Aug | Derivatives I: Definition, basic formulas and some techniques | Tutorial 01 |  |
| Week 4  2 Sep – 6 Sep | Derivatives II: Graphs of Functions, increasing and decreasing functions, concavity and extreme values | Tutorial 02 |  |
| Week 5  9 Sep – 13 Sep | Derivatives III: Applications, linear approximation, connected rate of change and optimization | Tutorial 03  Assignment 1 |  |
| Week 6  16 Sep – 20 Sep | Integral I: Indefinite and definite Integral and some techniques of computations | Tutorial 04 |  |
| Recess Week  21 Sep – 29 Sep | | | |
| Week 7  30 Sep – 4 Oct | Integral II: More techniques and Applications of integrals: Area and volume problems | Tutorial 05 |  |
| Week 8  7 Oct – 11 Oct | Integral III: More Applications, ordinary differential equations | Tutorial 06  Assignment 2 |  |
| Week 9  14 Oct – 18 Oct | Vectors I: Vectors in R^2 and R^3, Vector products | Tutorial 07 |  |
| Week 10  21 Oct – 25 Oct | Vectors II: Lines and Planes | Tutorial 08 |  |
| Week 11  28 Oct – 1 Nov | Vectors III: Relations of line and plane | Tutorial 09  Assignment 3 | Oct 31 Deepavali  Nov 1 NUS Well-Being Day |
| Week 12  4 Nov – 8 Nov | Complex Numbers (optional)  Problem solving sessions I | Tutorial 10 |  |
| Week 13  11 Nov – 15 Nov | Problem solving sessions II  Revision |  |  |
| Reading Period  16 Nov – 22 Nov | | | |
| Examination  23 November (Saturday), 2024 (9am) | | | |