MATH3121 Abstract Algebra
Course Outline - Fall 2026-27
(6^{th}-September 2026)

MATH3121 L1: Wednesday: 13:30-14:50; Friday: 13:30-14:50, room 5403 (lifts 29-30)

Professor Home Page

1) https://machiang.wixsite.com/machiang, 2) http://www.math.ust.hk/people/faculty/profile/machiang/

Instructor

Professor Edmund Chiang

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TA and Tutorials

Mr. FONG, Lok Heen

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T1A: Fri 12:00-12:50, Room 4503

Mr. ZHANG, Yuguo

Office: Rm:

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T1B: Mon. 18:00-18:50, 2304

Dr. Choy, Ka Hei (adjunct)

Email: khchoyab@connect.ust.hk

Course Description

Sets, mappings, polynomials, complex numbers, equivalence relations, modulo mathematics, groups including permutation groups, rings, fields, Jordan canonical forms, etc (depending on the schedule, the actual topics covered may differ from this list)

Duration: One semester

Credits: 3 units

Prerequisites: MATH 2111/MATH 2121/MATH 2131/MATH 2350

Exclusion: MATH 3131

Intended Learning Outcomes

On successful completion of this course, students are expected to be able to:

No	ILOs
1	Develop an understanding of the core ideas and the concepts of groups, rings and fields and related topics.
2	Be able to apply algebra concepts to solve real-world problems.
3	Be able to relate algebra concepts to different areas in mathematics.
4	write proper proofs with rigorous language and reasoning.

Assessment Scheme

This course will be assessed using criterion-referencing and grades will not entirely be decided basing on "a curve". Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessment	Assessing Course ILOs
Tutorials* 15%	1, 2, 3, 4
Midterm Exam 20%	1, 2, 3, 4
Final Exam 65%	1, 2, 3, 4

Grade	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, has potential to achieve key professional skills, and the ability to make basic judgments.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for development in the discipline

- AI policy: Although you are allowed to use AI to assist your learning and homework, you must state the where you have used AI to help your to complete the work.
- The WebWork exercises will NOT be counted toward your final grades. Students are allowed to submit and check answers through the WeBWorK. You should contact your tutors for help on problems encountered.
- Students should visit the following WeBWorK@UST page to get familiar with the system as early as possible: https://webwork.math.ust.hk/. See also
  - https://openwebwork.org/i-am-a-student/

- *The weekly tutorial problems are of elementary nature that test your basic understanding of the course material. Your tutors will discuss extra problems that would require extra skills in the tutorial worksheet each week. You will also have the opportunities to practice on these problems where marks will be assigned (in general hints to these problems will be released a week after each tutorial). *Although no marks have been assigned to the tutorial worksheets, they are an integral part of the course. Your submission records will be used as a reference when deciding on your final grades.* Operational rules:

  1. Upon completion of each tutorial worksheet, you will be assigned a 0 (no genuine effort), 1 (insufficient effort), or 2 (sufficient effort). Your marks will be recorded in Grading System of the Mathematics Department. ;
  2. Marks maybe deducted if you leave tutorial more than 5 minutes before the end of each tutorial;
  3. Marks maybe deducted if you fail to collect all marked tutorial worksheets you submitted at the end of semester;
  4. Apart from taking sick leave in which case a proper medical certificate must be submitted, you must tender written application with proper reasonale (e.g., need to participate in open competition, etc.) to me at least 48 hours prior to the tutorials.

- The midterm examination is scheduled on 16$^{\text{th}}$ (Fri.) October 2026 during lecture.

Learning Resources

- J. Fraleigh, A First Course in Abstract Algebra (7th edition), Pearson 2002.
- J. Stillwell, "Elements of Algebra: Geometry, Numbers, Equations", Springer-Verlag, 1994'.

Teaching and Learning Activities

- Lectures, Tutorials

Academic Integrity

- Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.