

MATH 3131 Honors in Linear and Abstract Algebra II

Course outline 2025-2026 Spring

[Course Title]: Honors in Linear and Abstract Algebra II

[Course Code]: MATH3131

[No. of Credits]: 4

[Any pre-/co-requisites]: MATH2131

Instructor: Prof. MIN Yu

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Office Hours: Thursday 4pm-5pm, Room 3485

Teaching Assistant: Mr. JIANG Linfang

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Meeting Time and Venue:

Lecture: Tuesday and Thursday 12:00pm-01:20pm Room 6602, Lift 31-32

Tutorial: Tuesday 07:00pm-07:50pm Room 2504, Lift 25-26

Course Description

This course is for honored students. It is continuation of Honors in Linear and Abstract Algebra I. It covers basic concepts and theorems on abstract algebra including groups, rings, modules and fields.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Recognize and use appropriately important technical terms and definitions.
2. Use algebraic techniques to formulate and apply the fundamental theorems in concise form.
3. Understand and apply the basic concepts and theorems in abstract algebra.
4. Understand and apply the techniques of abstract algebra.
5. Able to write rigorous proof

Assessment and Grading

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

Assessments:

1. Homework
2. Examination

Assessment Task	Contribution to Overall Course grade (%)	Due date
Homework	30%	To be determined
Midterm exam	30%	To be determined
Final exam	40%	To be determined

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Homework	1,2,3,4	This task assesses students' grasp of the main contents of the course and whether they can understand proofs of theorems and know how to apply them (ILO 1,2,3,4).
Midterm exam	1,2,3,4	This task assesses students' grasp of the main contents of the course and whether they can understand proofs of theorems and know how to apply them (ILO 1,2,3,4).
Final Exam	1,2,3,4	This task assesses students' grasp of the main contents of the course and whether they can understand proofs of theorems and know how to apply them (ILO 1,2,3,4).

Grading Rubrics

Detailed rubrics for each assignment will be provided. These rubrics clearly outline the criteria used for evaluation. Students can refer to these rubrics to understand how their work will be assessed.

Final Grade Descriptors:

[As appropriate to the course and aligned with university standards]

Grades	Short Description	Elaboration on subject grading description
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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, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
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 professional practice or development in the discipline.

Course AI Policy

The use of Generative AI is permitted for the purpose of searching course related material. But the use of AI is not permitted in any of the assessments.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

If applicable, explain the policy for resubmitting work or reassessment opportunities, including conditions and deadlines.

Required Texts and Materials

Main References:

1: Notes on abstract algebra: <http://faculty.bicmr.pku.edu.cn/~lxiao/2022fall/Honors-algebra.pdf>

2: D.S. Dummit, R.M. Toote "Abstract Algebra", 3rd edition.

Other references:

3: Prof. JIANG Qingyuan's notes:

https://drive.google.com/file/d/1W3Ys2jWnoWI6dXC_l88x9F842AYKCXPI/view

4: M. Artin, "Algebra", 2nd edition

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.