

The Hong Kong University of Science and Technology

UG Course Syllabus

[Course Title] **Honors in Linear and Abstract Algebra I**

[Course Code] **Math 2131**

[No. of Credits] 4

[Any pre-/co-requisites] Math 2121

Name: [Instructor(s) Name] Guowu Meng

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Office Hours: 3 pm – 5 pm, Friday

Course Description

The goal is to provide a **solid foundation** in linear algebra, focusing on its **theoretical aspects** and preparing students for more advanced courses in mathematics. The instruction is delivered through Lectures, Tutorials, Assignments, Exams.

Intended Learning Outcomes (ILOs)

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

1. understand linear maps and their canonical forms as well as matrix representations, some key related concepts
2. understand the modern functorial way of thinking about mathematics
3. understand tensor algebras and related concepts such as exterior algebra and determinant lines
4. understand the canonical form of endomorphisms
5. understand geometric structures on linear spaces

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:

[List specific assessed tasks, exams, quizzes, their weightage, and due dates; perhaps, add a summary table as below, to precede the details for each assessment.]

Assessment Task	Contribution to Overall Course grade (%)	Due date
Mid-Term	30%	24/10/2025
Homework	20%	Multiple due dates
Final examination	50%	TBA

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

Mapping of Course ILOs to Assessment Tasks

[add to/delete table as appropriate]

Assessed Task	Mapped ILOs	Explanation
Assessed Task 1	ILO1, ILO3, ILO4, ILO5	This task assesses students' ability to understand the core of linear algebra
Assessed Task 2	ILO2	A few homework or exam problems are given to test the understanding of functorial way of thinking about mathematics

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
A	Excellent Performance	Understand the course content very well
B	Good Performance	Understand the course content reasonably well
C	Satisfactory Performance	Understand most of the course content reasonably well
D	Marginal Pass	Understand some course materials
F	Fail	Understand nothing

Course AI Policy

Students are allowed to use AI as a tool to help them to understand the course materials.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include [specific details, e.g., strengths, areas for improvement]. 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

Resubmitting work is allowed provided that a prior request with reasonable excuses was given.

Required Texts and Materials

In the internet age, basic knowledge is as accessible as the air we breathe. Therefore, I do not confine myself to any particular textbook. For your reference, I have included the following three sources:

0. [Linear Algebra](#), from Wikipedia
1. [Linear Algebra](#), by Prof. Min Yan
2. [Honors in Linear and Abstract Algebra I](#), by Prof. Ivan Ip

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.

[Optional] Additional Resources

Students are encouraged to use internet as a resource.