



# ALGEBRA SERIES: MATRICES AND EQUATIONS (MATS3240)

## Introduction

A series of Algebra programmes offered by the **Department of Mathematics, the University of Hong Kong**, are designated for Maths lovers to learn Algebra progressively.

The **Algebra Series** consists of the following programmes:

Programme	Code	Application	Programme held
Matrices and Determinants	MATS3230	Jul-18	Oct 2018
Vectors	MATS3320	Oct-18	Dec 2018
Matrices and Equations	MATS3240	Jan-19	Mar 2019
Linear Algebra	<a href="#">MATS3250</a>	Apr-19	Jun - Jul 2019

Here comes the third programme in the **Algebra Series**, Matrices and Equations.

Systems of linear equations occur in many real-life applications. Exploring efficient ways to solve such systems is of both theoretical and practical interest. The theory of linear systems forms a fundamental part of the subject of linear algebra.

## Programme Type / Level

Algebra Course (Level 4) ([Token-required](#))

## Instructor(s)

Dr Ching Tak Wing  
Department of Mathematics, the University of Hong Kong

## Pre-requisites

Student should have basic knowledge in:

- Basic operations on matrices
- Computation of inverses and determinants of matrices
- Basic properties of vectors

## Target Participants



- S1 – S6 HKAGE student members
- Class size: 25

All applicants **MUST** attend the screening test held on **9 Feb 2019** in **HKU** except those who have passed **BOTH** “Matrices and Determinants (MATS3230)” and “Vectors (MATS3320)”

Priority will be given to student members who have passed **BOTH** MATS3230 and MATS3320. They could have direct admission to this programme when apply.

## Medium of Instruction

English with English handouts

## Certificate



**E-Certificate** will be awarded to participants who have:

- ❖ Attending **at least 3 sessions** **AND**
- ❖ Satisfactory performance in both assignments and assessments

## Intended Learning Outcomes



Upon completion of the programme, participants should be able to:

1. determine the number of solutions to a linear system;
2. find the general solution to a linear system;
3. use matrix-related methods to solve a linear system.

## Application Deadline

**4 Feb 2019**

Application Result Release Date **22 Feb 2019**

If student members withdraw from the programme after the Application Deadline, the token will be deducted.

## Schedule (Tentative)



Session	Date	Time	Venue	Content
	<b>9 Feb 2019</b>	<b>10:00 a.m. – 12:00 n.n.</b>		<b>Screening Test</b>
1	9 Mar	9:30 a.m. – 12:30 p.m.	Room 210 Run Run Shaw Building HKU	Solutions to Systems of Linear Equations
2	16 Mar			Row Operations and Row Echelon Matrices
3	23 Mar			Determinants and Linear Systems
4	30 Mar			Test and Discussions

**Remarks: For any assessment to be held in the programme, no make-up will be arranged, including Screening Test.**

[MAP](#)

## Sample Examples for the Programme

1. Solve the system of equations 
$$\begin{cases} 2x + y - z = 3 \\ -x - 2y + 3z = 1 \\ -3y + 5z = 5 \end{cases}$$

2. Find the values of  $a$  for which 
$$\begin{cases} ax - y + z = 2 \\ x + 3y + 2z = a \\ x - y - az = 1 \end{cases}$$
 has a unique solution.

## Enquiries



For enquiries, please contact us at 3940 0101 after language selection, press "1".