

# HKUST Dual Program 2018

Pre-stage Level (Mathematics)

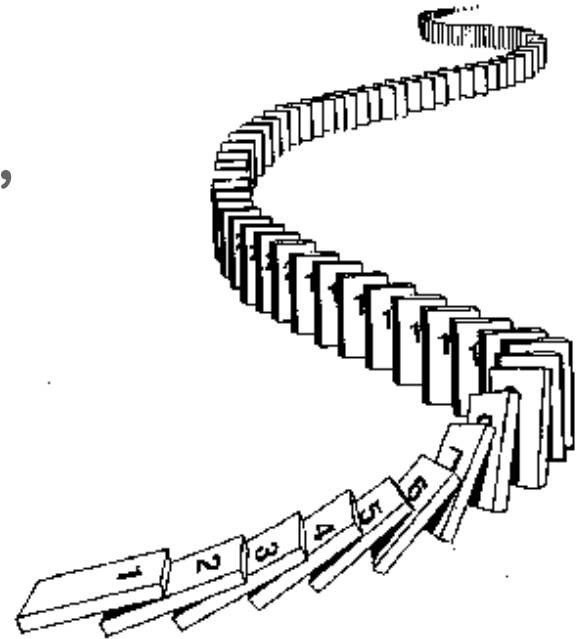
# About this course

- \* **Aim:** Prepare students for “Mathematics Level 1” in Dual Program.
- \* **Content:** Based on HKDSE Mathematics (Core part) with some additional topics
- \* **Prerequisite:** Students in S1 - S3 with some knowledge about elementary algebra

# Course Content

- \* 15 three-hour classes
- \* Topics covered:
- \* **Numbers** - division algorithm, GCD, prime factorization
- \* **Mathematical induction**

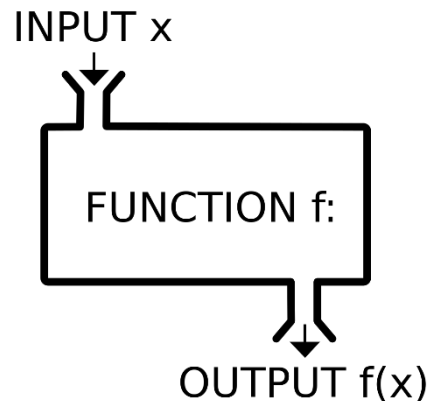
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# Course Content

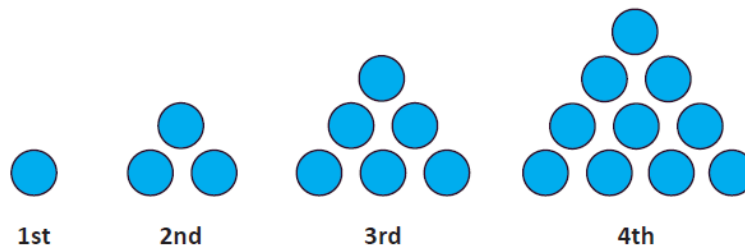
- \* **Polynomials** - Algebra of polynomials, remainder theorem, partial fractions
- \* **Functions** - Domain and range, graph of a function, polynomial functions, trigonometric functions

$$\frac{4x^2}{(x-1)(x-2)^2} = \frac{A}{x-1} + \frac{B}{x-2} + \frac{C}{(x-2)^2}$$



# Course Contents

- \* **Complex numbers** - Arithmetic of complex numbers, polar form, De Moivre's theorem
- \* **Sequences and Series** - Summation notation, interesting sequences and series



# More about this course...

- \* Logic and set theory infused into the course material.
- \* Some emphasis on writing mathematical proofs.
- \* **Assessment:** Homework assignments and a written exam.



**Thank You !**