



香港資優教育學院
The Hong Kong Academy for Gifted Education

Mathematics Credit-bearing Course (MAT6000A)

Mathematical Analysis: *An Overture*

04 Feb. 2012 to 30 Jun. 2012

The Chinese University of Hong Kong,
Enrichment Programme for Young Mathematics Talents (EPYMT)

Programme Chair: Prof. Thomas Kwok-keung AU

This is a university level course for students who possess proficiency in secondary school calculus. The course introduces a rigorous approach to the study of real numbers and properties of limits, which are the essential foundations for mathematical analysis as well as the concepts of differentiability and integrability. In addition, it also discusses the underlying theories of various methods and techniques used in calculus.



Programme Details

Date & Time	4 Feb. – 30 Jun. 2012 Please refer to “Programme Schedule” for details
Target Participants	Student members who: <ul style="list-style-type: none"> ❖ have mastered the calculation of limits, differentiation, and integration, and have good knowledge in polynomials and trigonometric functions, ❖ achieve a satisfactory result in the <u>screening test</u> (Please refer below for details), and ❖ are preferably S.4 to S.7 students.. <p>*Priority will be given to student members in Mathematics domain</p>
Class Size	35
Medium of Instruction	English
Course Requirement	<p>Certificate of Completion will be awarded to participants who are able to fulfill all the course requirements which include:</p> <ul style="list-style-type: none"> ❖ achieving an overall attendance rate of 80% or above, ❖ completing all the assignments with satisfactory performance, and ❖ attaining a satisfactory overall result in the four tests and examination. <p>Two academic credits from CUHK will be awarded to participants who are granted certificates from the HKAGE. For further details, please kindly refer to the official letter issued by CUHK.</p> <p><i>*CUHK reserves the right to make the final decision of all matters related to credit claiming of this course.</i></p>
Intended Learning Outcomes	<p>Upon completion of the programme, participants should be able to:</p> <ol style="list-style-type: none"> 1. define rational numbers and identify real numbers; 2. state and give examples of the fundamental properties of real numbers; 3. define and determine the limit of a sequence; 4. discern topological properties of the real numbers and analytical properties of functions; 5. demonstrate the understanding of the rigorous construction of the real numbers.
Course Fee	<p>HKD 1,500</p> <ul style="list-style-type: none"> ❖ Payment should be made on or before 18 Jan 2012 (Wed). Please observe and follow the payment method specified in the email upon completing the online application. ❖ After the screening test on 21 Jan 2012, rejected applicants will receive full refund. <p>Under certain conditions, fee remission could be granted. For more details, please refer to the fee remission policy on the HKAGE website.</p>
Application Procedure & Deadline	<ul style="list-style-type: none"> ❖ Students should complete and submit the Online Application Form on the website: http://hkage.org.hk/en/sz_programmes.html on or before 18 Jan. 2012 (Wed). Late application will not be considered. ❖ All student applicants are required to attend a screening test on 21 Jan. 2012 (Sat). ❖ The application result will be announced via email to the student members by 30 Jan. 2012 (Mon). Those who have not received the email by the specified date should contact the HKAGE by phone or by email. ❖ Successful applicants should complete the “Confirmation Slip” attached to the result announcement email and fax/mail it to the HKAGE on or before 1 Feb. 2012(Wed). ❖ Applicants on the waiting list will be notified via email or phone after 1 Feb. 2012(Wed). Otherwise, no further notice will be given.
Enquiry	For enquiries, please contact Mr Li at 3698 3498 or Mr Shing at 3698 3499.

Screening Test Details

Date:	21 January 2012 (Sat)
Time:	2:00p.m. – 5:00p.m. (Please arrive 15 minutes before the test starts)
Venue:	LT6, Lady Shaw Building, CUHK (Map)

Programme Schedule (English version only)

Session	Date	Time	Content	Venue (CUHK)
1	4/2		Language of sets and logics	Lee Shau Kee Building 212 / 204 / 303
2	11/2	9:00a.m. – 12:00nn	Functions	
3	18/2		Induction and Inequalities	
4	25/2	10:00a.m. – 12:00nn	Test	Lady Shaw Building LT2
5	3/3	9:00a.m. – 12:00nn	Properties of real number	Lee Shau Kee Building 212
6	10/3		Completeness of real number	
7	17/3	10:00a.m. – 12:00nn	Test	Lady Shaw Building LT2
8	24/3		Countable and uncountable	Lee Shau Kee Building 212
9	31/3	9:00a.m. – 12:00nn	Sequences and their limits	
10	14/4		Properties of limits	
11	21/4	10:00a.m. – 12:00nn	Test	Lady Shaw Building LT2
12	5/5	9:00a.m. – 12:00nn	Monotone and convergence	Lee Shau Kee Building 212
13	12/5		Bolzano-Weierstrass and Cauchy	
14	19/5	10:00a.m. – 12:00nn	Test	Lady Shaw Building LT5
15	26/5		Limits of functions	Lee Shau Kee Building 212
16	2/6	9:00a.m. – 12:00nn	Limits Theorems and continuity	
17	9/6		A taste in differentiation and integration	
Independent study for 2 weeks				
18	30/6	09:30a.m. – 12:00nn	Examination	Lady Shaw Building LT5