



LEHMAN URBAN TRANSFORMATIVE EDUCATION
SCHOOL OF EDUCATION
LEHMAN COLLEGE, CUNY

Lehman College
The City University of New York
Micro-Credential “Algebra for All” (A4A)

Lehman College offers 5-courses, 15-credits sequence **MicroCredential for Algebra for All (A4A)**, to support elementary, middle school and high school teachers of mathematics.

As a participant, you will:

- Deepen your content knowledge of critical areas that relate to algebra.
- Learn, apply and reflect on best pedagogical practices for mathematics.
- Learn apply and reflect on strategies for supporting students’ socio-emotional needs to open mathematical potential.

Benefits of the Program

- Courses will be accepted into Lehman’s matriculated mathematics education program. Teachers can also apply to have the courses transferred.
- Tuition and fees for the first 3 courses, 9-credits will be paid by CUNY during the first year (Spring 2022- Summer 2022). **Tuition funding for the remaining 2 courses, 6-credits is not guaranteed (subject to availability of funds and are tentatively scheduled Fall2022-Winter2023).** *Please note: required textbooks for courses are not covered. Participants will be responsible for purchasing books and materials for each course.*
- Possibility for teachers to apply the credits to their 30+

***Course Sequence will include (see program timeline on the last page):**

- **Two mathematics pedagogy courses**
Course 1 (Spring 2022)- Teaching Mathematics in Middle and High School: designed to address the teaching of pre-algebra and algebra concepts, including ratios and proportional relationships, expressions, equations, functions, statistics, and geometry using student-centered, hands-on approaches and technology.

*See program timeline on the last page.

Course II (Summer A to Summer B 2022) - Teaching Problem Solving in Mathematics in Middle and High School: designed to introduce and apply heuristic techniques to facilitate mathematical problem solving including the use of technology as a problem-solving tool. The course aims at analyzing a problem using multiple pathways from both student and teacher levels. Knowledge and skills derived from the course will be utilized in the conduct of an action research in the Fall 2022 semester.

- **One research course in mathematics education** - [Fall 2022] designed to learn and delve into the process of inquiry through Action Research in the 5-9 mathematics classroom. . Intertwining pedagogy and research will lead to develop better structured assessments, address the needs of all students experiencing difficulty in learning mathematics including English language Learners and students with special needs.
- **Two graduate mathematics courses**
 - **Course I (Spring 2022-Summer A 2022)** - **Elementary number theory and abstract algebra** topics to explore the fundamental properties of our number systems [*Whole Numbers, Prime Numbers, Composite Numbers, the Integers, Fractions, the Rational Numbers, and the Real Numbers. Relations, Equivalence Relations, and Groups*].
 - **Course II (Fall 2022 to Winter 2023)**- **Functions** to illustrate, explain, and explore mathematical objects encountered in grades 5-9 from an advanced perspective. Will connect algebra, geometry, fractions, equations, and inequalities through function graphs.

The New Cohort-Based Program Will Begin in Spring 2022

Application Eligibility

NYCDOE teachers with completed applications will be considered for participation.

To Apply

- Create an account for **ApplyYourself** by clicking the link in the following:

https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantConnectLogin.asp?id=lehmangrad

- Once you are registered with **ApplyYourself**, then click “Begin Application Here” and choose:
Application Type: Non Degree
Applying For: Algebra for All (A4A)
For Term: Spring
For Year: 2022

*See program timeline on the last page.

- You are required to submit a copy of your **bachelor's degree transcript** (unofficial copies acceptable for non-degree applications).
- The \$250 fee will be waived.

Application Deadline: **November 15, 2021** (extended to December 15, 2021)

"Algebra for All" A4A Course Schedule

Semester & Course	Title and Description
ESC 532: <i>Teaching Mathematics in MS & HS</i>	Designed to address the teaching of pre-algebra and algebra concepts, including ratios and proportional relationships, expressions, equations, functions, statistics, and geometry using student-centered, hands-on teaching approaches and technology
MAT 602: <i>Introduction to Number Theory and Modern Algebra I</i>	This class will survey the basic ideas, techniques, and concepts of number theory pertinent to elementary, middle, and high school math teachers. Major topics will include unique prime factorization, divisibility, the Euclidean Algorithm, Diophantine equations, modular arithmetic, and the axioms of a group. The mathematics education topics that will be integrated into the course include the importance and role of productive struggle and emphasizing creativity and flexibility in thinking mathematically. In addition, identifying high-quality tasks and exploring issues of equity in mathematics classrooms will be discussed. This course is designed to emphasize conceptual understanding of the content areas listed above as well as the connections between those content areas. Students will be expected to work together as a community of learners to solve problems and ask questions. Connections to the content in the Common Core State Standards for Mathematics (CCSSM, 2010) will be made (http://www.corestandards.org/math).
ESC 748: <i>Teaching Problem Solving in Mathematics in Middle and High School</i>	Introduction and application of heuristic techniques to facilitate mathematical problem solving; use of technology as a problem-solving tool; assessment. Problems will be analyzed on both teacher and pupil levels.
ESC 742: <i>Research in Mathematics Education</i>	Review of the research literature; theories of learning mathematics; alternative assessment; technology in mathematics instruction. An action research paper is required. The paper involves the process of inquiry through action research in the 5-9 mathematics classroom. Intertwining pedagogy and research will lead to develop better structured assessments, address the needs of all students experiencing difficulty in learning mathematics including English language Learners and students with special
MAT 601: <i>Secondary School Mathematics from an Advanced Standpoint</i>	An in-depth study of functions to illustrate, explain, and explore mathematical objects encountered in grades 5-9 from an advanced perspective. Will connect <i>algebra, geometry, fractions, equations, and inequalities through function graphs</i> . <i>Mathematical topics covered will include: Equations, Functions, and Their Graphs; Families of Functions: Their Algebra and Their Geometry; Linear, Quadratic, Exponential, and Logarithmic Modeling; Systems of Equations; Additional Topics as Time Permits.</i> Many prospective teachers have learned mathematics through a procedural, rule-based perspective. This course is designed to emphasize conceptual understanding of the content areas listed above as well as the connections between those content areas. Teachers will be expected to work together as a community of learners to solve problems and ask questions. Connections to the content in the Common Core State Standards for Mathematics (CCSSM, 2010) will be made (http://www.corestandards.org/math).

*See program timeline on the last page.

TENTATIVE TIMELINE FOR COHORT 4
Fall & Spring courses meet 4:30-7:00 PM
Sessions are Online (Synchronous/Asynchronous)***

	Spring 2022	Summer A June 2022	Summer B July 2022	Fall 2022	Winter 2023
ESC 532*	15 meetings (Mondays/Tuesdays) (registration)				
MAT 602*	9 meetings (Wednesdays)	6 meetings (Wednesdays) (registration)			
ESC 748*		9 meetings (Tuesdays & Thursdays) (registration)	6 meetings (Tuesdays &Thursdays)		
ESC 742**				15 meetings (Thursdays) (registration)	
MAT 601**				8 meetings (Tuesdays) (registration)	7 meetings (Tuesdays) (registration)

*guaranteed CUNY sponsorship

** not guaranteed for CUNY sponsorship, subject to availability of CUNY funds

***some sessions will be asynchronous online and will be identified by instructors

*See program timeline on the last page.