MATHEMATICS/STEM INSTRUCTIONAL LEADER (PREK-6) (ONLINE), GRADUATE CERTIFICATE

The online 18-credit Mathematics and STEM (Science, Technology, Engineering, and Mathematics) Instructional Leader (PreK-6) graduate certificate programs offer a unique opportunity for elementary teachers to enhance their content knowledge and pedagogical content knowledge and to experience leadership opportunities through engaging in the professional development of their peers. The focus of these two graduate certificate programs is to enrich teachers' subject content knowledge in the area of mathematics and the STEM disciplines, and to build upon their leadership potential through inquiry, dialogue, writing, and reflection. Participants will be eligible to receive a graduate certificate in either Mathematics Instructional Leader or STEM Instructional Leader upon satisfactory completion of the program requirements.

The Graduate Certificate Mathematics Instructional Leader (PreK-6) and Graduate Certificate STEM Instructional Leader (PreK-6) programs are approved by the Maryland State Department of Education (MSDE) for those seeking the Mathematics Instructional Leader (PreK-6) or STEM Instructional Leader (PreK-6) endorsement.

Program Requirements

These two online programs are delivered asynchronously. Students may take one or two courses (3-6 credits in total) each semester. The expected timeframe for completion is between 12 and 24 months.

Mathematics Instructional Leader (Pre-K-6) Certificate Program of Study

Students must first take the following 3-credit courses:

Code	Title	Credits
ED.840.600	Instructional STEM Leadership and Professional Development in the Elementary School	3
ED.840.601	Mathematical Foundations in the Pre-K-6 Classroom	3
ED.840.670	Advanced Methods in the Elementary STEM Classroom	3
ED.840.671	Algebraic and Geometric Thinking in the Pre-K-6 Classroom	3
ED.840.672	Advanced Topics in the Pre-K-6 Mathematics Classroom	3
ED.840.673	Practicum in STEM and Mathematical Instructional Leadership	3
Total Credits		**18**

STEM Instructional Leader (Pre-K-6) Certificate Program of Study

Code	Title	Credits
ED.840.600	Instructional STEM Leadership and Professional Development in the Elementary School	3
ED.840.601	Mathematical Foundations in the Pre-K-6 Classroom	3
ED.840.670	Advanced Methods in the Elementary STEM Classroom	3
ED.840.650	Physical Science in an Integrated Pre-K-6 Classroom	3
ED.840.651	Earth and Space Science in an Integrated Pre-K-6 Classroom	3
or ED.840.652	Life Science in an Integrated Pre-K-6 Classroom	
ED.840.673	Practicum in STEM and Mathematical Instructional Leadership	3
Total Credits		**18**

Learning Outcomes

The learning outcomes of the Mathematics and STEM Instructional Leader (Pre-K-6) certificates are as follows. Students in the program will:

- Enhance their abilities to engage diverse learners in mathematics/STEM content.
- Create equitable learning contexts through which all students will be prepared to engage with mathematics/STEM concepts and skills at the PreK-6 grade level and beyond.
- Understand learning theories and their application to the teaching of mathematics/STEM content and pedagogy.
- Network with other mathematics/STEM educators and professionals.
- Develop the ability to approach the learning of new topics in mathematics/STEM through inclusive, equitable, technology-enhanced, problem-based, and student-centered approaches.
- Understand the development of children's mathematics/scientific knowledge.
- Develop age appropriate learning experiences to foster students' critical thinking and ability to learn through classroom activities that:
  - promote the principles of equity, curriculum, teaching, learning, assessment, and technology (National Council of Teachers of Mathematics, 2000) (Mathematics option), or
  - are interwoven and interdisciplinary (National Science Teachers Association, 2003) (STEM option).
- Apply their learning of effective mathematics/STEM educational practices through the creation, implementation, and modification of content-specific and interdisciplinary mathematics/STEM experiences.
- Evaluate and adapt local curricular materials to incorporate authentic problems related to mathematics/STEM concepts and skills and serve as an instructional resource.