

INTERDISCIPLINARY STUDIES, MASTER OF (M.I.S.), WITH A CONCENTRATION IN INTERDISCIPLINARY MATHEMATICS AND SCIENCE LEADERSHIP/K-8 MATHEMATICS SPECIALIST

Program goals

The interdisciplinary mathematics and science leadership concentration in the M.I.S. program is designed for in-service teachers of mathematics for kindergarten through eighth grades. In designing their individual programs, students, in conjunction with their advisers, may select courses offered by VCU mathematics, science and education departments and courses offered by other collaborating Virginia colleges and universities. The Graduate School, the College of Humanities and Sciences, the School of Education and the departments of Mathematics and Applied Mathematics and Teaching and Learning administer the program.

Student learning outcomes

1. Students will understand and apply mathematical concepts and procedures in the following content strands: number systems and number theory, geometry and measurement, statistics and probability, and functions and algebra.
2. Students will understand the connections among various mathematics concepts and procedures, the structures within and between different content strands, and children's learning trajectories.
3. Students will apply, at different levels of complexity, the five fundamental mathematical process standards: becoming mathematical problem-solvers, reasoning mathematically, communicating mathematically, making mathematical connections and using mathematical models and representations.
4. Students will understand and apply the appropriate technologies for teaching and learning mathematics including graphing utilities, dynamic software, spreadsheets and virtual manipulatives.
5. Students will analyze and develop rich mathematical tasks for children and adults.
6. Students will analyze, synthesize and apply mathematics education literature, including national and state standards, journals and other publications, to (a) understand trends in mathematics and pedagogy, (b) adapt and evaluate instructional materials, assessment materials and other resources, and (c) organize and develop high-quality, equitable and engaging programs for children, including diverse learners.
7. Students will study and implement effective models of mathematics coaching and mentoring of teachers.
8. Students will study and implement effective models of professional development for K-8 schools and districts.
9. Students will develop and apply strategies to teach mathematics to diverse learners.
10. Students will study and apply strategies and models for managing, assessing and monitoring children's learning, including diagnosing student errors.
11. Students will develop and apply the leadership skills necessary to design and implement mathematics programs at the school and division levels to improve mathematics teaching and learning.
12. Students will develop and apply effective oral and written communication skills to gather, plan, organize and present ideas related to mathematics content and pedagogy to various stakeholders.

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website (<http://www.graduate.vcu.edu/>) and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the academic regulations section for additional information on academic regulations for graduate students. (<http://bulletin.vcu.edu/academic-regs/>)

Degree candidacy requirements

A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the academic regulations section for additional information on degree candidacy requirements. (<http://bulletin.vcu.edu/academic-regs/grad/candidacy/>)

Graduation requirements

As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the academic regulations section for additional information on graduation requirements. (<http://bulletin.vcu.edu/academic-regs/grad/graduation-info/>)

Apply online today. (<https://www.vcu.edu/admissions/apply/graduate/>)

Admission requirements

Degree:	Semester(s) of entry:	Deadline dates:	Test requirements:
M.I.S.	Fall, spring, summer	Contact program administrator	GRE-General or MAT

Special requirements

- Upon review of the application and all supporting documentation, the mathematics/science leadership program coordinator will contact applicants to schedule interviews to develop programs of study that will detail specific courses to be taken and the institutions offering those courses.

In addition to the general admission requirements of the VCU Graduate School (<http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements/>), the following requirements represent the minimum acceptable standards for admission:

- At least three years of successful K-8 mathematics and/or science teaching experience
- Three recommendations: at least one from an immediate supervisor or principal and at least one that addresses leadership potential
- Submission of satisfactory scores on either the GRE or MAT from a current test (fewer than five years old) (Provisional admission may be granted pending fulfillment of this requirement.)
- A written statement of intent that provides evidence of at least three years of experience in teaching mathematics and/or science for kindergarten through eighth grades
- Interview to develop program of study (Program director will contact student after initial review of application.)

Degree requirements

In addition to general VCU Graduate School graduation requirements (<http://bulletin.vcu.edu/academic-regs/grad/graduation-info/>), students are required to complete course work in core and elective courses and to conduct significant research.

- Credit hour requirements:** Students in the interdisciplinary mathematics and science leadership concentration are required to earn a minimum of 36 graduate-level credit hours beyond the baccalaureate. The discipline focus areas are required to be in mathematics and either the sciences or mathematics/science

education. At least one-half of the credit hours presented for graduation must be at the 600 level or higher.

- Other requirements:** At least 18 of the 36 credits, including the final project, must be granted by VCU. Up to six transfer credits may be approved, and the remainder of the credits must be from consortium partners as approved by the students' advisers, the VCU Graduate School and the Mathematics and Science Leadership Advisory Committee. A maximum of six hours may be taken as a nondegree-seeking student before admission to the program.
- The final project must be supervised by a VCU graduate faculty member, may be in mathematics, science or education and must include an indication of the relationship of the subject of the project to teaching at the kindergarten-through-eighth-grade level.

Curriculum requirements

Course	Title	Hours
MATH 661	Number and Operations	3
MATH 662	Geometry and Measurement	3
MATH 663	Functions and Algebra	3
MATH 664	Statistics and Probability	3
MATH 665	Rational Numbers and Proportional Reasoning	3
MATH 667	Functions and Algebra II	3
MATH 668	Modeling With Mathematics	3
TEDU 657	Mathematics Education Leadership I	3
TEDU 658	Mathematics Education Leadership II	3
TEDU 659	Mathematics Education Leadership III	3
TEDU 680	Externship Proposal Seminar	3
TEDU 700	Externship	3
Total Hours		36

The minimum total of graduate credit hours required for this degree is 36.

Contact

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Program website: math.vcu.edu/graduate/mis-specialists (<https://math.vcu.edu/graduate/mis-specialists/>)