



PROGRAM REQUIREMENTS OVERVIEW

Award: Graduate Certificate

Program of Study: Applied Mathematics

About This Certificate . . .

This program leads to a Graduate Certificate in Applied Mathematics with an option to complete a Master of Arts degree in Education. This 18-credit hour program is designed to be completed in a two-year cycle, and serves several purposes:

1. The program is intended to provide licensed secondary mathematics teachers the credentials required by the Higher Learning Commission to teach concurrent college or university mathematics courses.
2. The program enables professionals interested in enhancing their knowledge of applied mathematics an opportunity to take individual courses and/or earn a graduate certificate in the subject area.
3. The program provides an opportunity for post-graduates to take courses that serve as a bridge between a baccalaureate degree and a master's degree in mathematics or related field. In this case the transferability of the courses towards a specific master's degree (other than the Master of Arts in Education) is not guaranteed and would depend on the individual master's programs.

All CMU program completers are expected to demonstrate proficiency in critical thinking, communication fluency, quantitative fluency, and specialized knowledge/applied learning. In addition to these campus-wide student learning outcomes, all recipients of an Applied Mathematics Graduate Certificate will be able to:

1. Employ mathematical, computational and/or statistical methods to address topics in applied mathematics (specialized knowledge/applied learning, quantitative fluency);
2. Create oral and written arguments, well-grounded in theories and methods of applied mathematics (communication fluency, quantitative fluency);
3. Formulate and evaluate hypotheses related to applied problems, issues, concepts, and perspectives (critical thinking, quantitative fluency).

Degree Requirements:

- A bachelor's degree from an accredited college is required, preferably in mathematics, mathematics education, or an area with a significant mathematics requirement.
- It is strongly recommended that applicants have completed 18-24 hours of undergraduate mathematics courses, including at least two semesters of calculus, a course in probability and statistics, and a course that includes writing mathematical proofs. Each applicant should address how their background relates to these recommendations in their letter of intent (see below), and discuss any particular strengths if they do not meet these recommendations.
- A fully completed application including official transcripts is required prior to beginning the program, two letters of recommendation (one page in length) and a letter of intent that provides information about the student's background, interests, and aspirations, and how they relate to the Graduate Certificate in Applied Mathematics.
- No class grade lower than a "B" will be counted toward the certificate, and a grade of "B" or better is required in prerequisite courses.
- For additional information on applicable policies, please refer to the Graduate Policies and Procedures Manual

GRADUATE CERTIFICATE: Applied Mathematics

(18 semester hours)

Course No Title Sem.hrs Grade Term

Required Courses (9 credits)

MATH 500	Intro Grad Applied Math	3	_____	_____
MATH 510	Applied Probability & Stats	3	_____	_____
MATH 520	Applied Numerical Methods	3	_____	_____

Elective Courses (Select 9 credits from the following courses.)

MATH 530	Applied Math Modeling	3	_____	_____
MATH 540	Audio & Image Processing	3	_____	_____
MATH 550	Math Logic & Foundations	3	_____	_____
MATH 560	Applied Number Theory	3	_____	_____
MATH 570	Applied Cryptography	3	_____	_____
MATH 596	Topics	1-3	_____	_____

Students should work closely with a faculty advisor prior to registering for courses.

SUGGESTED COURSE SEQUENCING FOR A GRADUATE CERTIFICATE IN APPLIED MATHEMATICS

This is a recommended sequence of course work. Certain courses may have prerequisites or are only offered during the Summer, Fall or Spring semesters. It is the student’s responsibility to check with the mathematics department for course offerings and availability.

FIRST YEAR

Summer Semester		Hours	Fall Semester		Hours
MATH 500	Intro Grad Studies Appl Math	<u>3</u>	MATH 510	Applied Probability & Statistics	<u>3</u>
		3 credits			3 credits
Spring Semester		Hours			
MATH 520	Applied Numerical Methods	<u>3</u>			
		3 credits			

SECOND YEAR YEAR

Summer Semester		Hours	Fall Semester		Hours
MATH 5XX	Elective	<u>3</u>	MATH 5XX	Elective	<u>3</u>
		3 credits			3 credits
Spring Semester		Hours			
MATH 5XX	Elective	<u>3</u>			
		3 credits			