UW-Whitewater | Online Certificates
Graduate Certificate
IN MATHEMATICS

For high school teachers, technical college instructors, and potential university academic staff who wish to meet the Higher Learning Commission (HLC) credential requirements for teaching undergraduate mathematics courses or those seeking a Master of Science in Education – Professional Studies with a Mathematics emphasis. Students pursuing the MSE must take at least 9 units of Mathematics at the 700-level.

Admission Requirements: Meet all School of Graduate Studies admission requirements and completed at least 24 units of undergraduate mathematics coursework at the level of Calculus I or above with at least a 2.8 GPA.

CERTIFICATE REQUIREMENTS
SELECT 6 COURSES FROM THE FOLLOWING

Summer 2020:

MATH 623: Advanced Function and Algebra Concepts (5/26-7/3)
Concepts from high school mathematics are discussed from an advanced perspective using calculus, abstract and linear algebra, and some complex variables. The topics include number systems, equations, functions, polynomials and basic number theory. Challenging problems and projects help to develop deeper understanding, and highlight connections of different areas of mathematics. *Prerequisite: Undergraduate degree in mathematics or consent of instructor*

MATH 764: Topics in Analysis (7/6-8/15)
A graduate course exploring select topics in real and complex analysis with emphasis on computation, abstract argumentation, and connection to the theoretical basis for calculus and related courses. Topics include the topology of n-dimensional real space, integration in multiple dimensions, infinite series, calculus of a complex variable, and the Cantor set. *Prerequisites: Math 255 or equivalent multivariate calculus course or consent of instructor*

Fall 2020:

MATH 624: Advanced Topics in Geometry and Trigonometry
The course material is centered around concepts in geometry and trigonometry including geometric transformations in 2 and 3 dimensions, their representations by matrices, and equations with complex numbers. Metric spaces, minimum distance problems, quadratic, arithmetic, geometric, harmonic means, area, volume and geometric probability. Multiple representations of the trigonometric functions and their identities. An individual research project is to be completed. *Prerequisite: Undergraduate degree in mathematics or consent of instructor*

Deadline: at least 1 week prior to beginning course date

Spring 2021:

MATH 752: Abstract Algebra
This course will cover fundamental algebraic structures such as rings, fields, and maps between these structures. Relations of these concepts to Algebra topics in undergraduate mathematics will be emphasized. Galois Theory will be introduced if time allows. *Prerequisites: Math 452 or equivalent abstract algebra course or consent of instructor*

Summer 2021:

MATH 649: Probability and Statistical Inference
Foundations associated with quantifying and modeling chance and randomness with a focus on the role probability plays in statistical inference. Topics include set theory, combinatorics, random variables, selected discrete and continuous probability distributions, probability distributions for commonly used statistics, and the logic and applied use of probability in formulating and conducting hypothesis tests. *Prerequisite: Undergraduate degree in mathematics or statistics or consent of instructor*

MATH 721: Combinatorics
This course will cover topics in combinatorics and graph theory such as combinations, permutations, Pigeonhold Principle, Binomial and Multinomial Theorems, Inclusion-Exclusion Principle, Stirling numbers, partially-ordered sets, generating functions, connectedness, Cayley Theorem, graph coloring, Eulerian walks, Hamiltonian circuits, planar graphs, and Ramsey Theory. Connections will be made to undergraduate *mathematics content. Prerequisites: Math 280 or equivalent course or consent of instructor*

Fall 2021:

MATH 617: Number Theory
A study of the properties of integers, representation of integers in a given base, properties of primes, arithmetic functions, modulo arithmetic, Diophantine equations and quadratic residues. Consideration is also given to some famous problems in number theory. *Prerequisite: Undergraduate degree in mathematics or consent of instructor*

When you are ready to apply, please complete the UW-Whitewater Graduate School online application available at: **apply.wisconsin.edu/**

University of Wisconsin-Whitewater,
800 W. Main Street
Whitewater, WI 5310-1790

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University of Wisconsin Whitewater | School *of* Graduate Studies

MASTER OF SCIENCE IN EDUCATION
STUDENTS SEEKING A MASTER OF SCIENCE IN EDUCATION – PROFESSIONAL STUDIES DEGREE ARE ALSO REQUIRED TO COMPLETE THE FOLLOWING:

Offered each Spring Semester:

EDFOUND/CIGENRL 723: Issues, Perspectives, and Directions: A Professional Seminar in Education
As the introductory course for graduate studies in education, this seminar will provide an introduction to the use of research to support practice through an investigation of essential philosophical questions and current educational issues. Students will connect these studies to reflections on their own practice as they develop skills of analysis and argumentation.

EDFOUND 780: Reading, Analyzing, and Evaluating Educational Research
The course provides practicing teachers with background in the processes of reading, analyzing, and evaluating research in the field of education. The emphasis is on development of skills in understanding how educational research is conducted, and in knowledge and skills needed to evaluate research writing in educational journals.

CIGENRL 702: Reflective Practice and Action Research
The course assists teachers in planning, organizing, implementing, and assessing inquiry-related strategies appropriate for their classrooms. Participants will investigate current issues by way of Action Research, ethnographic, symbolic interaction, and qualitative inquiry techniques. Projects will be conducted that relate to individual classroom needs and situations.
Prerequisite: EDFOUND 780

Offered each Summer Session:

EDUINDP 789: Capstone Seminar
The purpose of this seminar is to provide the master's student with faculty and peer support as the student grounds, implements, refines, assesses and reports his or her capstone project. The capstone project is a self-selected and defined project completed with advisor assistance, that makes a connection between the graduate study and the student's
or equivalent abstract algebra course or consent of instructor

Admissions Requirements:
Prior to applying to the Graduate Certificate in Mathematics or Master of Science in Education – Professional Studies program, please review the admissions requirements and application process available at: www.edu/gradstudies/admissions

Transfer Credit
If you have graduate credits that you would like to transfer into the certificate program, you must complete the transfer credit form available on the UW-Whitewater Graduate Studies Admissions website.

The Department of Mathematics allows for the possibility of transferring up to 6 units of related graduate mathematics courses. Please contact the Department Chairperson to discuss possible transfer credits.

Tuition:
UW-Whitewater Summer 2020 graduate tuition rate: $1,351.38 for a 3-credit course. All students participating in this cohort will be charged the current resident graduate tuition rate (regardless of residency) and will be exempt from any additional fees (no campus, distance education or segregated fees) for the duration of this cohort. Graduate tuition rates for Fall 2020 and beyond have yet to be determined by the board of regents.
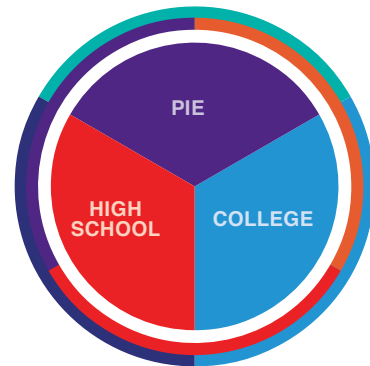
Deadline: at least 1 week prior to beginning course date

PARTNERS IN EDUCATION

Teachers who teach Partners In Education (PIE) courses for UW-Whitewater at their high school are eligible to receive a tuition waiver for up to 18 graduate credits in their content area in order to meet the Higher Learning Commission (HLC) credential requirements.
For more information:
Laura Montez, MontezLA29@uww.edu or 262-379-4171

If interested in only taking a course or selected courses and **NOT** completing the entire math certificate or master's degree, please complete the registration form available at:
uww.edu/ce/pie/teachers/grad-courses

To access the resident tuition rate without fees, all participants must register for classes by contacting:
Carrie Lencho, lenchoc@uww.edu

When you are ready to apply, please complete the UW-Whitewater Graduate School online application available at: **apply.wisconsin.edu/**

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