

# MATHEMATICS (MATH)

## **MATH 800P – History of Mathematics 3 credit hours**

An introduction to the history of mathematics from its primitive origins to modern day mathematics.

Department Consent Required

Prerequisite: MATH 202 and permission of instructor

## **MATH 804P – Theory of Numbers 3 credit hours**

Properties of integers, congruencies, primitive roots, arithmetic functions, quadratic residues, and the sum of squares.

Prerequisite: MATH 250 or permission of instructor.

## **MATH 811 – Topics in Geometry for the Secondary School Teacher 3 credit hours**

The course will focus on the connections between high school geometry and college-level mathematics (geometry, abstract algebra, analysis).

The goal is for each student to develop "new mathematical insights and understandings." Topics include, but are not limited to, Congruence, Distance and Similarity, Trigonometry, Area and Volume, Axiomatics and Euclidean Geometry.

Prerequisite: MATH 310 or equivalent

## **MATH 813P – Discrete Mathematics 3 credit hours**

A study of the evolution of the number system from the naturals through the complex with emphasis on the complex. A detailed study of the topics of discrete math including counting techniques, probability, graphs, trees and relations.

Department Consent Required

Prerequisite: MATH 115 and permission of instructor

## **MATH 815 – Topics in Discrete Mathematics for the Secondary School Teacher 3 credit hours**

This course will provide an introduction to combinatorics and graph theory, with an emphasis on applications, as well as preparing materials and lesson plans that can be brought into the middle and secondary math classroom.

Prerequisite: MATH 250 or other proof based mathematics course

## **MATH 830P – Middle School Mathematics 3 credit hours**

A study of additional topics found in grades 5-9 mathematics not covered in MATH 230, 330, e.g. algebra, probability, calculators, computers, and statistics.

Department Consent Required

Prerequisite: MATH 230 and MATH 330 and permission of instructor

## **MATH 840P – Linear Algebra 3 credit hours**

Study of vector spaces, linear transformations, matrices and determinants.

Department Consent Required

Prerequisite: MATH 115 and permission of instructor

## **MATH 841 – Topics in Abstract Algebra for Secondary Teachers 3 credit hours**

Topics include, but are not limited to, Divisibility and Euclid's Algorithm, Theorems of Euler and Fermat, Fundamental Theorem of Algebra, Groups, Cosets, Quotient Groups, Fields, Rings, Quotient Rings, Isomorphisms, Homomorphisms, and Congruences. We will cover parts of all 6 chapters in the text. The material in Chapters 1-3 are expected to be familiar to the class and will be covered briefly at the beginning of the semester.

The main focus of the course will be the material in Chapters 4-6. This course is one of six required mathematics courses for the Master of Arts in Education in Curriculum and Instruction: Mathematics Education.

Prerequisite: Admission to the graduate program for a Master of Arts in Education in Curriculum and Instruction.

## **MATH 852 – Foundations of Calculus 3 credit hours**

This course is a study of calculus in its historical order of development, rather than in the order usually presented in contemporary texts. This ordering of topics parallels the development of differential and integral calculus between the 17th and 19th centuries and will allow us to study the problems which motivated the development as well as understand the refinement of ideas linking historical and modern treatments.

Prerequisite: MATH 115 and MATH 202 and MATH 260 and MATH 460 or equivalent courses from other institutions

## **MATH 860P – Advanced Calculus I 3 credit hours**

A study of functions, sequences, limits, continuity, differentiation, and integration.

Department Consent Required

Prerequisite: MATH 250 and MATH 260 and permission of instructor

## **MATH 862 – Mathematical Analysis for Teachers 3 credit hours**

A study of sequences, series, limits, continuity, differentiation, and integration from an instructional perspective.

Prerequisite: Two semesters of Calculus or MATH 202.

## **MATH 864 – Geometry for Teachers 3 credit hours**

This course helps students improve their understanding of plane geometry as commonly taught in high school. It focuses on Euclidean geometry through an axiomatic approach, with a brief exploration to neutral geometry as well. It also includes a technology component using an interactive computer program (e.g., GeoGebra) to enhance learning geometry.

Prerequisite: Admission into Science/Math Education Program

## **MATH 870P – Teaching of Secondary Mathematics 3 credit hours**

Recent trends in the content of the math curriculum and procedures for the improvement of teaching mathematics in the high school.

Department Consent Required

Prerequisite: MATH 260 and permission of instructor

## **MATH 871 – Topics in Math 3 credit hours**

Recent trends in the content of the math curriculum and procedures for the improvement of teaching mathematics in the high school.

Department Consent Required

Total Credits Allowed: 12.00

## **MATH 895 – Independent Study in Mathematics 1-3 credit hours**

Individual studies and research under the guidance of a faculty member.

May be taken twice for two separate studies.

Department Consent Required

Total Credits Allowed: 6.00

## **MATH 896P – Mathematics Seminar 1 credit hour**

Topics not included in the normal mathematics offerings are presented by the students.

Department Consent Required

Prerequisite: MATH 260 and permission of instructor