SU DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE
SYLLABUS (Tentative)
MATH 430/531 Mathematical Connections for Secondary School Teachers

Objective: To connect the undergraduate mathematics curriculum to the secondary mathematics curriculum by examining high school curriculum topics from an advanced and historical perspective with the goal of deepening understanding of the mathematics required for teaching in secondary schools. We will consider contributions from diverse cultures as we examine the historical development of numbers and number systems, algebra, Euclidean and non-Euclidean geometries, calculus, discrete mathematics, statistics, probability, and measurement.

Intended for: Secondary education majors in Mathematics.

Requirements: Sced 373 and Math 441 or Math 451

Text: Math through the Ages: A Gentle History for Teachers and Others

ISBN: 9781939512123

Weeks

Real Numbers   **3**
Rational and irrational numbers, the number line and decimal representations of real numbers, periods of periodic decimals, the distributions of various types of real numbers.

Functions   **2**
The definitions, historical evolution, and basic machinery of functions; properties of real functions of a real variable and explorations of problems involving these functions.

Equations   **3**
The concept of equation and how it relates to equality, equivalence, and isomorphism, algebraic structures and solving equations, the solving process.

Geometry: Notions of congruence   **3**
General properties of definitions, congruence from Euclid to modern times, the congruence transformations (translations, rotations, reflections, glide reflections).

Geometry: Distance and similarity   **2**
Explorations of distance and similar figures.

Trigonometry   **1**
Angle measure and the trigonometric ratios, the trigonometric functions and their connections, properties of the sine and cosine functions.

Total   14

EVALUATION
Projects and Presentations 30%
Homework 35%
Midterm Exam 15%
Final Exam 20%
**Graduate students will be assigned special or additional homework/test problems/projects.