

SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS (*Tentative*)
MATH 130 *Fundamental Concepts I*

- Objectives:** To provide students with a thorough understanding of the mathematical concepts covered in grades one through eight using approaches that support professional (NCTM) standards. To move prospective elementary school teachers through the mathematical content into the ability to explain the mathematical ideas and relationships. Using correct vocabulary, the student must be able to explain concepts in everyday language appropriate for the listener and be able to demonstrate these ideas using physical models and/or activities. Use of technology is required, and participation in active learning (group work, use of manipulatives, etc.) is expected. Non-routine problem solving to be included regularly throughout the semester.
- Intended for:** Students in the Elementary Education program.
- Prerequisite:** Proficiency in algebra and mastery of arithmetic skills, including fractions, decimals, and percents. Three years of high school math, including two years of algebra and one year of geometry.
- Texts:** “Mathematics for Elementary Teachers: A Conceptual Approach, “ by Bennett; McGraw Hill Publishers, Eighth edition, 2010.
“Mathematics for Elementary Teachers: An Activity Approach, “ by Bennett; McGraw Hill Publishers, Eighth edition, 2010.

This course does not satisfy General Education requirements.

	Weeks
<i>Non-routine Problem Solving</i> Independent reading as assigned by instructor.	
<i>Sets: Vocabulary, Notation, Intersection, Union, Venn Diagrams</i> <i>Logic: And, Or, if-then, converse and contrapositive</i>	2.0
<i>Numeration and Place Value</i> Characteristics of a place value system explored through activities involving other numeration systems and on systems other than base 10 <i>Operations, Properties, Alternate Algorithms Using Whole Numbers</i> Connection of algebraic approach to basic approach appropriate for elementary school <i>Mental Math Techniques</i>	5.0
<i>Number Theory</i> Prime numbers, composite numbers, divisibility tests, factors, multiples, factorization, greatest common factor, least common multiple, Fundamental Theorem of Arithmetic	1.5
<i>Decimal Fractions, Common Fractions</i> Basic concepts explored with the use of manipulatives; concrete visualization; analysis of alternate algorithms for operations; applications and analysis of alternate solution techniques	2.5
<i>Number Systems</i> Integers: physical models for basic concepts, physical models for operations. Rational numbers and intro to irrational numbers.	1.5
<i>Tests</i>	1.5

14.0

EVALUATION

Tests	40 – 60%
Comprehensive Final Examination	20 – 30%

Free tutoring is available for this course in the spring and fall semesters.

Writing Across the Curriculum: Writing assignments are a regular part of this course. Students will be expected to carefully explain their reasoning in written English.

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.