The University of the Incarnate Word

MATH 2372 Integration of Mathematics and Science II
Algebra, data analysis and chemistry

Catalog description:
An investigation of rational numbers, proportion, probability, and statistics integrated with topics of physical science including sound, light, electricity, magnetism. Instructional and assessment strategies are chosen for the optimal preparation of elementary school mathematics and science.

Context:
Prerequisite: Completion of MATH 1304, College Algebra, with a C or better. This course is one three which integrate mathematics and science in the preparation of elementary school teachers. It is designed as a hands-on laboratory course involving extensive experience in experimental design and implementation.

Description of the course:
A supportive instructional environment is provided to give preservice teachers opportunities to ask questions and contribute ideas from investigation or discussion in order to build their competence and confidence in mathematics and science. The course provides a variety of instructional settings and materials, including manipulative materials and technological tools with which preservice teachers can explore and increase their understanding of mathematics and science. Manipulatives used to model concepts and operations in rational numbers will be used. Assessment may include both authentic and traditional formats, with group and individual activities, to be used in evaluation, validation, and decision-making. Assessment will be used to provide a balanced picture of mathematical and scientific knowledge through a variety of methods, including the use of appropriate technological tools and physical models. Assessment strategies will include open-ended problems, journals, research projects and presentations, interviews, and portfolios. Similarities and differences of mathematical and scientific inquiry will be considered throughout the course.

Outcomes of the course:
The preservice teacher will be expected to recognize and revise previously formed misconceptions in order to better make sense of mathematics and science. They will consider mathematics as a process of observing patterns or regularities, generalizing these observations to create rules or algorithms, verifying the generalizations with valid reasoning and using the generalizations to predict outcomes and make decisions. They will understand and use the methods of scientific inquiry to make sense of the physical world. Preservice teachers will explore ideas in mathematics and science in order to strengthen their communication and reasoning skills. They will participate in guided reflection and class discussion in order to analyze their own learning.

ExCET competencies addressed: 012H,L, 013B,J, 014H,I,J,K,L 015A,C,I, 020D,H, 021/c,G,I,J,L.(See attachment)

Approval Date:
November, 1999 , amended Summer 2001