

UNIVERSITY OF THE INCARNATE WORD
SCHOOL OF GRADUATE STUDIES
MATH 7386

Integration of Mathematics and Science in Teacher Preparation

Catalog description:

This is a three-hour course whose purpose is to prepare college teachers of mathematics to more capably prepare pre-service teachers who are not specializing in mathematics and who intend to become elementary school teachers. Mathematical content and pedagogy will be addressed in the framework of an integrated mathematics/science experience for the pre-service teacher which directly relates the Texas Essential Knowledge and Skills Statement and ExCET Framework.

Context:

This course is designed to meet the requirements for the study of the integration of mathematics and science at the college level in Ph.D.s in Mathematics and Science Education. The course may not be repeated for credit. The audience consists of graduate students with experience in the classroom.

Course overview:

Integration of mathematics and science is a problem-solving, inquiry-based course that provides teachers with the knowledge and skills to successfully integrate their teaching of mathematics and science for pre-service teachers. The course will consider the learning theory supporting integration and the curriculum requirements for pre-service teachers where mathematics is integrated with related science studies at appropriate grade levels. The students will have the opportunity to see how science and mathematics can be merged into specific lessons within a variety of the sciences. The instruction will include lectures, discussions, written assignments, group and individual hands-on activities, technology, and alternative assessment strategies.

Course outcomes:

After completing the course, students will be able to:

Assessment:

Understand the learning theory which supports the integration of mathematics and science instruction	Written exam or paper, classroom project
Explain and implement the integration of topics in teacher preparation in mathematics and science	Written exam or paper, classroom project
Build a resource of mathematical and science activities which will be useful in training of pre-service teachers	Portfolio
Build a resource of assessment strategies that can be used in the pre-service and school classroom	Portfolio
Build an annotated bibliography of professional literature addressing modern learning theory and the integration of school disciplines	Portfolio
Develop an awareness of the historical interface between science and mathematics	Written exam, classroom project and presentation

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