



TEXAS TECH  
UNIVERSITY  
College of Education

Multidisciplinary Science Master of Science  
Middle School Math and Science (MS)<sup>2</sup> Concentration  
Program Handbook

College of Education  
Curriculum and Instruction Department  
Texas Tech University  
Box 41017  
Lubbock, TX 79409-1071  
806.742.1997, ext. 271  
806.742-2197 – fax  
<http://www.ttumssquare.org/>

*Master of Science in Multidisciplinary Science Degree Program  
Middle School Math and Science (MS)<sup>2</sup> Concentration*  
Curriculum and Instruction Department

Program Overview

The main goal of the (MS)<sup>2</sup>: *Understanding by Design* program is to prepare and increase the number of highly qualified in-service middle school mathematics and science teachers to become well developed in content knowledge. Through participation in this program, teachers will thrive in an interdisciplinary environment through their experiences in novel learning communities encompassing a team of mathematics and science teachers as well as university STEM (science, technology, engineering, and mathematics) and education faculty. During this six-year endeavor, a total of 100 (MS)<sup>2</sup> participants, admitted in four cohorts of 25 students each, will engage in:

1. Tailored professional development experiences as well as STEM and education courses.
2. Community building between Texas Tech University STEM and education faculty and in-service mathematics and science teachers.
3. Collaborative design and implementation of integrated STEM modules.
4. Grant proposal writing and manuscript productions suitable for publication in STEM-based education journals (e.g., *National Science Teachers Association* and *National Council of Teachers of Mathematics*).
5. Development of cyber-enabled support network and dissemination platforms for statewide outreach.

The 36 credit hour Master of Science in Multidisciplinary Science with a concentration in Middle School Math and Science degree program is designed for one middle school math teacher and one middle school science teacher to partner in study including writing curriculum over a three-year period. Partners should be from the same school but a partner from the same district is an acceptable alternative.

One online course is held each fall and spring semester; two face-to-face courses at the Lubbock campus are held the first summer semester with online activities and research opportunities offered the second summer semester. Mini-grants are available for classroom applications.

Contact

The program's Web site is <http://www.ttumssquare.org/>. Contact Rebecca Ortiz, PhD, Recruiter and a co- principal investigator for the Greater Texas Foundation grant that supports this master's degree program at [Rebecca.ortiz@ttuedu](mailto:Rebecca.ortiz@ttuedu) or 806-742-1997 x299. Esther Lucey is the unit coordinator at [esther.lucey@ttu.edu](mailto:esther.lucey@ttu.edu); telephone: 806.742.1997, x271.

## Graduate Faculty

### *College of Arts and Sciences*

Dr. Dominick Casadonte and Dr. Gregory Gellene

CHEM 5360 and 5361: Conceptual Chemistry for Teachers, I and II

Dr. Jerry Dwyer, Dr. Victoria Howle, and Dr. Brock Williams

MATH 5360 and 5361: Advanced Math and Statistics for Teachers, I and II

Dr. David Lamp

PHYS 5371: Conceptual Physics for Teachers in Physics

PHYS 5300: Integrated Research Techniques in Mathematics and Science

Dr. Mark McGinley

BIOL 5311: Ecology for Teachers

Dr. Lou Densmore

BIOL 5312: Cell and Molecular Biology for Teachers in Biological Sciences

Dr. Jeff Lee

IS 5301: The Nature of Science for Teachers

### *College of Education*

Dr. Rebecca Ortiz and Dr. Shirley Matteson

EDSE 5377: Science Curriculum and Instruction in Education

Dr. Zenaida Aguirre-Munoz

EDCI 6306: Instructional Modifications for Universal Access to Mathematics & Science

Dr. Walter Smith, Principal Investigator for the (MS)<sup>2</sup> grant degree program

### *College of Engineering*

Dr. Mary Baker

ENGR 5300: Integrating Math, Science, and Technology in the Context of Engineering

## Advisement

Following admission to the Master of Science in Multidisciplinary Science, Middle School Math and Science concentration, students will be assigned an advisor who will serve as their point of contact throughout the three-year period required to earn this degree.

Courses must be taken in a prescribed order (see last page); therefore, College of Education staff will assist with enrollment each semester. You are responsible for becoming familiar and using the TTU Student email and Raiderlink system.

## Degree Plan

You are responsible for maintaining communication with the TTU Graduate School. At Texas Tech University, a student is admitted as a graduate student by the Graduate School as well as admitted to a specific college degree program. A master's degree plan (Admission to Candidacy

form) must be filed with the Graduate School during your first semester as a graduate student. The Graduate School will ultimately award your degree and handle all aspects of that process. See: <http://www.depts.ttu.edu/gradschool/NowWhat.php> for important information as a new Texas Tech graduate student. Note specifically the section, “Required Steps for a Master’s Degree.”

### Program of Studies

The *(MS)<sup>2</sup>: Understanding by Design* is a three-year cohort program. Each cohort will complete 36 credit hours of graduate coursework in order to earn a Master of Science in Multidisciplinary Science degree). A bachelor’s degree and Texas teaching certificate are required.

During each of the fall and spring semesters, students will take one course through distance education. Courses will be offered online and enhanced by a variety of online multimedia tools. Laptop computers will be provided at no cost if you are awarded a scholarship. Admitted scholarship students are responsible for fees not covered by the scholarship.

During each summer, coursework will be completed during a three-week intensive session on the Texas Tech campus in Lubbock, Texas, plus follow-up work on line. If awarded, the scholarship will cover the cost of housing in Texas Tech residence halls during the summer sessions. Additional funded summer research opportunities during the second summer session will be available for interested students.

Please note: Portions of this scholarship may be taxable (such as laptop computer, summer housing). Please see IRS Publication 970: <http://www.irs.gov/pub/irs-pdf/p970.pdf> for additional information. *(MS)<sup>2</sup>* master of science degree students awarded a scholarship are responsible for reporting and paying any applicable income tax. Students who are nonresident aliens for tax reporting purposes will be subject to tax withholding on portions of this scholarship and will be responsible for paying the balance to the university.

### Criteria for Admissions

Admission will be based on grade point average of the applicant’s last 60 hours for the undergraduate degree, a personal statement from the applicant about his/her career goals, and three reference letters. Ideally the cohorts will be diverse in terms of ethnicity and gender and their schools’ locations in Texas. The target is a 50/50 male/female ratio, and a 50 percent minority teacher population and teachers who teach diverse populations of students.

### Comprehensive Evaluation

All multidisciplinary science master’s degree students must pass a comprehensive evaluation prior to receiving their degree. Students are required to take the evaluation during their last semester of coursework. Arrangements to take the exam at a local site are feasible.

### Other Issues

Other important issues are outlined in the Undergraduate and Graduate catalog, available at this link: <http://www.depts.ttu.edu/officialpublications/catalog/viewcat.php>.

## Course Listing by Semester

Semester offered	Course number	Course name
Fall	EDSE 5377	Science Curriculum and Instruction in Education
Spring	IS 5301	The Nature of Science for Teachers in Interdisciplinary Studies
Summer One	MATH 5360	Advanced Math and Statistics for Teachers, I
	PHYS 5371	Conceptual Physics for Teachers in Physics
Summer Two	Competitive	Research opportunities
Fall	CHEM 5360	Conceptual Chemistry for Teachers, I
Spring	CHEM 5361	Conceptual Chemistry for Teachers, II
Summer One	MATH 5361	Advanced Math and Stats for Teachers, II
	BIOL 5311	Ecology for Teachers
Summer Two	Competitive	Research opportunities
Fall	BIOL 5312	Cell and Molecular Biology for Teachers in Biological Sciences
Spring	EDCI 6306	Instructional Modifications for Universal Access to Mathematics and Science
Summer One	PHYS 5300	Integrated Research Techniques in Mathematics and Science
	ENGR 5300	Integrating Math, Science, and Technology in the Context of Engineering
Summer Two	Competitive	Research opportunities

## Admissions

The Greater Texas Foundation has provided funding for tuition and course-fee scholarships for a limited number of current middle school math teachers partnered with science teachers to earn a master's degree in multidisciplinary science. The application is a two-step process.

### **Step One**

Apply to the Texas Tech University Graduate School Office of Admissions as a Master of Science in Multidisciplinary Science degree student with an emphasis in Middle School Math and Science Education. If you have questions about your Graduate School application, call 806.742.2781 or email: [gradschool@ttu.edu](mailto:gradschool@ttu.edu).

1. Complete the Graduate Admissions application form online at: <http://www.depts.ttu.edu/gradschool/admissions/how.php> . Pay the \$50 application fee. Choose the "Multidisciplinary Science M.S." from the alphabetical list of degrees offered. Indicate that your primary location is "distance". Choose or type in text for concentration as middle school math and science.
2. Submit official transcripts from all of the colleges and universities that you have attended to the TTU Graduate School, PO Box 41030, Lubbock, TX 79409-1030 or electronically.
3. Official GRE scores are not required.
4. Contact the recruiter, Dr. Rebecca Ortiz, with questions regarding the degree program, your qualifications or courses. Contact unit coordinator Esther Lucey for admission process questions.

### **Step Two**

Apply to the College of Education (MS)<sup>2</sup> master of science multidisciplinary science degree program at: <http://www.ttumssquare.org/application.html> for a grant-funded scholarship, being careful to respond to the questions and attach the required documentation. Admission to the (MS)<sup>2</sup> scholarship program is competitive. Not all who apply will be admitted into the program. The standards for admission to the (MS)<sup>2</sup> program go beyond those for admission to the Graduate School. In addition to the submitted application, please attach the following documents as a part of the form:

1. A copy of your résumé/*curriculum vitae*
2. A letter of intent to include
  - o Why you would like to be a part of this program.
  - o Your intention, if chosen, to perform the work required and remain in the program for the entire duration of three years including summer semesters

3. Two letters of support:
  - One from the principal of the school where you are currently teaching.
  - One from a professional educator such as a math/science/engineering co-teacher at your school.
4. Online application: Please click “Submit” on the application page only after you have filled in and attached all the necessary details.