



TEXAS TECH UNIVERSITY  
**College of Education™**

# Multidisciplinary Science

## *Master of Science in Multidisciplinary Science Program Handbook*

College of Education  
Graduate Education and Research  
Texas Tech University  
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Lubbock, TX 79409-1071  
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[www.educ.ttu.edu](http://www.educ.ttu.edu)

## Overview

The Master of Science in Multidisciplinary Science (MSCI) degree is designed to meet the professional needs of middle and secondary school science teachers and elementary teachers with a strong science background by expanding their science and math content knowledge.

The curriculum consists of graduate courses in the sciences, mathematics and science education, culminating with the completion of a comprehensive portfolio project. Courses are offered to a cohort of students allowing students opportunities for interaction with their peers and instructors.

The purpose of this handbook is to provide specific information that will assist you in applying for the Master of Science degree program in Multidisciplinary Science. Specific descriptions of courses are in the *Texas Tech University Graduate Catalog*. Information about Texas Tech University can be found on-line at [www.ttu.edu](http://www.ttu.edu). Information about the College of Education can be found at [www.educ.ttu.edu](http://www.educ.ttu.edu).

## Contact

Contact Dr. Ratna Narayan, Program Coordinator, at (806) 742-1998 x473 or stop by Room 263 in the Education Building or by email at [ratna.narayan@ttu.edu](mailto:ratna.narayan@ttu.edu) or contact Dr. Walter Smith, Chairperson, Department of Curriculum and Instruction, [walter.smith@ttu.edu](mailto:walter.smith@ttu.edu), at (806) 742-1998 x446, Room 104A.

## Admissions and Advisement

### Admissions

A. Apply through the Office of Graduate Admissions in Holden Hall for “General Admission” to the Graduate School. Read the *Graduate Catalog* of the University for admission requirements. A bachelor’s degree from Texas Tech University or any other university does not guarantee admission to the Master’s program.

B. The Graduate Record Examination (GRE) is not required for this program.

C. The Graduate School has two admission statuses, described briefly here. Official descriptions are in the current graduate catalog. The graduate admissions categories are: (1) Full admission to the Master of Science program in Multidisciplinary Science or (2) Graduate temporary (GTMP).

The College of Education (COE) has established a holistic approach to the admission process. If a student does not gain full admission within one semester, he or she will not be permitted to register for the second semester.

D. The standards for admission to the Multidisciplinary Science Program go beyond those for admission to the Graduate School. Complete the College of Education Master's degree application process by submitting all application materials located at the end of this handbook.

**Notification of acceptance.** The official letter of acceptance or rejection will be sent by the Office of Graduate Admissions.

**Appeal process.** Applicants who are not accepted into the Master of Science Program in Multidisciplinary Science may appeal the Admission Evaluation Committee’s decision. The first level of

appeal is to reapply to the program, addressing the Multidisciplinary Science Admission Evaluation Committee's reasons for rejection, as delineated in the notification of the rejection letter. If an applicant is still rejected by the Multidisciplinary Science Program, the next level of appeal is the College of Education Graduate Academic Affairs Committee. In making an appeal to the Graduate Academic Affairs committee, the applicant must address the Multidisciplinary Science Admission Evaluation Committee's reasons for rejection as defined in the previous letters. If the applicant's appeal is denied by the College of Education Graduate Academic Affairs Committee, there is no further recourse for admission.

### **Advisement**

Following admission to the College of Education Multidisciplinary Science Program, the program coordinator will assign an advisor to each student. The student may request *in writing* to be assigned to a specific faculty advisor. Students may change advisors during their course of study by writing the program coordinator to request such a change.

The degree plan is the primary advisement tool. It is completed early in the student's program, ideally in the first semester, and provides the listing of courses needed for graduation. The student is responsible for keeping the degree plan updated and for bringing the plan to advisement sessions. Students need to file degree plan changes on a specific form when necessary.

The student's advisor will provide other forms of guidance as requested by the student. This includes providing suggestions for preparing for the comprehensive evaluation which will be an application-based portfolio.

### **Degree Plan**

As soon as possible after admission to the Master's degree program, but no later than during the first semester of work, the student should contact his or her program advisor to develop a "Program for the Master's Degree" (i.e, a degree plan). During an individual conference, the advisor will assist the student with selection of courses related to the program option chosen. After the student's degree plan is signed by the advisor and department chair and approved by the Graduate School, the student is expected to follow it as the basis of all subsequent enrollments.

**Transfer credit.** No more than 6 approved semester hours of coursework may be transferred from another accredited university. Transfer courses may not include practicum or internship. No course on the degree plan may be over six years old at the time the degree is conferred. The MSCI Admission Evaluation Committee will review transfer of credit on a case-to-case basis.

### **Continuation of Enrollment**

Students who have been granted admission are expected to register in the term for which admission is granted. Any student who fails to register during any one-year period prior to graduation, and who does not have an official leave of absence from study granted by the Multidisciplinary Science Program and the Graduate School, may be required to apply for re-admission to the program according to the procedures and standards in effect at the time of reconsideration.

## Master of Science in Multidisciplinary Science: Program of Studies

Teachers complete 36 hours of graduate courses in science, mathematics and science education that are specially designed for teachers with a focus on increasing content knowledge. These courses provide a strong, broad-based background in science content emphasizing major science concepts and their cross-disciplinary teaching and learning applications.

### Master of Science in Multidisciplinary Science

Course Number / Name	Department in which it is taught	Course description
<b>IS 5301</b> <b>The Nature of Science for Teachers</b>	Interdisciplinary Studies	Interdisciplinary course for teachers providing an overview of science and scientific inquiry. Special emphasis on research methods.
<b>GEOL 5340</b> <b>Advances in Historical Geology</b>	Geosciences	Survey of currently important topics in earth processes and history for science educators, with an emphasis on how geologists interpret modern and past geologic events.
<b>ATMO 5302</b> <b>Weather, Climate, and Applications</b>	Geosciences	Basic principles of atmospheric science, with particular emphasis on applications, including severe weather, air pollution, and global climate change.
<b>Math 5360</b> <b>Advanced Mathematics for Teachers I</b>	Mathematics and Statistics	An introduction to statistical data analysis, including statistical computations, software and data collection, and advanced topics in mathematics, including modular arithmetic, the golden ratio, and voting methods. Particular emphasis will be placed on incorporating these ideas in the science classroom.
<b>Math 5361</b> <b>Advanced Mathematics for Teachers II</b>	Mathematics and Statistics	An introduction to advanced topics in mathematics, including population models, complex dynamics, topology, and the structure of the real numbers. Particular emphasis will be placed on incorporating these ideas in the science classroom.
<b>BIOL 5311</b> <b>Ecology for Teachers</b>	Biological Sciences	An investigation into ecology (populations, communities, and ecosystems) and evolution (microevolution and macroevolution) for practicing teachers.
<b>BIOL 5312</b> <b>Cell and Molecular Biology for Teachers</b>	Biological Sciences	This course will provide the students with an up-to-date exposure to cell and molecular biology. This rapidly changing field is one of the most difficult for teachers to remain current in. Topics such as DNA topology and the details of the Central Dogma of Molecular Biology will be addressed, as well as photosynthesis, respiration,

		and membrane structure and function. Cell regulation will be covered so that students will be exposed to the latest ideas of gene expression and its control. Because of the content, this course is probably best suited for students who are involved with teaching Middle School or High School biology courses.
<b>PHYS 5371 Conceptual Physics for Teachers</b>	Physics	An integrated course designed for teachers taught in an inquiry-based format. Topics covered include elementary physical principles of mechanics, kinematics, electricity, circuits, and magnetism. Emphasis is placed on ways to teach each topic.
<b>PHYS 5372 Astronomy for Teachers</b>	Physics	An integrated course designed for teachers taught in an inquiry-based format. Topics covered include solar system, stellar, galactic astronomy, and the history of human understanding of the universe. Emphasis is placed on how to teach each topic.
<b>EDSE 5377 Science Curriculum and Instruction</b>	Education	A study of evolving science curriculum with emphasis on innovative practices, methodology, organization for instruction, and evaluation.
<b>CHEM 5360 Conceptual Chemistry for Teachers I</b>	Chemistry	An integrated course for teachers. Topics include dimensional analysis, inorganic nomenclature, stoichiometry, atomic structure and quantum mechanics, molecular structure and geometry, periodic properties, thermochemistry, states of matter, and solution chemistry
<b>CHEM 5361 Conceptual Chemistry for Teachers II</b>	Chemistry	A continuation of CHEM 5360, covering, equilibrium, acid-base chemistry, solubility, kinetics, electrochemistry, nuclear chemistry, and introductory organic chemistry, biochemistry, and polymer chemistry

### Schedule of Courses for Cohort IV and Probable Format for Instruction

Summer 2008	Fall 2008	Spring 2009
IS 5301 <i>FTF</i> GEOL 5340 <i>FTF</i>	MATH 5360 <i>Web CT</i>	BIOL 5311 <i>BL</i>
Summer 2009	Fall 2009	Spring 2010
PHYS 5372 <i>FTF</i> BIOL 5312 <i>FTF</i>	EDSE 5377 <i>iTV</i>	MATH 5361 <i>Web CT</i>

Summer 2010	Fall 2010	Spring 2011
PHYS 5371 <i>FTF</i> ATMO 5302 <i>FTF</i>	CHEM 5360 <i>iTV</i>	CHEM 5361 <i>iTV</i>

#### Probable Course Format Key

Web CT – online delivered, Internet delivered course

iTV- down linked classes to remote sites

BL- blended courses involving some distance and some face-to-face components

FTF- face-to-face courses (Faculty and students in the same location, at TTU Junction campus)

Cohort 4 teachers will spend 3 weeks (each summer for 3 summers) in residence on the Junction campus. Though 6 hours of graduate credit are allowed in one summer session, the courses will necessarily include some assigned work beyond the three week window (such as required pre-session readings or post-session papers).

#### **Comprehensive Evaluation**

All Multidisciplinary Science Master's degree students must pass a comprehensive evaluation prior to receiving their degree. MSCI Students are expected to complete a comprehensive application-based teaching portfolio in lieu of their Master's comprehensive exam. Students are required to take the evaluation during their last semester of coursework.

The evaluation is offered once each semester. Students must apply online to take the evaluation at <https://educfmk.educ.ttu.edu/SSL/Applications/mcompapp/>. Please follow directions specific to the Multidisciplinary Science program. Since deadlines for applying to take the evaluation apply, students are encouraged to inquire about the procedures in their last year of course enrollment.

#### **Other Issues**

Other important issues such as registration, financial assistance, ethics, and appeals procedures are outlined in the *Undergraduate and Graduate Catalog*.

## How to Apply

### Steps in Application Process

- ❑ Contact Dr. Ratna Narayan ([ratna.narayan@ttu.edu](mailto:ratna.narayan@ttu.edu)) for advisement in the MSCI Master's Degree admissions process.
- ❑ Submit the Application for Admission to the Graduate School of Texas Tech University to the Graduate School office (03 Holden Hall). Located online at <http://www.depts.ttu.edu/gradschool/admissions/How.php>.
- ❑ Submit official transcripts of all college work to the Graduate School.
- ❑ International students: Submit Test of English as a Foreign Language (TOEFL) score to the Graduate School.
- ❑ Submit the MSCI program application form, letter of application, resume, writing sample and acknowledgement form, to the Associate Dean of Graduate Education, College of Education, Box 41071, Lubbock, Texas 79409-1071.
- ❑ Submit 3 recommendation forms [one by an administrator and two professional (using the recommendation forms in this MSCI handbook) to the Associate Dean of Graduate Education, College of Education, Box 41071, Lubbock, Texas 79409-1071
- ❑ IF YOU RECEIVE AN OFFICIAL LETTER OF ADMISSION from the Graduate School, contact Dr. Ratna Narayan ([ratna.narayan@ttu.edu](mailto:ratna.narayan@ttu.edu)) to develop the Program for Master's Degree (degree plan). She will also advise you on course selection and registration before the second semester of enrollment.
- ❑ IF YOU RECEIVE A REJECTION LETTER from the Graduate School, contact the Associate Dean of Graduate Education 806-742-1998 x 434 for advisement regarding the admissions appeals process.
- ❑ GRE scores are not required by this program.

### Criteria for Admissions

The following three major areas will be considered in the evaluation of an individual's application.

#### I. Individual Profile

- a. Professional goals as articulated in application letter.
- b. Teaching experience. All applicants must be currently-employed teachers preferably at the middle and high school level.
- c. Writing skills as demonstrated in letter of application and one sample of academic work.

#### II. Academic Record

- a. Undergraduate GPA and, if applicable, graduate GPA.

#### III. Recommendation

- a. Personal/Professional (two recommendation forms).
- b. Administrator (one recommendation form).



## **Application Cover Sheet page 2**

### **Letter of Application**

As part of your application process to the Texas Tech University Multidisciplinary Science Graduate Program, the faculty requires completion of a letter of application from you. You should describe your professional goals, teaching experience, and other pertinent information in your letter. The information you provide enables us to more accurately assess the compatibility between your educational and career goals and the Multidisciplinary Science Graduate Program goals.

### **Writing Sample**

As part of your application process to the Texas Tech University Multidisciplinary Science Graduate Program, you should submit a writing sample (e.g., exam, paper, manuscript) that demonstrates your composition skills and scholarship.

### **Resume**

Please include your resume with this application cover sheet.

### **Recommendation Forms**

Have one school administrator and two other professionals complete the appropriate attached forms and return the completed forms to the Associate Dean of Graduate Education at the address on the forms.

I certify that all the information in my application is true and correct.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Due date: Applications submitted before Jan 15<sup>th</sup>, 2008, will receive priority consideration to begin the summer 2008 cohort.**

**Applications received after March 1<sup>st</sup>, 2008, will be considered until space is filled.**

**Submit application materials to:**

**Associate Dean of Graduate Education  
Texas Tech University College of Education  
Box 41071  
Lubbock, TX 79409-1071**

**Master of Science Degree in Multidisciplinary Science  
Texas Tech University College of Education  
Recommendation Form (Professional)**

**To the applicant:** Make two copies of this form, complete the information requested below and give a copy of this form to the two individuals serving as references along with a stamped envelope addressed to the Associate Dean of Graduate Education and Research, College of Education, Box 41071, Lubbock, TX 79409-1071.

Applicant's Name: \_\_\_\_\_  
Last
First
Middle

Recommender's Name: \_\_\_\_\_  
Last
First
Middle

Sign the waiver below if you want the recommender's comments to remain confidential.

I waive my rights to ever see this form and any supplementary notes or letters.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Applicant: Do Not Write Below This Line**

**To the recommender:** The person named above is applying for admission to the Master of Science in Multidisciplinary Science Program at Texas Tech University. We would appreciate having your appraisal of the applicant's qualifications for graduate work. Please respond on this form and attach an additional letter if desired. Thank you for your assistance.

1. How long have you known the applicant?  Less than one year  more than one year
2. How well do you know the applicant?  casually  fairly well  very well
3. In what capacity have you known the applicant? \_\_\_\_\_

4. Please rate the applicant on the characteristics shown below, by marking an X along the line to indicate your assessment. Indicate below to whom you are comparing the applicant.

- Undergraduate students     master's level students     doctoral level students

	Weak	Strong	Can't Judge
	0 10 20 30 40 50 60 70 80 90 100		
a. Capacity for analytical thinking			
b. Accepts responsibility			
c. Motivation and enthusiasm			
d. Organizational ability			
e. Ability to work with colleagues			
f. Ability to handle stressful situations effectively			
g. Possesses integrity			
h. Written and oral communication skills			

5. Do you have knowledge of the applicant ever behaving in an unethical or unprofessional manner?

Yes

No

If yes, please explain in #6 below

6. Write a few sentences describing the applicant's potential to successfully complete a program of study in the Master of Science in Multidisciplinary Science Program and become a leader in the profession once the degree is completed. Statements about the candidate's academic ability, effectiveness as an educator, and dependability are particularly important for persons applying to our program.

7. If you alone were making the decision to accept this applicant as a graduate student, which of the following would best describe your decision?

- a. Recruit – will be a truly outstanding student and professional
- b. Definitely accept – will complete the degree at a superior level
- c. Accept – will complete the degree at an adequate level
- d. Accept – with reservations about ability or motivation
- e. Accept – with reservations
- f. Do not accept (please explain in #6 above)

**Please return the completed recommendation form promptly.**

**The application will be not reviewed until all recommendations are received.**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Position: \_\_\_\_\_

Address: \_\_\_\_\_

Office Phone: \_\_\_\_\_ Home Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**Thank you for your assistance.**

Please return this form in the envelope provided to:  
Associate Dean for Graduate Education and Research  
College of Education  
Box 41071  
Lubbock, Texas 79409-1071

**Master of Science Degree in Multidisciplinary Science  
Texas Tech University College of Education  
Administrator's Recommendation Form**

**To the applicant:** Complete the information requested below and give this form to the person serving as a reference along with a stamped envelope addressed to the Associate Dean of Graduate Education and Research, College of Education, Box 41071, Lubbock, TX 79409. Sign the waiver below if you want the recommender's comments to remain confidential.

Applicant's Name: \_\_\_\_\_  
Last
First
Middle

Recommender's Name: \_\_\_\_\_  
Last
First
Middle

I waive my rights to ever see this form and any supplementary notes or letters.

\_\_\_\_\_

Signature
Date

**Applicant: Do Not Write Below This Line**

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**To the recommender:** The person named above is applying for admission to the Master of Science in Multidisciplinary Science Program at Texas Tech University. We would appreciate having your appraisal of the applicant's qualifications for graduate work. Please respond on this form and attach an additional letter if desired. Thank you for your assistance.

1. How long have you known the applicant?  Less than one year  more than one year
2. How well do you know the applicant?  casually  fairly well  very well
3. In what capacity have you known the applicant? \_\_\_\_\_

4. Please rate the applicant on the characteristics shown below, by marking an X along the line to indicate your assessment. Indicate below to whom you are comparing the applicant.

Undergraduate student  master's level student  doctoral level student

	Weak	Strong	Can't Judge
	0 10 20 30 40 50 60 70 80 90 100		
a. Capacity for analytical thinking			
b. Accepts responsibility			
c. Motivation and enthusiasm			
d. Organizational ability			
e. Ability to work with colleagues			
f. Ability to handle stressful situations effectively			
g. Possesses integrity			
h. Written and oral communication skills			

5. Do you have knowledge of the applicant ever behaving in an unethical or unprofessional manner?

Yes       No      If yes, please explain in #6 below

6. Write a few sentences describing the applicant's potential to successfully complete a program of study in the Master of Science in Multidisciplinary Science Program and become a leader in the profession once the degree is completed. Statements about the candidate's academic ability, effectiveness as an educator, and dependability are particularly important for persons applying to our program.

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- c. Accept – will complete the degree at an adequate level
- d. Accept – with reservations about ability or motivation
- e. Accept – with reservations
- f. Do not accept (please explain in #6 above)

**Please return the completed recommendation form promptly.**

**The application will be not reviewed until all recommendations are received.**

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Position: \_\_\_\_\_

Address: \_\_\_\_\_

Office Phone: \_\_\_\_\_ Home Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**Thank you for your assistance.**

Please return this form in the envelope provided to:  
Associate Dean for Graduate Education and Research  
College of Education  
Box 41071  
Lubbock, Texas 79409-1071





### List of Major Steps Required by the Graduate School for the MASTER'S DEGREE

ACTION	INITIATED THROUGH	SUBMITTED TO	TIME
1 Plan courses for degree	Graduate Advisor	Graduate Advisor	Prior to registration
2 Set up thesis advisory committee and title, if applicable	Graduate Advisor	Graduate Advisor	Prior to filing "Program for the Master's Degree and Admission to Candidacy" form
3 File "Program for the Master's Degree and Admission to Candidacy" form (Not to be confused with the "Statement of Intention to Graduate" form, see #6 below)	Graduate Advisor or Chair, Advisory Committee	Graduate School	After first semester of master's coursework, no later than the posted deadline
4 File changes in degree program, if necessary	Graduate Advisor or Chair, Advisory Committee	Graduate School	As needed
5 Enroll in semester of graduation (at least 3 hours of thesis, if defending thesis)	Graduate Advisor or Chair, Advisory Committee	Registrar	Semester of graduation
6 File "Statement of Intention to Graduate" form, including official title of thesis, if applicable. (Not to be confused with the "Program for Master's Degree and Admission to Candidacy" form see #3 above)	Student	Graduate School	Semester of graduation* (One must be filed for each intended graduation semester)
7 Submit the "Thesis Title Page Request" form	Student	Graduate School Thesis Coordinator	Prior to deadline during semester of graduation
8 Pay thesis document fee, if applicable	Graduate School Thesis Coordinator	Student Business Services	Prior to deadline during semester of graduation*
9 Schedule final comprehensive examination and/or defense and send result by memo to Graduate School	Graduate Advisor or Chair, Advisory Committee	Graduate School Master's Coordinator	Semester of graduation* (usually about 6 weeks before graduation)
10 After incorporating committee changes, submit .pdf file of thesis and signed title page to Graduate School for official review	Advisory Committee	Graduate School Thesis Coordinator	Semester of graduation (usually 5 weeks before graduation date)
11 Final grade for thesis hours (A or B) Grade will be "CR" until final semester	Chair, Advisory Committee	Registrar Final grade roll	End of semester
12 Submit official .pdf of thesis to ETD web site; order and bring all personal/paper copies to Graduate School	Student	Graduate School Thesis Coordinator	Prior to deadline

\*Deadline packets will be sent to students according to proposed date of graduation indicated on "Program for the Master's Degree and Admission to Candidacy" form.

Forms may also be downloaded from the Graduate School web site: <http://www.depts.ttu.edu/gradschool/>

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