Master of Science
In Applied Science Education

Student Handbook

Division of Teacher Education
Department of Cognitive and Learning Sciences
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931
Telephone: (906) 487-2460
Fax: (906) 487-2468
Email: stockero@mtu.edu
http://www.mtu.edu/cls/education/

Update 9/9/2014
# Table of Contents

Admission........................................................................................................................................... 3  
Advising .................................................................................................................................................. 3  
Graduate Committee .......................................................................................................................... 4  
Responsible Conduct of Research Requirement .............................................................................. 4  
Program Requirements – Applied Science & Mathematics Track .................................................. 5  
Program Requirements – Earth System Science Track .................................................................... 6  
Program Requirements – Peace Corps-Master’s International Track .............................................. 7  
Course Descriptions ............................................................................................................................ 8  
Internship .............................................................................................................................................. 10  
Elective Education and Science Courses .......................................................................................... 11  
Graduate Research Report ................................................................................................................ 11  
Research Presentation ....................................................................................................................... 13  
Continuous Enrollment; Registration Requirements ...................................................................... 13  
Graduate School Requirements ........................................................................................................ 14  
Time Frames for Program Completion ............................................................................................. 15
Welcome to Michigan Tech University’s
Master of Science Program
In
Applied Science Education

Department of Cognitive and Learning Sciences Mission Statement

The mission of the Department of Cognitive and Learning Sciences Department is to provide exemplary programs supporting the preparation, professional development and continuing practice of secondary school teachers, and to promote a solid foundation for understanding human cognition and behavior. This mission will be met through continued assessment of departmental, programmatic, and curricular goals.

MS-ASE Tracks

There are three routes to the MS-ASE:
The Applied Science and Mathematics Track is the original MS-ASE degree for professional educators. It is designed for teachers with at least one year of experience, who wish to improve their knowledge and application of science and mathematics in the classroom.
The Earth System Science Track (ESS) was initiated in 2007 with support from the National Science Foundation; it is designed for in-service teachers who want to improve their understanding of Earth Science and who may wish to become certified to teach Earth Science.
The Peace Corps-Master’s International Track (PC-MI) was introduced in 2006 for individuals with degrees in science, mathematics, or engineering, who want to combine Peace Corps service with a graduate program leading to teaching certification.

Admission
Admission to the MS-ASE program is selective. Applications http://www.mtu.edu/gradschool/admissions/apply/ are reviewed by the Graduate Committee of Michigan Tech’s Division of Teacher Education. Applicants must hold a bachelor’s degree or its equivalent from an accredited institution and be prepared for advanced study as demonstrated by their undergraduate program of study and scholastic record.

Applicants for the Applied Science and Mathematics track and the Earth System Science track must also possess secondary teacher certification in mathematics or science and have at least one year of secondary school teaching experience.

Advising
Initially an advisor will be assigned by the Division of Teacher Education. However, you are encouraged to choose your own advisor at any time. You must choose an MTU graduate faculty member who will advise you on course selection and choice of research topic and who will supervise the research experience. The advisor is an important factor in the graduate student’s timely and
successful completion of the program of study. An advisor is needed to assist you to progress toward your degree. You can find the Advisor and Committee Recommendation form at http://www.mtu.edu/gradschool/administration/academics/timeline/report/ The Graduate School uses this form to identify which faculty member is working with you. Although the form will ask if you want to appoint a committee, this is not required at this time. You will need a committee established no later than two weeks before your defense.

The heart of graduate study lies in the student-advisor mentoring relationship. Your advisor will be your primary contact as you complete your prospectus and research report. He/she will assist you in communicating with your committee, distributing drafts of your report and scheduling meetings and your final presentation. We recognize the need for flexibility in choosing an advisor and committee. Any suggestions you may have, or questions concerning choosing a committee may be directed to your assigned or chosen advisor.

Possible advisors from the Department of Cognitive and Learning Sciences graduate faculty for the Applied Science and Mathematics Track and for the Earth System Science Track are listed below. Information about their research can be found at http://www.mtu.edu/cls/department/faculty-staff/faculty/

Dr. Brad Baltensperger brad@mtu.edu
Dr. Kedmon Hungwe khungwe@mtu.edu
Dr. Amy Lark amlark@mtu.edu
Dr. Shari Stockero stockero@mtu.edu

ESS students will also select a co-advisor from the Department of Geological and Mining Engineering and Sciences.

Advisors for the Peace Corps-Master’s International Track will be selected from the graduate faculty of the departments of Biological Sciences, Chemistry, Cognitive & Learning Sciences, Geological and Mining Engineering & Sciences, Mathematical Sciences, and Physics, as appropriate to the individual student’s needs.

Your Graduate Committee
Each student’s research project is supervised and evaluated by a graduate committee; this committee is selected in consultation with the advisor and is typically chosen at the start of a student’s research project. The committee consists of your advisor, who serves as chair, plus 2-3 other faculty. At least one member of the committee must not be a faculty member or adjunct faculty member in the Department of Cognitive and Learning Sciences. Consult with your advisor in establishing your committee. Your committee serves as the evaluation committee for your oral examination and provides input and critique for your graduate research report.

Responsible Conduct of Research Requirement
All graduate students are required to complete the Basic Responsible Conduct of Research Training either by attending orientation or completing an online training course http://www.mtu.edu/gradschool/administration/academics/timeline/report/ their first semester. Michigan Tech also requires all students who started spring 2013 or later to complete the Advanced
Responsible Conduct of Research Training
http://www.mtu.edu/gradschool/administration/academics/timeline/report/ by their third semester.

Summary of Program Requirements

All work required for the MS-ASE degree (30 credits) must be completed within five calendar years of the first enrollment in the degree program. It is expected, however, that most students can complete the requirements in three years. You must be enrolled in a course each fall and spring semester until completion of your degree.

The MS-ASE is a 30-credit master’s degree program. Once admitted to the program, each student will establish an individual degree program in consultation with his/her advisor. All grades must be B (3.0 on 4.0 scale) or better in the required science education core courses and applied science core courses. The student must maintain a cumulative grade point average of 3.0 or better.

The URL below shows a detailed timeline of items that you need to complete in order to obtain a MS degree at Michigan Technological University. It is the student’s responsibility to submit all forms on time, so we recommend that students carefully review this timeline at the start and throughout the program of study.
http://www.mtu.edu/gradschool/administration/academics/timeline/report/

Applied Science and Mathematics Track
This track of the Master of Science in Applied Science Education (MS-ASE) degree is designed to meet the needs of teachers who want to: improve their knowledge and application of science and mathematics in the classroom, continue their professional development, seek an advanced degree in an application-based master’s program, and accomplish the goals of national and state curriculum standards.

This program offers a graduate degree for in-service secondary mathematics and science teachers that promotes professional development within their discipline and addresses classroom and students’ needs. Through the coursework, participants will be able to demonstrate advanced ability to integrate technological literacy and real world applications into mathematics and science curricula serving students in grades 6-12. This emphasis is a priority in both state and national standards for secondary mathematics and science education.

Science Education Core Courses, 6 credits
Offered as online distance learning courses during the academic year
ED 5700 Introduction to Education Research 2 credits
ED 5730 STEM Learning Materials 2 credits
ED 5740 Designing Education Research 2 credits

Applied Science Core Courses, 12 credits
Offered as intensive institutes during the summer
ENG 5100 The Engineering Process 4 credits
Take two of the following three:
ENG 5200 Engineering Applications in the Physical Sciences 4 credits
ENG 5300 Engineering Applications in the Earth Sciences 4 credits
ENG 5400 Engineering Applications in the Life Sciences 4 credits

**Applied Internship-Educators, 3-6 credits**
ED5800 The internship is a full time one- or two-month summer position doing applied science or mathematics. ED5800 can be taken at a rate of 1 credit per semester if needed in order to maintain continuous enrollment.

**Graduate Research in Education, (2cr) variable to 6 credits**
ED5900 Enrollment in this course is mandatory at the time of completion and presentation of the report to your committee. ED5900 can be taken at a rate of 1 credit per semester if needed in order to maintain continuous enrollment.

**Elective Science/Math Education, Mathematics and/or Science Courses, 4-7 credits**
Only credits approved by the department will be accepted. Most Michigan Tech summer professional development courses can be applied as electives.

**Earth System Science Track**
The program is designed to serve practicing teachers who are:

- currently teaching Earth/Space Science but are teaching out of field; or
- teaching another science and are interested in teaching Earth/space science in the future, or
- obtaining and Earth /Space Science endorsement; or
- interested in working toward an advanced degree in science education.

The requirements were designed around national and state science education standards to ensure that participating teachers will develop the skills necessary to engage students in learning about Earth/space science and will meet the requirements for highly qualified status.

**Science Education Core Courses, 6 credits**
Offered as online distance learning courses during the academic year
ED 5700 Introduction to Education Research 2 credits
ED 5730 STEM Learning Materials 2 credits
ED 5740 Designing Education Research 2 credits

**Applied Science Core Courses, 12 credits**
Offered as online distance learning courses during the academic year
GE 5020 Earth System Science I 4 credits
GE 5030 Earth System Science II 4 credits

Offered as intensive institute during the summer
ENG 5300 Engineering Applications in Earth Sciences 4 credits

**Field Courses, 7 credits**
Offered as intensive institutes during the summer
SS 5150 Natural Hazards and Human Impact 3 credits
GE 5130 Geology of Utah’s National Parks 4 credits
Graduate Research in Geology, 2 credits
GE 5999 Enrollment in research course is mandatory at the time of completion and presentation of the report to your committee. Can be taken at a rate of 1 credit per semester if needed in order to maintain continuous enrollment.

OR

Graduate Research in Education, (2cr) variable to 6 credits
ED5900 Enrollment in research course is mandatory at the time of completion and presentation of the report to your committee. ED5900 can be taken at a rate of 1 credit per semester if needed in order to maintain continuous enrollment.

Elective Science Education and/or Science Courses, 4-7 credits
Only credits approved by the department will be accepted.

Peace Corps-Master’s International Track
There is a nationwide need for experienced and qualified science teachers. Education experts and government leaders have expressed great concern over the shortage of science teachers and the shortage of high school students who go on to major in science and engineering fields in college. Returning Peace Corps volunteers will be especially qualified for secondary school teaching positions because of their practical experience, their ability to demonstrate the relevance of science to the lives of students in international settings, and their ability to integrate science with other disciplines.

This track is designed for graduates with degrees in science, mathematics, or engineering who would like to become certified teachers and who wish to serve abroad in the Peace Corps. Courses in the program provide the basics of education theory, practice and application. Most program completers will be able to earn teaching certification shortly after completing their Peace Corps service.

Fall Semester 10 credits
ED4700 Fundamentals of Instruction 3 credits
ED4720 Methods of Teaching Science 2 credits
ED5210 Foundations of Education 2 credits
ED5700 Introduction to Education Research 2 credits
SS5201 International Immersion and Research 1 credit

Spring Semester—10 credits
HU/ED4150 Literacy in the Content Areas 4 credits
ED5110 Psychological Foundations of Learning 2 credits
ED5730 STEM Learning Materials 2 credits
FW5770 Community Planning and Analysis 2 credits

Summer Semester—4 credits
One course from:
ENG5100 The Engineering Process 4 credits
ENG5200 Engineering Applications in the Physical Sciences 4 credits
ENG5300 Engineering Applications in the Earth Sciences 4 credits
ENG5400 Engineering Applications in the Life Sciences 4 credits
Required Peace Corps courses—6-7 credits
ED5994 Field Work in International Science Education 1 credit
(2 years overseas) repeatable to 18 credits
ED5900 Graduate Research in Education 1 credit
Upon completion of Peace Corps service

*If seeking Teacher Certification you need ED5920, ED5921 and ED5900 and are required to pass the MTTC Professional Readiness Exam prior to taking ED5920

ED5920 Teaching Internship – Prep 6 credits
Placement in our local schools
ED5921 International Teaching Internship 1 credit
During 2 years overseas—repeatable to 18 credits
ED5900 Graduate Research in Education 1 credit
Return from overseas

Course Descriptions

Education Courses

ED 4150 - Literacy in the Content Areas, 4 credits
An introduction to the best ways to use language for deepening comprehension and understanding of all the content areas. Includes inquiries into how cultural and learning differences relate to comprehension. A minimum of 28 tutoring hours in a local school is required.

ED 4700 - Fundamentals of Instruction, 3 credits
Study of key areas of instruction in preparation for student teaching. Emphasis is placed on lesson planning, classroom management, and student assessment and evaluation.

ED 4720- Methods of Teaching Science, 3 credits
Application of learning and instructional theories to the teaching of science and mathematics.

ED 5110 – Psychological Foundations of Learning, 2 credits
The course examines how human beings grow and learn with major emphasis on the early adolescent and adolescent. Psychological basis of educational procedures and practices are established with special reference to learning disorders, gifted children, and culturally diverse classrooms.

ED 5210 - Principles of Education, 2 credits
Contemporary issues in education from historical, philosophical, sociological, and legal perspectives. Emphasizes the structure/function of U.S. education as well as exceptional children, especially the handicapped and culturally different.
**ED5700 Introduction to Education Research**, 2 credits
In-depth study of education research methods pertaining to classroom practice, curriculum standards, and program evaluation. Action research methods are emphasized. Offered online during fall semester.

**ED5730 STEM Learning Materials**, 2 credits
Examination of learning materials that enable inquiry-based learning as prescribed by state and national standards. Assessment techniques to measure this type of learning will be considered. Offered online during spring semester.

**ED5740 Designing Education Research**, 2 credits
Course focuses on designing a research project for the MSASE program. Emphasis on motivating a study, developing research questions, conducting a literature review, and selecting appropriate research methodology. Should be taken within one year of beginning research project. Offered online during fall semester.

**Applied Science Core Courses**

**ENG5100 The Engineering Process**, 4 credits
The course introduces the engineering problem solving and design processes. Students will learn about the engineering profession and will complete a design/build/test project. Offered as an intensive institute during the summer.

**ENG5200 Engineering Applications in the Physical Sciences**, 4 credits
This class will show how engineers use principles from the physical sciences to solve problems and design systems. Key concepts will be linked to the Michigan Curriculum Frameworks for precollege education. Offered as an intensive institute during the summer.

**ENG5300 Engineering Applications in the Earth Sciences**, 4 credits
This course will show how engineers use principles from the earth sciences to solve problems and design systems. Key concepts will be linked to the Michigan Curriculum Frameworks for precollege education. Offered as an intensive institute during the summer.

**ENG5400 Engineering Applications in the Life Sciences**, 4 credits
Students will gain hands-on experience linking engineering technologies to the biological sciences. Participants will visit labs and field sites at Michigan Tech to observe and participate in current research. Topics covered include biofuels, environmental restoration, environmental toxins, and ecosystem measurement. Offered as an intensive institute during the summer.

**GE 5020 Earth System Science I**, 4 credits
Includes basic geologic content traditionally covered in university-level physical geology and historical geology. The course contact is a stepping through geologic time from the present in to the past. The course will take a place-based approach, using the geologic record of Michigan. Offered as a distance learning course during fall semester.

*GE 5030 Earth System Science II*, 4 credits
Focuses on material traditionally covered in courses on astronomy, meteorology, and oceanography. This course will address content from the field by focusing on the Earth’s climate system. Offered as a distance learning course during spring semester.

**Field Courses**
*(Earth System Science Track only)*

* SS5150 Natural Hazards and Human Impacts, 3 credits
  The interaction of humans and environment is examined through field study on the Keweenaw Peninsula. Focus on natural hazards, geological and geographical landscapes and processes. Integrates scientific and social scientific content knowledge with pedagogical approaches for K-12 teachers. A summer intensive field course.

*GE5130 Geology of the National Parks*, 4 credits
A two-week, field-based course taught in National Parks. Course requires a project and special assignments. A summer intensive field course.

**International Development and Science Education**
*(Peace Corps-Master’s International Track only)*

* FW 5770 –Rural Community Development Planning and Analysis*, 2 credits
  Context, analysis, and monitoring of development processes of rural communities in tropical countries.
  On-campus, spring semester course.

* ED 5994 –Field Work in International Science Education*, 1 credit each semester
  Field work and reporting from students in the Peace Corps Master's International Program in Science Education. Fall, Spring, Summer

**Internship 3-6 credits**
*(Applied Science and Mathematics Track only)*

The industry or research internship ED5800 is a full time one- or two-month summer position doing applied science, most often in a work setting close to home. You should work with your education advisor to identify the internship. The internship is designed to emphasize the application of engineering and science principles in a “real-world” setting.

*Prospectus*. During the semester prior to enrollment in the internship, you will need to complete a prospectus outlining your intended internship. The prospectus should describe the purpose of the internship, proposed activities, and a timeline for completion. It should also identify how the internship is expected to relate to the final Graduate Research Report. The prospectus should be approximately 1000 words in length and should be submitted to your advisor for approval at least two months before the internship is to begin.
Internships can be arranged with government agencies, industries, or with university scientists or engineers engaged in research. The purpose is to observe and participate in the activities of practicing scientists and engineers and to use that understanding to inform classroom teaching. It should be seen as a source of inspiration and ideas for the classroom. A 3-credit internship requires 120-150 hours of activity at the internship site. Interns should document their internship activities with a log or journal of activities. Submission of those documents to their advisor at the conclusion of the internship is necessary before credit can be granted. Internships can be completed during one summer or semester or can be spread over a longer period of time.

**Elective Education, Science, and Mathematics Courses 4-7 credits (Applied Science and Mathematics and Earth System Science tracks only)**

Michigan Tech summer professional development activities can be applied as electives, such as the ESMIS and EPDIS courses, Geology of Utah Institute, the Earth Science Institutes and Lesson Study. Other graduate level coursework in applied science must be approved through your advisor.

**Graduate Research Report**

The graduate research report is the culminating product of your work in the Masters Program. It represents your ability to understand key ideas from your coursework and internship, to apply these ideas to your classroom, to measure the effectiveness of your efforts, and to document all of this in both written and oral formats. It is designed to highlight your understanding of applied science education through coursework; development, implementation, and assessment of classroom units; internship activities; and research.

Some feel that the research report can seem like a bottomless pit. It is true that much time needs to be devoted to the preparation and documentation of the work you choose to do, but remember that the product represents university scholarship in its best form. Your MS-ASE research report paper will become a permanent part of the MTU library collection and will reflect on this master's program as long as that library exists. Future students will draw on your scholarship for their inspiration.

You will generally enroll in ED 5900 (Graduate Research in Education) or GE 5999 (Graduate Research) [for the Earth System Science Track] at the time of completion and presentation of the report to your graduate committee. You can enroll in either course for one credit at a time, but 2 credits are needed for degree completion (1 credit for the Peace Corps-Master’s International Track).

**Prospectus.** By this time you should have submitted the Degree Schedule which can be found at [http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/](http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/)

To begin the process, you must write a 2-3 page prospectus that clearly communicates your plan for the report to your advisor for approval. The purpose of the prospectus is to describe what you propose to accomplish in the report and how you intend to do so. Your advisor may circulate the
document to other members of your committee for their recommendations or comments (your committee must be identified at this time).

Human Subjects Approval. Consult with your advisor concerning the need for human subject’s approval. This will generally be done before or at the same time your prospectus is being written.

Identifying a Problem. The first step in writing the report is the selection of a problem in an area that typically involves both the application of MS-ASE coursework already taken and the MS-ASE internship. Some possibilities are:

- Creation or major modification of an instructional unit based on MS-ASE coursework or the internship, classroom implementation of that unit, and subsequent evaluation to determine the success of the unit.
- Detailed analysis of student learning/misconceptions subsequent to instruction on relevant MS-ASE content or processes.
- Creation and testing of new classroom materials derived from experiences in the internship and/or MS-ASE coursework.
- Mentoring work with other teachers to help them better understand how science and engineering function. This would include evaluation of the success of such mentoring and any products of this mentoring process.

Content. Once you have identified your topic and have established clear questions that you are seeking answers to, you should proceed with the project. Generally your work will include:

- background research that places your activities in the context of what educators already know about the topic
- presentation of your data (quantitative or qualitative)
- summary and interpretation of your findings
- conclusions and implications of the research, including suggestions for further study

Format. The report is generally 40-60 pages long (plus front matter, references and appendices). For most reports, the following format is typical (although any given report may utilize a somewhat different format, where appropriate for its approach). The current report guidelines can be found at [http://www.mtu.edu/gradschool/administration/academics/report/](http://www.mtu.edu/gradschool/administration/academics/report/)

- Title page
- Table of contents
- Statement of the topic or problem, and its importance. (This could be considered to be the first chapter of a multi-chapter document. The chapter format is one way of organizing and simplifying the structure of what you have to say).
- Review and appraisal of previous literature, and a statement about the background of the problem (this could be considered to be the second chapter).
- Statement about the procedures, subjects, and facilities used in conducting the study.
- Presentation, summary, and interpretation of data (quantitative or qualitative) or findings.
- Conclusions and their limitations.
• Educational implications of the study, and the suggestions they offer for further research.
• References. Because your report is a scholarly document, this is very important.

Style. The preferred form is that of the American Psychological Association (APA) Publication Manual (see for example https://owl.english.purdue.edu/owl/resource/560/01/)

Research Presentation
Each student must present his/her research to the graduate committee in an oral examination, either in person or through videoconferencing. Faculty and students will be invited to attend.

At least two weeks prior to the examination, complete Pre-Defense Form, http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/ in consultation with your whole committee. This names your examining committee and schedules your oral examination. At least two weeks prior to your oral examination, distribute readable copies of the thesis/report to your committee.


The presentation of your research results will normally take 30-45 minutes. It should include an introduction to the problems, a discussion of your methodology and how your study relates to the relevant literature, presentation of conclusions and implications of the study. Discussion and questions will follow. Non-committee members will then be excused and the committee may have additional questions or discussion to raise with the student. Following this, the committee will deliberate and determine if the examination and report satisfy the requirements of the program.

Your advisor/department may retain your M6 for up to two weeks following the defense while you make changes as directed by the committee; research grades are not changed until the M6 is in the Graduate School Office. Note: At the time of your oral examination you must be enrolled in ED5900 or UN5953.

Submission of Final Document
Make corrections as indicated by your committee and to the satisfaction of your advisor. Submit an electronic copy of the final report to the Graduate School Office. A bound copy will be kept in the Department of Cognitive & Learning Sciences. Please make additional, unbound copies available to the committee if they wish to have them. For an additional charge, you may have a copy bound for your own use.

Continuous Enrollment; Registration Requirements

Continuous enrollment
Continuous enrollment throughout the academic year (fall and spring semesters) is required until the end of the semester in which you complete all your degree requirements. If you wish to remain active in the graduate program you must be enrolled each semester in either a regular course, the
internship (ED5800), a research course (ED5900), or one of three courses approved to facilitate continuous enrollment (UN5951, UN5952, and UN5953). Use the **Continuous Enrollment Course Form** to enroll in a UN course: [http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/](http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/)

If you do not maintain active status, your enrollment will be considered inactive and you will have to apply for re-admission to regain active status.

Because the core applied science courses and many of the appropriate elective courses are offered only during the summer, the graduate school has agreed to waive the continuous enrollment course fee for 3 semesters for MS-ASE students. **However, you still must register for one of the three continuing enrollment courses** for each fall and spring semester. For assistance or questions, contact the Division of Teacher Education. To facilitate continuous enrollment while you are working on your research project, you may enroll in ED 5900, or GE5999 for 1 credit per semester. Speak with your advisor about this option.

Under some circumstances, if you are making NO progress toward your degree during a given academic year semester, you may request a waiver of continuous enrollment. However this is limited to only one term, and must be approved by the Dean of the Graduate School. The “no progress” designation required for a waiver means you will have no use of campus facilities and no use of faculty time.

**Registering and Avoiding Late Fees**

Michigan Tech requires that you be registered for classes and that your tuition and fees be paid in full **five days before the beginning of each semester**. Keep informed about the deadline for registration and payment in order to avoid a bill for late payment. Students with unpaid bills will be automatically dropped from their classes and will only be able register by contacting the Office of Student Records and Registration.

**Graduate School Requirements**


**Transfer Credits**

A limited number of graduate course credits from other colleges or universities, taken within 5 years prior to admission to the MSASE program, may be accepted for graduate credit at Michigan Tech. A request for transfer credit must be made during the student’s first semester in the program. Transfer of credits taken after enrollment at MTU must be approved in advance of course registration. Courses intended primarily for undergraduates are not transferable. The number of credits accepted depends on an evaluation by the department and the dean of the Graduate School. Transfer credits for courses taken after admission to the program and approved in advance may not exceed one-half of the non-research course credits. The total of transfer credits may not exceed one-half of the non-research course credits.
Credit Definition
Academic advancement by students is measured in terms of semester-hour credits or simply credits. One credit should average three to four hours of a student’s time per week for one semester. Depending on course requirements, these hours may all be spent in the classroom or laboratory or may be divided between home study and class or laboratory.

Time Limit
All work required for the Master of Science degree must be completed within five calendar years of the first enrollment in the degree program.

Graduation
You must complete your degree requirements no more than five calendar years after you started Graduate School. When you have completed your degree requirements, you can usually receive a certification letter immediately. Your transcript will indicate degree granted by the 4th week of the next semester. Your diploma will be mailed to you about 90 days after the term ends. Leave a valid address with the Graduate School.

Be sure the Graduate School and your advisor are aware of your commencement plans at the beginning of the commencement semester. If you wish to participate in the commencement ceremony, the final copy of your report must be filed with the Graduate School several weeks in advance. Please check with Graduate School Office regarding this deadline.