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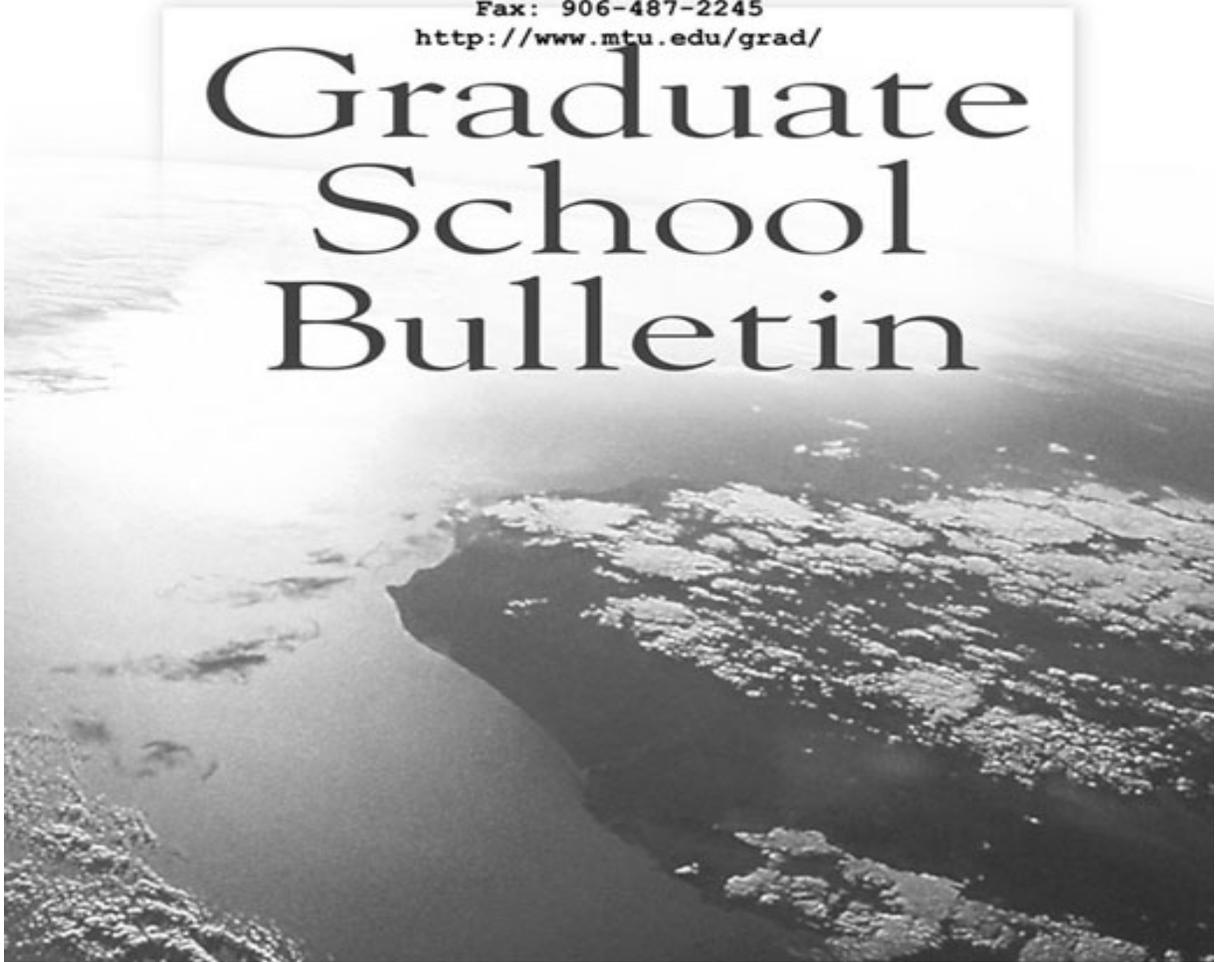
2001-2003 Graduate School

**REACH** *MichiganTech*  
Graduate School  
Michigan Technological University *It's Time to Change the World.*

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<http://www.mtu.edu/grad/>

# Graduate School Bulletin



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NOTE: This PDF is an archival copy of the on-line 2001-2003 Bulletin. In the process of conversion from web files to PDF, pagination has changed. A paper copy as originally printed is available from the J. Robert Van Pelt Library, call no.: LD3315 .M52.

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## ***Where to Go and Who to See for Help***

To complete your degree in a timely manner, there are many things you should do for yourself. However, some things you can't do, like correct your tuition bill or your immigration status. Faculty and staff from all over campus are willing to help you.

### **Department Policy Information**

<b>Graduate Program</b>	<b>Coordinator</b>	<b>Secrecy/Aide</b>
Applied Science Education	B. Baltensperger	Kim Besonen
Biology	D. Lueking	Lenora Veker
Chemical Engineering	J. King	Alexis Wisniewski
Chemistry	R. Brown	Rita Smith
Civil/Environmental Engg/Environmental Engg Science	J. Mihelcic	Corrine Leppen
Computer Science	S. Gur	Glen Gardner
Computational Science and Engineering	P. Merkey	Allyson Jabusch
Electrical and Computer Engineering	A. Gael	Michele Kamppinen
Engineering, Master of	N. Hutzler	
Engineering Mechanics	O. Arici	Kathy Wollan
Environmental Engg, PhD	1 Crittenden	Corrine Leppen
Environmental Policy	M. Durfee	Lisa Dwyer
Forestry, Forest Science, Forest Molecular		
Genetics & Biotechnology	M. Gale	Mary Jurgensen
Geological Engineering, Geology, Geophysics	G. Bluth	Amie Ledgerwood
Industrial Archaeology	P. Martin	Lisa Dwyer
Mathematics	M. Gockenbach	Denise Laux
Mechanical Engineering	O. Arici	Kathy Wollan
Materials Science and Engineering	W. Milligan	Beth Ruohonen
Mineral Economics	G. Campbell	Judy Chapmen
Mining Engineering	G. Bluth	Amie Ledgerwood
Physics, Engineering Physics	D. Beck	Bizabelh Pollins
Rhetoric and Technical Communication (Humanities)	J. Jobst	Marjorie Lindley

#### **Graduate School Office**

Third floor of the Administration Building, 487-2327

*Dean of the Graduate School*  
J. Bruce Rafert, PhD

*Assistant Dean of the Graduate School*

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Marilyn Vogler Orion, PhD

*Administrative Associate*

Andrea Lappi

**Application Process:** Admissions Coordinator Jill Oliver, Room 315

**Billing/Support:** Office Assistant Carol Wingerson, Room 316

**Blue Room Reservations:** Office Assistant Carol Wingerson, Room 316

**Commencement:** Assistant to the Dean Mina Grudnoski, Room 317B

**Degree Progress:** Assistant to the Dean Mina Grudnoski, Room 317B

**Grad School Policies and Procedures:** Assistant to the Dean Mina Grudnoski, Room 317B

**Health Insurance:** Administrative Associate Andrea Lappi, Room 317

### **Miscellaneous Services and Information**

**International Exchanges:** Center for International Education, Admin. Room 131, 487-2160

**International Services:** Center for International Education, Admin. Room 131, 487-2160

**Income Tax on Stipends, Fellowships:** Tax Accountant Brenda Sutherland, Admin. Room 231, 487-3149

**King-Chavez-Parks Fellowships:** Coordinator of Outreach/Multiethnic Programs Betty Chavis, Alumni House Room 204, 487-2920

## ***From The Dean***

Michigan Technological University has a proud tradition of excellence in science and engineering education. Since its charter in 1885 by the state of Michigan, Michigan Tech has expanded its education and research role to include graduate programs in humanities and social sciences as well as all of the major science and engineering disciplines. The faculty and staff at Michigan Tech are here to help you complete your graduate program in a timely and rewarding manner. We look forward to working with you.

—J. B. Rafert, Dean of the Graduate School

### **Our Mission**

The mission of the Graduate School is to serve as a progressive and innovative unit of Michigan Technological University, enhancing the University's continuing role as the technological institution of the State of Michigan by

- preparing its graduate students to embark on a lifelong process of learning and exploring new knowledge
- assisting them in acquiring the skills necessary to become responsible leaders in society
- providing opportunities for graduate education to qualified individuals from all racial, ethnic, and gender groups
- providing our faculty with a full range of encouragement and support for research and scholarly activities
- stimulating research to advance the frontiers of knowledge and to enhance the application of knowledge for the betterment of society
- safeguarding the highest level of integrity in the conduct of research in the University

### **Our Vision**

The University's research and graduate programs will be a home in which students and faculty are encouraged to pursue and create knowledge at its cutting edge, and a working laboratory in which knowledge is put to useful application for the benefit of society. The Graduate School will expand programs in areas outside of our technological emphasis and thereby contribute to the social and cultural enrichment of our students and our community. It will reach out globally with teaching, training, research, and service. It will strive for continued growth in ethnic, gender, and racial diversity. Through these accomplishments, it will be a nationally and internationally recognized leader in graduate education supported by vigorous research.

### **Graduate Programs**

MTU offers discipline-oriented master's and doctoral degree programs in the University's colleges and schools as well as nondepartmental master's and doctoral programs. The graduate degrees offered at Michigan Tech are listed on page 41. Detailed program descriptions can be found on the Web at the various departmental pages. The programs at Michigan Tech are administered by the Graduate School under the direction of the dean of the Graduate School with the advice of the Graduate Faculty Council. The council, comprised of elected members of the graduate faculty, helps to ensure the high quality of the graduate program and assists the dean in developing Graduate School policies and in administering graduate programs.

### **Graduate Faculty**

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University faculty members must be granted graduate faculty status by the department chair, the dean of their college or school, and the dean of the Graduate School. This faculty also includes adjunct faculty whose expertise gives each program additional breadth and depth. Graduate faculty are eligible to teach graduate courses (5000 or 6000 level), serve as examining members on graduate committees, and supervise graduate students. Graduate faculty and their areas of interest are listed.

## **Research**

Research is an essential part of graduate students' activities. Students receive research guidance and supervision from faculty advisors and graduate committees. Administrative assistance relating to research funding may be obtained from the Research and Sponsored Programs office; University research centers and institutes are described.

## **Policies and Procedures**

It is your responsibility as a graduate student to be knowledgeable about and to comply with University, Graduate School, and individual program policies and procedures. This Graduate School Bulletin will familiarize you with the opportunities and graduate programs available at Michigan Tech and inform you about the policies and procedures under which these programs are administered. Information about other University policies is available in the [MTU Student Handbook](#). Graduate course listings are available [online](#). Needed forms are available on the Web through the Graduate School home page. Questions can usually be answered by your major advisor or department graduate program coordinator. If further clarification is needed, contact the Graduate School office.

Registration, class scheduling, and withdrawal procedures are the business of the Office of Student Records and Registration. Visit their [website](#) or consult the Student Handbook for those policies and procedures.

## Quick Notes for Graduate Students

You are responsible for all information in this Graduate School Bulletin and any addenda that may be published, but here are some highlights. Note: The Bulletin is also available on the Web—link from the [Grad School homepage](#).

### Assistantships

If you are awarded an assistantship of any sort, you will receive biweekly checks. Though your tuition and fees are paid, you will always be responsible for paying a number of student-voted fees. If you don't receive a bill, you should check with the Cashier and pay these fees, thereby validating your enrollment, keeping your classes, and avoiding late fees. The Cashier will know if you have support or pending support.

If your department has not notified the Graduate School office (GSO) about your assistantship by the time bills are mailed, you will be billed for tuition. At the payment deadline, the Cashier's Office will have the most up-to-date support information, and your bill will be handled accordingly. However, if the GSO has still not been notified of the award by the payment deadline, you are responsible for your tuition. You will get a refund when your sponsor notifies the GSO that the award has been made.

Since 6–12 credits cost the same amount, departments or researchers may have minimum/maximum credit loads and credit distributions for their GTA, GRA, or fellowship award/reipients. Be sure to check—credits over 12 cost your sponsors additional dollars and you must get their permission to exceed that limit.

Co-op—Graduate Level, UN5000 (More information on page 23.)

Co-op involves working, usually off-campus, in an industry or agency related to your course of study. Graduate credit is available for co-op experience taken prior to completion of degree requirements. Students must return to campus for at least one term of study following completion of the co-op. Students register for UN5000; the time on co-op does not count against international students' practical training.

This experience requires the approval of your advisor and the Graduate School. You must enroll each term you are off campus, and for the term you're returning. Successful completion of the co-op requires that you complete a report on your experience, that your advisor grade the report, and that your advisor submit a grade to the assistant dean of the Graduate School to be assigned to your transcript.

### Degree Requirements, MS and MEng—quarter credits/semester credits\*

	Master of Science			Masters of Engineering
	Plan A	Plan B	Plan C	
	Course Work and thesis	Course Work and Report	Course Work	
	Q/S	Q/S	Q/S	Q/S
<b>Min. course work credits (total)</b>	30/20	36/24	45/30	39/26
<b>Min. grad (5000-level) credits</b>	18/12	18/12	27/18	21/12

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### Max. undergrad

<b>(4000-level) credits</b>	18/12	18/12	18/12	21/14
<b>Practicum credits</b>	—	—	—	3–6/2–4
<b>Research credits†</b>	9–15/6–10	3–9/2–6	—	—
<b>Minimum total credits</b>	45/30	45/30	45/30	45/30

\*Semester credits apply if you are completing your degree after August 28, 2000.

†Research credits are also used as continuous enrollment credits for those who leave before completing their degrees.

As always, departments can have special, more-stringent requirements, so check with your department coordinator before making your degree schedule. Departments may require more credits, may limit your out-of-department credits, may require specific courses, etc.

## Enrollment

(MONEY is at stake. Please read this entire section VERY carefully.)

**Validating enrollment**—Every term that you register for research credits or classes, you must validate your enrollment, by the due date, by signing your bill and returning it to the Cashier's office with the required payment.

- If you don't get a bill, you must ask for one, sign it, and return it. **THIS IS YOUR RESPONSIBILITY.**
- Even if you have a \$0 balance or a credit balance, you must sign your bill and return it.
- If you do not return your signed bill by the deadline, your courses and/or research credits will be dropped and you will have to pay a late fee of \$50 to get them reinstated. In most cases, this will not be paid for you by whoever is supporting you.
- If you get a bill for full tuition and have been told you'll be supported, ask the cashier to check the system. If your support is on the system, you can pay just the fees you owe (approximately \$135).
- If your support is not "on the system," contact your department immediately. **DO NOT HOLD YOUR BILL BEYOND THE DEADLINE WAITING TO HEAR FROM THEM.**
- If you can't pay the full bill immediately, you may arrange a deferred payment with Accounts Receivable.
- You may also pay by credit card (Visa, Mastercard, or Discover accepted).

**Continuous enrollment** throughout the academic year (Aug-May) is required until the end of the semester in which you complete all your degree requirements. You must be enrolled during any term in which you are working with University faculty or using University facilities, including the term of your defense or final oral examination. However, if you find it necessary to leave for a term or two and you will not be working with your advisor during that time, you may submit a waiver of continuous enrollment request form to the GSO. You do not need a waiver if you choose not to enroll summer term.

**Full-time enrollment** is required if you are receiving an assistantship or fellowship and may be required by insurance companies, your lending institution, and/or the Immigration and Naturalization Service. In

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graduate school, full-time enrollment means at least 6 credits whether you are a master's or doctoral student. In summer term, 1 credit of research or one course is considered full time. Before you sign up for fewer credits, be sure you're not jeopardizing your visa status, loans, fellowships, insurances, etc., or your department standing.

Dropping and adding credits may significantly increase your bill.

## **GPA—Grade Point Average**

You must maintain an overall 3.0 GPA for all courses taken while a graduate student. All courses used on your degree schedule must have B or better grades, but at your department's discretion, 6 credits of BC/C grades may be used toward your degree if they are not in your major department.

## **Graduation, Degree Certification, and Commencement**

You graduate in a given semester if you have completed all degree requirements, including grade changes, before the first day of the next semester. When you have completed your degree requirements, the GSO can provide a degree certification letter upon request. You won't graduate until the end of the term, so your degree won't be on your official transcript until fourth week of the next term. Your diploma will be mailed to you about 90 days after the end of your graduation term. Confirm your commencement plans with the GSO at the beginning of the commencement term. If you want to march in commencement, you must have completed your degree and notified the GSO by April 15 or November 1, as appropriate. (These dates are subject to change.) The mailing of commencement information, in mid-March and early October, is triggered by your graduation date on BANNER (the administrative database), as updated by the GSO according to your submission of MEng, M, and D forms. Keep in touch! Commencement information is available on the Web.

You must remain enrolled until the end of the semester in which you complete all degree requirements

## **Health Insurance**

All University students are eligible to enroll in a group health insurance plan sponsored by the University. Graduate students supported by an assistantship or fellowship are required to enroll in the University graduate student plan unless they have comparable coverage from another provider. Supported students will receive a subsidy of approximately \$450–\$500 toward the cost of the insurance premium.

International students can use this group health insurance plan to provide the proof of medical health insurance required before you can pay your bill.

Brochures for the plan are available in the Center for International Education, the Office of Student Affairs, the Graduate School office, and from the Graduate Student Council.

## **Paperwork**

Please be sure your graduate school file contains an official final transcript from your previous college and your signed, witnessed, [Patent, Research, and Proprietary Rights form](#).

If your final transcripts do not include degree granted, then an official proof-of-degree is also required. Transcripts are not considered official unless they are sent directly to the Graduate School by the degree-granting institution or are received in a stamped, sealed envelope issued by the institution. MTU graduates do not have to request or pay for their transcripts—the GSO has access to them.

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Various forms are used to inform the GSO of your progress through your degree program. They also serve as a kind of work contract between you and your advisor/committee, confirming that you're on the right track. These forms (MEng for master of engineering, M for master of science, D for doctoral) should be filed in a timely fashion per instructions on each form and/or the timeline to your degree.

## **Registration/Scheduling**

Pay attention to the registration and payment dates listed in the academic calendar. Whether or not you get a bill for any given term, you are responsible for paying on time. Put the dates on your calendar and do a status check with the Cashier before the final date. You must confirm your enrollment by returning your signed bill on time. If you decide not to attend, please let us know.

Note: If you register late, you, not the sponsor who is supporting you, must pay the \$50 late registration fee.

## **Research**

Familiarize yourself with the research in progress on campus. It is a good idea to attend seminars and thesis defenses in your department and others. Announcements are usually in the campus newspaper or on the Electronic Display System (EDS)—monitors are located throughout campus. The Graduate Student Council e-mails a weekly seminar list to department representatives.

## **Residency Requirements—Academic**

Master's students must complete a minimum of one-half (provisional) of the course work in residence at MTU. The thesis credits must be supervised by the graduate faculty.

Doctoral students must spend at least four semesters on campus at MTU beyond attainment of a bachelor's degree, or two semesters beyond attainment of a master's degree, in a formal program of study and research under direct supervision of a given program/department.

Different residency requirements apply to partnered off-campus programs.

## **Transfer Credits**

Master's students may transfer in up to one-half (provisional) of the course work credits, but only with department and Graduate School approval. Along with other Michigan universities, Michigan Tech participates in the MIGS program. Courses taken at cooperating schools can be transferred "home," complete with grade. For more information, check with the Graduate School office.

## **Got a Life?**

The university experience is much more than classes, research, and cappuccino. Broaden your awareness of other subjects, styles, and cultures by attending the various lectures, symposia, concerts, dance performances, films, etc. as your schedule allows—and make sure it allows some time for these things.

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## ***Degree Requirements—General***

Attainment of a graduate degree demonstrates that a person has reached prescribed milestones in the pursuit of knowledge beyond the bachelor's degree. Satisfactory completion of the master's and doctoral degrees is characterized by a greater level of independent research compared to the undergraduate educational experience. In an age of accelerating development, it is important that degree requirements be completed in a timely manner so the student remains abreast of, and contributes to, new knowledge.

There are forms to mark significant milestones in pursuit of the degree. These forms, which must be completed and submitted to the GSO according to a schedule, are available on the Grad School Website "forms" link.

### **Continuous Enrollment Policy**

Graduate students must be enrolled every fall and spring semester until they complete their degrees. They must be enrolled for the term of their final oral examination. If a non-summer term is missed and a waiver of continuous enrollment was not granted by the Graduate School office, the student must pay the one-credit enrollment fee for each semester missed, and must apply for readmission before returning to active status.

In general, graduate students are not required to register for summer term in order to fulfill the continuous enrollment policy; however, those graduate students who have summer financial support or who are using University faculty or facilities must register for summer term.

### **Registration**

To be enrolled, students are required to register each semester during the dates specified in the [University Academic Calendar](#). Enrollment requires selecting classes, verifying course data, acquiring the combined billing statement, and making the applicable payment by the due date. Registration is validated when the billing statement is processed by the Cashiers' office.

While every effort is made to ensure that the Time Schedule Booklet is accurate at the time of printing, unforeseen circumstances or low enrollments may cause the cancellation of some section(s) or course(s). Michigan Tech also reserves the right to change the days, times, rooms, and/or instructors of section(s) or course(s) as deemed necessary.

**Registration Changes**—Within one week of the beginning of the semester and subject to the allowable maximum, students may make the following changes in their schedules: adding or dropping classes, changing credits on variable-credit courses, section changes, pass-fail versus letter-grade option changes, and audit versus letter-grade option changes. Courses dropped after the 5th day in most cases may not be replaced without additional tuition changes.

Students may drop courses through the end of the third week of a semester without a grade being reported. From the beginning of the fourth week through the end of the eighth week of a semester, courses dropped will be indicated by a grade of W (late drop) on a the transcript.

For information on withdrawal or readmission [click here](#).

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## **Credit Requirements**

### **Credit Definition**

Academic advancement by students is measured in terms of semester-hour credits or simply credits. One credit should average three hours of a student's time per week for one semester. Depending on course requirements, these three hours may all be spent in the classroom or laboratory or may be divided between home study and class or laboratory attendance. One hour in class and two hours in individual study is a typical division. Students should multiply the course credits by three to determine the demands the course will place on their time during a typical week of the semester. For example, in MA5524 Functional Analysis (a 3-credit course with no lab), one would expect to spend nine hours per week on the course (three hours in class and six hours out of class).

### **Graduate Credit Courses**

No course numbered below 3000 can be counted toward a graduate degree. Courses numbered in the 3000 and 4000 series are intended primarily for upper-division undergraduate students but are available to graduate students for graduate credit with their department's approval. Although courses numbered in the 5000 series are intended primarily for graduate students, they are also available to qualified senior students. Courses numbered in the 6000 series are available only to advanced graduate students.

### **Credit Loads: Minimum/Maximum Credits**

#### *Full-Time Students*

Master's level: 6 credits minimum

Doctoral level: 6 credits minimum

All graduate students using University services must be enrolled for at least one course or at least one credit of graduate research.

Graduate students supported by teaching, research, or administrative assistantships or by fellowships must be registered as full-time students and must complete a certain number of credit hours each term in which they receive support. In both master's and doctoral programs, research credits may, but need not, be included for the purpose of determining whether the minimum criteria have been met.

#### *Appointment Levels—Fall and Spring Semesters*

- Quarter-time (10 hours per week): 6-credit minimum
- Half-time (20 hours per week): 6-credit minimum
- Three-quarter time (30 hours per week): 6-credit minimum.

#### *Appointment Levels—Summer Session*

Summer enrollment requires a minimum registration of one course or one research credit for full-time status.

*Fellowship Students*—Unless the fellowship carries other requirements for determining eligibility, fellowship students must be enrolled full-time.

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## **Degree Certification**

### **Provisional Certification**

The Graduate School will issue a letter of Provisional Certification if requested by the student. The student must have completed all the requirements for an advanced degree, including depositing copies of the thesis, dissertation, or report in the Graduate School office.

### **Official Certification**

The Graduate School office authorizes and mails the diplomas within 90 days of the end of the term in which the student finishes. It is important to keep the Graduate School informed of current addresses. A replacement diploma costs \$35.

The Board of Control receives and approves the list of degree recipients at its next regular meeting after the end of the term. That meeting date is the conferral date for the degrees, but the effective date is the end of the term in which the student finishes.

## **Commencement Ceremony**

Commencement information is mailed to all eligible students about two months before the ceremony. To participate in the commencement exercises, the student must have completed all degree requirements at least three weeks before the ceremony. Students completing after that date and by the first day of the next semester will be certified for that semester and will be eligible to participate in the next commencement. Students who leave campus before commencement should keep the Graduate School office informed of their commencement plans and their current address.

Michigan Tech has commencement in December and May, at the end of fall and spring semesters, respectively. Usually the December commencement includes the preceding summer and current fall graduates, and spring commencement includes the fall and current spring graduates; however, a student can defer participation to a later commencement. The student's name will appear in only one commencement program, the commencement for which he or she is first eligible, or a later one if deferral is requested in a timely manner.

## **Partnered Off-campus Program Residency Requirements (Provisional)**

This option is the one under which our off-campus programs are currently operating. In all cases, these options are offered under the auspices of a written master agreement with a cooperating partner in industry, government, or the non-profit sector.

The heart of graduate study lies not only in the student-advisor mentoring relationship, but also in opportunities for students to work together and for the advisory committee to meet with the student. Remote options at both the master's and doctoral level are designed to ensure fidelity to these relationships and thus maintain the high standards of MTU graduate degrees. At the same time, we recognize the need for flexibility in providing access to our programs. Thus, while our partnered programs involve some time in residency on the MTU campus in Houghton, that time may be accumulated in a variety of ways. The public defense of theses, dissertations, reports, and projects must occur on campus. Currently all programs require the course work final examination and oral defense to occur on campus. Students in our off-campus programs may take up to 1/2 of the required course work credits from other universities provided the course plan is approved in advance of course registration.

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### **Master's Partnered Option (AP, BP, CP, and MEP)**

A distance option is available in some programs for students who are employees of cooperating industrial, government, and organization partners and who meet admissions requirements. Each agreement is site and program specific, particularly with regard to how the student-advisor relationship will be maintained, but all generally involve the following conditions:

- approval of the site facilities (laboratories, libraries, computer facilities, etc. as appropriate to the program)
- appointment of a qualified on-site co-advisor to adjunct graduate faculty status
- periodic visits to the MTU campus in Houghton at specific mileposts in the degree, e.g., orientation; proposal defense; study weeks; thesis, project, or coursework defense

Agreements may also include additional requirements, e.g., MTU faculty time on-site with the student, summer school residency, video-conferences for periodic reviews, etc. Master's students should expect to spend a minimum of 4-10 weeks in residence on the MTU campus in Houghton during the course of their degree. All residency weeks must be documented on the M-OC form.

### **Doctoral Partnered Programs**

A distance option is available in some programs for students who have already earned a master's degree; who are employees of cooperating industrial, government, and organization partners; and who meet admissions requirements. Each agreement is site and program specific, particularly with regard to how the student-advisor relationship will be maintained, but all generally involve the following conditions:

- approval of the site facilities (laboratories, libraries, computer facilities, etc. as appropriate to the program)
- appointment of a qualified on-site co-advisor to adjunct graduate faculty status
- all degree exams (qualifiers, preliminaries, comprehensives, and dissertation defense and oral examination) are conducted on the MTU campus. There is no exception to this. Repeated exams, if required, must also be taken on campus. Doctoral students are expected to spend a period of residency on campus at the time of each exam as detailed in specific program guidelines (generally 1-2 weeks). These visits must be documented on the D-OC form.
- additional periodic visits to the MTU campus in Houghton.
- MTU advisor will spend substantive time on-site at the student's research facility
- some remote programs require 1 or more semesters in residence on the MTU campus, which can be met by enrollment in the full (12-week) summer term.

Doctoral students should expect to spend a minimum of 6-15 weeks in residence on the MTU campus in Houghton during the course of their degree.

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## ***Master of Engineering Degree***

The Master of Engineering degree is intended to be a terminal professional degree where the candidate demonstrates advanced ability in course work and with advanced engineering design project, or practicum. The master of engineering student must do the following:

- choose an advisor and advisory committee
- file a preliminary Degree Schedule form
- complete a written and oral report on a practicum
- file a final Degree Schedule form
- fulfill the campus residency requirement
- finish the degree within the prescribed time limit
- file a successful practicum report form.

In addition to the Graduate School requirements, which are described below, individual departments may have higher standards. Students are expected to know their department's requirements.

*Grades*—All grades must be B (3.0 on a 4.0 scale) or better in the major subject area. The department chair can approve no more than 6 credits of BC (2.5) or C (2.0) in a cognate department. The student must maintain a cumulative GPA of 3.0 or better in all courses taken as a graduate student.

*Campus Residency Requirement*—A minimum of one-half of the course work credits must be taken in residence at MTU.

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

### **Advisor**

Initially the advisor may be the department's graduate coordinator, but as soon as possible, and by the end of the first semester in residence, a permanent advisor should be chosen. This MTU graduate faculty member advises the student on course selection and choice of practicum experience. The advisor is an important factor in the graduate student's timely and successful completion of his or her program of study.

### **Advisory Committee**

The Advisory Committee is nominated by the chair of the major department, usually in consultation with the advisor, and approved by the College of Engineering. At least two of the three examiners must be members of the graduate faculty and one of the graduate faculty members must be from outside the major department.

### **Degree Schedule**

The Proposed Degree Schedule and Work Plan form (MEng1), available from the College of

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Engineering and on the Grad School “forms” web page, is used to list all the courses that the student will use for the Master of Engineering degree. The completed form must be approved by the College of Engineering and the Graduate School office during the first semester of enrollment.

The Final Degree Schedule form (MEng2), available from the College of Engineering and on the Grad School “forms” web page, must be filed during the first week of the second term in residence. It lists all the courses applied to the Master of Engineering degree, gives the advisory committee membership, provides an abstract of the practicum, and is endorsed by the student, the advisor, the department chair, the associate dean of engineering, and the dean of the Graduate School.

Changes in the Final Degree Schedule—Any changes must be approved. The chair of the major department must send a memo to the dean of the Graduate School.

## Course Work

Courses taken must meet certain requirements, described below, and they must be approved by the advisor and the department chair. Courses taken while an undergraduate at Michigan Tech may be used for graduate degree credits if the Senior Rule form (available from the department secretary) has been appropriately filed. Courses taken while a post-grad may be used on the Degree Schedule with departmental approval. The minimum requirements are as follows:

- |                 |               |
|-----------------|---------------|
| • course work   | 26–28 credits |
| • practicum     | 2–4 credits   |
| • minimum total | 30 credits    |

Distribution of course work credit

- |                              |            |
|------------------------------|------------|
| • 5000–6000 series (minimum) | 12 credits |
| • 3000–4000 level (maximum)  | 14 credits |

*Master of Engineering Practicum*—The practicum is an advanced independent study for students in the master of engineering program. The student in consultation with the advisor develops and executes a project demonstrating capabilities in problem solving, communication, and decision making. The practicum can be completed on campus or at the site of a Michigan Tech corporate partner. Students must submit a written report and make an oral presentation related to their project to their Advisory Committee.

The successful on-campus oral presentation will be evaluated by the committee on the MEng3 form, Report on Practicum.

## Timeline to Degree—Master of Engineering

First reconcile this suggested chronology with your department's requirements. The sequence may not be the same as written here. When you consult your advisor for your degree schedule, take this timeline to the meeting so you and your advisor are in agreement on your plans.

The degree will be granted at the end of the semester in which all courses have been satisfactorily completed and forms MEng1, MEng2, and MEng3 have been submitted and approved.

### Date

#### \_\_\_\_\_ Enrolling for the first time

\_\_\_\_\_ • If you do not have a faculty advisor to help you choose courses, consult with Dr. Neil Hutzler, associate dean of engineering.

\_\_\_\_\_ • Make sure the GSO has official final transcripts showing proof of your previous degrees if they are not from Michigan Tech.

\_\_\_\_\_ • Fill out the Patent, Research, and Proprietary Rights form in your department office.

\_\_\_\_\_ • If your research involves animal subjects, human subjects, or recombinant DNA, you just obtain approval from the appropriate administrative review committee(s). Applications for approval(s) may be found on the Research Website. If you need further assistance, please contact the [Research Compliance Administrator](#) by phone 906-487-3403.

\_\_\_\_\_ • Inform the Office of Student Records and Registration of any changes in your status, address, student identification number, expected graduation date, etc.

\_\_\_\_\_ **MEng1, Proposed Degree Schedule and Work Plan\***—This form is due early in the first semester and is prepared in cooperation with your advisor. It establishes preliminary plans for your course work and nominates a committee to complete your advising and practicum report.

\_\_\_\_\_ **MEng2, Final Degree Schedule**—This form is due in the first week of your second term of enrollment. After you submit your Final Degree Schedule, you will receive a signed copy in return that includes Graduate School forms to help you finish your degree. All your grades in the courses used must be B or better in your major subject, and your cumulative GPA must be 3.0 or higher.

\_\_\_\_\_ Set up an appointment with your committee to report on your practicum.

\_\_\_\_\_ **MEng3, Report on Practicum**—This form is due when you have completed your practicum, including the oral presentation to your committee.

\_\_\_\_\_ **The Goal: Graduation**—no more than five calendar years after you started graduate school. Your graduation date is the end of the term in which you complete all degree requirements. Your transcript will not indicate your degree until about four weeks after the next term begins. Your diploma will be mailed to you about 90 days after the term ends if you have completed and submitted your Life After MTU form. You may request a degree certification letter as soon as your degree is completed.

\* All these forms can be sent to the GSO by your department's graduate secretary via campus mail. Copies of signed forms will be returned to you and the department. Be sure to keep a file of your paperwork.

## *Master of Science Degree*

The master's degree demonstrates advanced ability, usually in both course work and research. The master's student must complete the following:

- choose an advisor
- file a Degree Schedule form (M4)
- complete one of three option plans:
  - plan A—thesis and course work
  - plan B—report and course work\*
  - plan C—course work only\*
- complete an oral examination
- fulfill the campus residency requirement
- finish the degree within the prescribed time limit
- submit an approved document in plans A & B

*\* Plans B and C are not allowed by all departments.*

In addition to the Graduate School requirements, which are described below, individual departments may have higher standards. Students are expected to know their department's requirements.

*Grades*—All grades must be B (3.0 on a 4.0 scale) or better in the major subject area. The department chair can approve no more than 6 credits of BC (2.5) or C (2.0) in a cognate department. The student must maintain a cumulative grade point average of 3.0 or better in all courses taken as a graduate student in order to remain in good standing.

*Campus Residency Requirement*—A minimum of one-half (provisional) of the course work credits, i.e., non-research credits, must be taken in residence at MTU. Off-campus programs have comparable site-specific requirements.

*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.

### **Advisor**

Initially the advisor may be the department's graduate coordinator, but as soon as possible, and no later than the end of the first term in residence, a permanent advisor should be chosen. This MTU graduate faculty member advises the student on course selection and choice of research topic and supervises the research experience. The advisor is an important factor in the graduate student's timely and successful completion of the program of study.

## Degree Schedule

The Degree Schedule form (M4) is used to list all the courses that are to be applied to the degree requirements, including those yet to be taken. The completed M4 should be submitted in the term prior to the defense term. It must be approved before the defense is scheduled.

The courses listed on the M4 must meet certain requirements, described in each option below, and they must be approved by the advisor and the department chair. Courses taken while an undergraduate at MTU may be used for graduate degree credits if the Senior Rule form (available from the department secretary) has been appropriately filed. Courses taken while a post-grad may be used on the Degree Schedule with departmental approval.

*Changes in the Degree Schedule*—Any changes must be approved. The chair of the major department must send a memo to the dean of the Graduate School requesting changes.

## Options

For plans A or B, the scope of the research topic for the thesis or independent project should be defined in such a way that a full-time student could complete the requirements for a master's degree in twelve months or three semesters following the completion of course work by regularly scheduling graduate research credits.

**Plan A: Thesis Option**—This plan requires a research thesis prepared under the supervision of the advisor. The thesis describes a research investigation and its results. The minimum requirements are as follows:

- |                          |              |
|--------------------------|--------------|
| • course work ( minimum) | 20 credits   |
| • thesis research        | 6–10 credits |
| • minimum total          | 30 credits   |

Distribution of course work credit

- |                              |            |
|------------------------------|------------|
| • 5000–6000 series (minimum) | 12 credits |
| • 3000–4000 level (maximum)  | 12 credits |

The thesis must be prepared in a style appropriate to the discipline. After the defense, two approved copies of the thesis must be submitted to the Graduate School office for binding. These copies will be retained by the library, one as a permanent record copy and one as a loan copy. Additional copies can be submitted for binding as it is customary for the department and major advisor to also receive a copy of the bound thesis.

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**Plan B: Report Option**—This plan requires a report describing the results of an independent study project. Of the minimum total of 30 credits, at least 24 must be earned in course work other than the project.

- course work 24 credits
- report 2–6 credits
- minimum total 30 credits

Distribution of course work credit

- 5000–6000 series (minimum) 12 credits
- 3000–4000 level (maximum) 12 credits

After the defense, one copy of the report that is approved by the advisor must be filed in the Graduate School office.

**Plan C: Course Work Option**—This plan requires the minimum 30 credits be earned through course work.

Distribution of course work credit

- 5000–6000 series (minimum) 18 credits
- 3000–4000 level (maximum) 12 credits

## **Oral Examination**

Examination by and approval of a faculty committee is required for awarding a master's degree. This committee will examine the general professional knowledge, course work, and (in plans A and B) the written documents of each master's candidate. The defense is scheduled and the committee nominated via the Scheduling of Final Oral Examination form (M5), which must be in the Graduate School office two weeks prior to the defense date.

**Committee**—Must be nominated by the chair of the major department, usually in consultation with the advisor, and approved by the dean of the Graduate School. At least three of the four examiners must be members of the graduate faculty and one of the graduate faculty must be from outside the major department.

**Thesis or Report**—Distribute copies to the Examining Committee at least two weeks prior to the examination date.

**Defense**—Must be scheduled and the committee nominated via the Scheduling of Final Oral Examination form (M5). The committee's written evaluation must be filed on the Report on Oral Examination form (M6). The student must be enrolled to defend.

## Timeline to Degree—Master of Science

First reconcile this suggested chronology with your department's requirements. The sequence may not be the same as written here. When you consult your advisor for your degree schedule, take this timeline to the meeting so you and your advisor are in agreement on your plans.

### Date

#### \_\_\_\_\_ Enrolling for the first time

- \_\_\_\_\_ • Get into course work under the direction of your departmental graduate coordinator.
- \_\_\_\_\_ • Make sure the GSO has official final transcripts showing proof of your previous degrees (if they are not from MTU).
- \_\_\_\_\_ • Fill out Patent, Research, and Proprietary Rights form in your department office.
- \_\_\_\_\_ • Get a Social Security Number if you will be getting a GRA or GTA, or otherwise working.
- \_\_\_\_\_ • Start looking for a **faculty advisor** for research projects; she/he should be chosen **by the end of the second term** in residence—your department will have its own way of handling this.
- \_\_\_\_\_ • If your research involves animal subjects, human subjects, or recombinant DNA, you must obtain approval from the appropriate administrative review committee(s). Applications for approval(s) may be found on the Research web site. If you need further assistance, please contact the Research Compliance Administrator by phone 906-487-3403 or e-mail [jpolzien@mtu.edu](mailto:jpolzien@mtu.edu).
- \_\_\_\_\_ • Inform the Office of Student Records and Registration of any changes in your status, address, student identification number, expected graduation date, etc.
- \_\_\_\_\_ During the semester prior to your defense (or earlier), complete the **M4, Degree Schedule\*** in consultation with your advisor—if there are problems, you have a term in which to correct them. Because it is approved by your advisor/coordinator and your department chair, any changes must also have their approval. If credit transfers are necessary, use the Transfer Credits form.
- \_\_\_\_\_ At least two weeks prior to your defense, complete **M5, Schedule of Oral Examination**, in consultation with your whole committee. This names your four-member examining committee and schedules your oral examination. (Check departmental policy on choosing your committee.)
- \_\_\_\_\_ At least two weeks prior to your defense, distribute readable copies of the thesis/report to the examining committee.

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\_\_\_\_\_ **Oral Examination**—Faculty and students will be invited to hear at least your presentation. It is wise to attend a few of these early in your tenure at Tech. Some departments also require a couple of preliminary seminars during your research. The examination for the course work option varies with the programs allowing this option. Take your **M6, Report on Oral Examination**, to the exam for signatures. (Your advisor/department may retain your M6 for up to one week following the defense while you make corrections; research grades are not changed until the M6 is in the GSO.)

\_\_\_\_\_ **Submission of final document (Plan A & B)**—Make corrections as indicated by your committee. Get the new original signed. Plan B report: 1 copy to the GSO, bound in a sturdy ACCO or SMEAD binder or the hot-glued plastic binder available in the Campus Store. (Your advisor/department may want more copies.) Plan A thesis: The Graduate School requires 2 copies for the library, 1 with original signatures; your department/advisor may want more. Instructions for payment and library submissions are on the invoice you will receive when you defend. Electronic submission is possible but does not replace paper copies yet.

\_\_\_\_\_ **The Goal: Graduation**—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 GSO and your advisor are aware of your commencement plans at the **beginning** of the commencement semester.

\* All these forms can be sent to the GSO by your department's graduate secretary via campus mail. Copies of signed forms will be returned to you and the department. Be sure to keep a file of your paperwork.

## ***Doctoral Degree***

The doctor of philosophy degree is a research degree. It is awarded in recognition of demonstrated mastery of subject matter in a chosen field of study and demonstrated competence in the conduct of an individual research investigation that represents a significant contribution to the cumulative knowledge of the field. The program of study and research will be planned and supervised by an Advisory committee. Each candidate's course work and research topic must be approved by the advisory committee as meeting the standards generally associated with the doctoral degree. A minimum of 30 course and/or research credit hours beyond the MS degree (or its equivalent) or a minimum of 60 course and/or research credit hours beyond the bachelor's degree is required. The doctoral student must complete the following:

- file an Acceptance into the Doctorate Program form (D1)
- choose an advisory committee and chair and file a Recommend Advisor Committee form (D2)
- file a Preliminary Program of Study form (D3)
- complete the comprehensive exam and file a report on the Comprehensive Examination form (D4)
- file a Degree Schedule form (D5)
- develop and defend a dissertation plan and file an Approval of Dissertation Proposal form (D6)
- file a Scheduling of Final Oral Examination form (D7) and defend an approved dissertation in an oral exam
- file a Report on the Final Examination form (D8)

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- fulfill the campus residency requirement
- submit the corrected, approved dissertation and associated forms
- finish the degree within the prescribed time limit

In addition to the Graduate School requirements, which are described below, individual departments may have higher standards. Students are expected to know their department's requirements.

*Grades*—All grades must be B (3.0 on a 4.0 scale) or better in the major subject area. The department chair can approve no more than 6 credits of BC (2.5) or C (2.0) in a cognate department. The student must maintain a cumulative grade point average of 3.0 or better to remain in good standing.

*Campus Residency Requirement*—Doctoral students must spend at least four semesters, not necessarily continuous, which can include summer terms, on campus at MTU beyond attainment of a bachelor's degree or two semesters beyond attainment of a master's degree in a formal program of study and research under direct supervision of their major advisor. In special preapproved instances, this residency requirement may be waived.

*Time Limit*—Comprehensive examinations must be taken within five years of entry and two terms before the final oral defense, and all requirements must be completed within eight years from the time of a student's first enrollment in the doctoral program.

*Modern Language Requirement*—There is no University-wide language requirement for doctoral degrees. Individual departments or programs may require a foreign language. Each academic department or program is responsible for establishing standards and examination procedures where a foreign language is required. Doctoral students should consult with their advisory committee concerning departmental regulations.

## **Advisory Committee**

During the student's first semester of residence, an Advisory Committee will be chosen to assume responsibility for the direction of the student's educational program and to hold meetings as needed to fulfill this responsibility. The committee, consisting of at least three members of the graduate faculty with one member designated as chair, will be appointed by the chair of the major department or program with the approval of the dean of the Graduate School and filed on the D2 form.

**Preliminary Program of Study**—Initially the Advisory Committee will meet with the student and prepare a program of course study and research work that will lead to the doctoral degree. This program must be filed in the Graduate School office during the second term of residence on the Preliminary Program of Study form (D3).

Subsequent changes in the program can be made by the advisory committee and will appear on the final Degree Schedule form (D5). The Graduate School office must be notified in writing of any significant changes affecting the time required for obtaining the degree.

**Proficiency Examinations**—Exams may be scheduled as necessary by the department or program to either plan a student's study program or determine the advisability of a student's continuing in the doctoral program.

## **Comprehensive Examination**

A comprehensive examination will be given to determine the general knowledge appropriate to the student's program and the student's ability to use this knowledge. This examination will be a written examination, although it may be oral in part if recommended by the Advisory Committee, but it must be

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given no later than five years after enrollment. It is recommended that the comprehensive exam be given after about two years of doctoral study and following completion of all course work required by the Advisory Committee. The examination will be given after the applicant has completed any modern language requirement and at least two terms prior to scheduling the final oral examination.

The examination will be prepared and administered by the major department or program with the cooperation of the Advisory Committee. Satisfactory performance on the comprehensive examination will be regarded as an indication that no additional formal course work is needed, although the student may take additional course work. Any member of the graduate faculty may attend the oral examination as an observer.

**Final Degree Schedule**—Upon satisfactory completion of the comprehensive examination, a final Degree Schedule form (D5) must be filed in the Graduate School office and approved prior to scheduling a final oral examination. This Degree Schedule should include all course work taken since the last previous degree to be applied to the doctoral degree. It must be approved by the Advisory Committee as meeting the standards associated with the doctor of philosophy degree.

## Dissertation

The research study undertaken as part of the doctoral degree program will be presented in the form of a dissertation that can be made a permanent acquisition of the library, along with an expanded abstract, not exceeding 350 words. Any classified or proprietary material that cannot be made available to the public is not acceptable as a dissertation. Completing the dissertation includes approval of the dissertation proposal, preparing the dissertation according to guidelines, and filing the completed (and successfully defended) dissertation.

The dissertation will be written and prepared under the supervision of the chair of the Advisory Committee according to discipline-specific writing requirements. Publication guidelines are found in *Publishing Your Dissertation* (UMI Dissertations Publishing). The Graduate School Office sends this booklet to students when the final Degree Schedule (D5) has been received. A completed draft of the dissertation must be approved by the Advisory Committee two weeks prior to the final examination.

After the dissertation has been satisfactorily defended, recommended or other appropriate editorial changes in the dissertation should be made with the approval of the Advisory Committee chair.

The appropriate number of copies of the corrected version of the dissertation, one with the original signatures, must be submitted to the Graduate School Office. Two will be bound for placement in the J. R. Van Pelt Library. The third, accompanied by the required form, attachments, and payment, is for submission to UMI Dissertations Publishing for microfilming and inclusion in *Dissertation Abstracts International*. If the student prepares appropriately, the UMI submission can be done electronically.

## Oral Examination

At a public final oral examination, primarily concerning the research and doctoral dissertation, the candidate should justify the validity of the methods and conclusions contained in the dissertation and should be familiar with the import of the particular investigations reported in the dissertation relative to the larger body of existing knowledge. The examination may be given any time after a period of two academic terms following the successful completion of the comprehensive examination and upon completion of the dissertation in a satisfactory form. The student's examination results must be reported to the Graduate School office on the D8.

The Examining Committee will be appointed by the dean of the Graduate School in consultation with the department chair. The committee will consist of at least four members of the graduate faculty. At least one

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of these will be from a cognate department or program. For interdisciplinary programs, cognate should be interpreted to mean a department other than those departments represented in the program or area of concentration. Additional external examiners who are not graduate faculty may be appointed by a nomination memo to, and approval by, the dean.

The examination will be scheduled, by filing the Scheduling of Final Oral Examination form (D7) with the dean of the Graduate School, in consultation with the chair of the Advisory Committee. The date of the examination must be at least two weeks following the approval of the completed draft of the dissertation by the Advisory Committee. A copy of the completed dissertation draft must accompany the D7 when it is filed in the Graduate School office. Copies of the completed draft must be distributed to any new members of the Examining Committee at least two weeks prior to the scheduled examination date.

## Timeline to Degree—PhD

First reconcile this suggested chronology with your department's requirements. The sequence may not be the same as written here. Take this timeline to a meeting with your advisory committee to make sure your goals are consistent with their expectations.

### During the first semester of residence or soon thereafter

\_\_\_\_\_ **D1, Acceptance into the Doctoral Program\***—completed by your department's graduate program coordinator, perhaps after a preliminary exam.

\_\_\_\_\_ • Make sure the GSO has *official* final transcripts showing proof of your previous degrees (if not from MTU).

\_\_\_\_\_ • Get a Social Security Number if you will be a GRA or GTA, or otherwise working.

\_\_\_\_\_ • Fill out a Patent, Research, and Proprietary Rights form in your department office.

\_\_\_\_\_ • Inform the Office of Student Records and Registration of any changes in your status, address, student identification number, etc.

### During the second semester of residence

\_\_\_\_\_ **D2, Recommended Advisory Committee**—Your department chair/graduate program coordinator appoints a three-member advisory committee of graduate faculty members to meet with you and prepare a program of courses and research work. Any changes in the membership of this committee should be approved by the department chair and reported to the GSO. Arrange a meeting with your committee to work on D3 and plan your degree path.

\_\_\_\_\_ **D3, Preliminary Program of Study**—Traditionally, this work contract is a list of all courses you have completed since you received your BS and any additional courses your committee says you should take. Subsequent changes in course selections or anticipated completion date can be made on the D5. If credit transfers are necessary, use the Transfer Credits form.

\_\_\_\_\_ **Proficiency Examination**—if required by department

\_\_\_\_\_ **Modern Language Requirements**—if required by department

### As work goes on

\_\_\_\_\_ If your research involves animal subjects, human subjects, or recombinant DNA you must obtain approval from the appropriate administrative review committee(s). Applications for approval(s) may be found on the Research web site. If you need further assistance, please contact the [Research Compliance Administrator](#) by phone 906-487-3403.

\_\_\_\_\_ **At least 2 semesters prior to scheduling the final oral examination** and no more than five years after beginning your doctoral program, you will be given a written comprehensive exam (and perhaps an oral exam) after you have completed any modern language requirement. Satisfactory performance on the comprehensive exam usually indicates that no additional course work is needed, although you have the option of taking more.

\_\_\_\_\_ **D4, Report on the Comprehensive Examination**—Some departments hold this form until the

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oral section of the exam.

\_\_\_\_\_ **D5, Degree Schedule**—The GSO can start verifying your grades immediately. (This list is frequently identical to D3. If it is, make a copy of your D3, change the number to D5, and have your committee and department chair initial it.) Your copy will be returned attached to the University Microfilms booklet on preparing your dissertation for publication.

### **The Dissertation**

\_\_\_\_\_ **D6, Approval of Dissertation Proposal**—This should be a simple statement of your research goal and plan of attack. (This is sometimes the oral part of the comprehensive exam.)

\_\_\_\_\_ At least 6 weeks prior to your defense, send the dissertation draft to your advisory (three-member) committee.

\_\_\_\_\_ **D7, Scheduling of Dissertation Defense**—due in the GSO with a copy of your best dissertation draft at least two weeks before the defense date but after the examining committee has approved your draft and signed the back of the D7. The examining (defense) committee must be comprised of at least four graduate faculty members, including at least one from a cognate department. Non-MTU members of your committee must be preapproved by the dean of the Graduate School. Your copy of the signed form will be returned with instructions on how to complete your degree.

\_\_\_\_\_ **Dissertation Defense**—Take your **D8, Report on Dissertation Defense**, to the defense for signatures. Your advisor/department may hold the signed form for up to one week following the defense; research grades will not be changed until this form is in the GSO.

\_\_\_\_\_ **Submission of Dissertation**—After the defense, make corrections as directed and get the new original dissertation signed. Determine how many copies you need to make. The Graduate School requires 3 copies (2 for the library to bind and keep and 1 for microfilming if you are not submitting an electronic document), but you and your advisor/department may want more. Other details of completing your degree will be attached to your copy of the signed D7. You must take your dissertation invoice, UMI dissertation copy unless submitting to UMI electronically, UMI forms, and payment receipt to the GSO. You can usually receive a certification letter immediately if all your degree requirements are complete.

\_\_\_\_\_ **The Goal: Graduation**—no more than eight years after starting the doctoral program. Your transcript will indicate degree granted by the 4th week of the next semester. If you have left a valid address, your diploma will be mailed to you about 90 days after semester end.

\_\_\_\_\_ Be sure the GSO and your advisor are aware of your commencement plans at the beginning of the commencement semester.

\* All these forms can be sent by your advisor/department to the GSO via campus mail. Copies of signed forms will be returned to you and the department. Be sure to keep a file of all your paperwork.

## ***Instructions for Preparing Reports, Theses, and Dissertations***

Michigan Tech graduate students can secure global exposure of their work and master the skills needed to create substantive electronic documents by choosing to accompany the submission of the required paper copies of project reports, theses, and dissertations with a wholly electronically formatted copy. While traditional paper copies are still required, electronic submission on CD-ROM, zip discs, and regular 1.44 m floppy discs is supported and encouraged. Instructions are available [here](#).

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## Approvals

The candidate must provide copies of the document, prepared in an approved format, to members of his/her final Oral Examination Committee prior to the oral examination in accordance with Graduate School regulations. Corrections may be required by the examining committee. After any such corrections have been made, the final copy will be submitted to the candidate's advisor.

The candidate's advisor and department chair must approve the final document. Sample title and approval pages follow these instructions.

## Copyright

Use of the copyright notice is optional, though recommended. On the title or final page, "©Year Owner's Name" will protect your written work, even if the copyright is not registered. "Copyright" or "Copr." may be used instead of "©." Dissertation copyrights may be registered, for a fee, with the UMI form sent to you with your copy of your signed D5.

## Distribution Of Theses and Dissertations

Submit at least two copies of the approved thesis or dissertation to the GSO for binding, along with the completed invoice and proofs of payment for each copy to be bound. Payment can be in cash to an MTU cashier, a memo authorizing payment by a departmental or research account, or a combination of these payment methods. The invoice sent to you at the time of your defense has the details. The copies will be bound and distributed as follows:

Original	Library Archives
First Copy	Library Circulation (3rd floor)
Additional Copies	Student's Department

The additional copies will be distributed by the department according to the candidate's instructions. The department will eventually receive the unbound copy if one was submitted to the Graduate School for microfilming. In addition, the candidate must provide an unbound copy of the approved document to any member of their final Oral Examination Committee upon request.

## Distribution of Project Reports

Reports are similarly prepared and submitted. Project reports are not professionally bound, but one copy should be submitted in a sturdy binder. Title and signature pages should be similar to thesis samples on page 20 and 21.

## Copies for Submission

Copies should be clean and legible, and any graphic materials must be clear. Standard copying and printing methods are acceptable. If you use computer printouts to show data, they must also be clear.

## Format

When considering the initial format of the dissertation, the candidate should consult the pamphlet *Publishing Your Dissertation: How to Prepare Your Manuscript for Publication*. This pamphlet is sent to PhD students when they submit their D5. The PhD dissertation must be written in a format that is consistent with the suggestions contained in this pamphlet, and the master's thesis should generally

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conform to the suggestions made in this pamphlet as well.

In the case of lengthy documents, a double-sided and /or single-spaced format is acceptable. Double-sided printing must observe appropriate margins on the binding edge.

In addition to the general suggestions given in this pamphlet, the following format guidelines should be followed:

*Paper*—The thesis or dissertation must be printed on 8 1/2-by-11-inch white paper.

*Margins*—A margin of 1 1/2 inches must be maintained at the left (binding) side of each page; a margin of 1 inch should be maintained on each of the other three sides. Page numbers should be at least 1/2 inch from the sides of the page.

*Title and Approval Pages*—Samples of the title page and approval page for the master's thesis/report and PhD dissertation follow. These samples indicate an accepted format for these pages.

The name of the authorized doctoral program should appear on the title page for doctoral dissertations (for example: Biological Sciences, Engineering-Environmental, Mechanical Engineering-Engineering Mechanics, Forest Science, etc.). This name should also correspond to the field of study on the approval page. The approval page should immediately follow the title page. One copy should bear original signatures on the approval page.

*Style*—The candidate should consult style manuals recommended by his/her department or advisor or recommended by the editors of journals that publish articles closely related to the subject of their thesis or dissertation.

## **University Microfilms Agreement and Abstract**

If an ETD is not submitted, an unbound copy of the PhD dissertation must be submitted to the GSO. In either case, a copy of the abstract must be submitted with the UMI fee as noted on the invoice. The abstract, which is submitted for the purpose of publication in Dissertation Abstracts International, must have a title identical to the title page of the dissertation and must be 350 words or less. The research advisor's name must appear on either the title page or the abstract. It is recommended that the student keep a copy of the Agreement Form.\*

\* The Agreement Form is in the UMI booklet that is sent to you with your copy of your signed D5.

[Sample title and approval pages were removed. See the current *Bulletin*.]

## **Financial Assistance**

### **Graduate Student Support**

The application forms for admission to the Graduate School are also regarded as application forms for assistantships. All students admitted to the Graduate School are considered for these awards. In general, departments make awards in March and April for the ensuing academic year. Recipients of awards are notified by the department as soon as the awards are made. All departments with graduate programs support students through teaching assistantships. Positions associated with research grants or contracts are often available in some departments and research centers.

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Regular assistantship appointments are for half-time work (20 hours/week), but departments can divide appointments, resulting in three-quarter time, quarter-time, or other fractional work time (with proportional adjustments of the stipend). Students' work load assignments, including teaching preparation and grading of papers, should not exceed the level of their appointments.

Support includes stipend, tuition, and all fees except student-voted fees—for instance, the student union expansion and student activities fees. All supported students must be registered as full-time graduate students.

## **Fellowships**

Departments, schools and colleges, and the Graduate School award a variety of highly selective fellowships to incoming and continuing graduate students. Some of these are awarded by departments and may be available to master's as well as doctoral students.

The Graduate School awards a variety of fellowships through the Michigan Tech Fund, including finishing fellowships for doctoral students to assist with completion of the dissertation. Either the chair of the department or program or the student's advisor makes nominations for these fellowships to the dean of the Graduate School.

In addition, Michigan Tech students have been successful in obtaining external fellowships from granting agencies such as NASA and NSF. The Graduate School offers the Proposal Incentive Award program to encourage students to be proactive in seeking external funding.

*King-Chavez-Parks Scholarships and Fellowships*—Michigan's King-Chavez-Parks Future Faculty Fellowship Program targets African American, Latino, and Native American students, groups which remain underrepresented in higher education. The purpose of the King-Chavez-Parks Future Faculty Fellowship Program is to increase the pool of minority candidates pursuing faculty careers in the state of Michigan, or in a state with an official reciprocity agreement. Future Faculty Fellows are eligible to pursue a master's or doctoral degree at public universities in Michigan. If a fellow does not complete the degree, or does not secure a teaching position at a Michigan college or university or in a state with an official reciprocity agreement, the fellowship converts to a loan which the fellow repays to the state of Michigan. Awards are made to master's candidates in amounts up to \$15,000 and to doctoral candidates in amounts up to \$35,000 using criteria set forth by the contracts drawn and distributed by the King-Chavez-Parks Initiative.

*Michigan Indian Tuition Waiver (MITW) Program*— If you are enrolled in a federally recognized tribe and have been a resident of the state of Michigan for at least one year, you may apply to receive the Michigan Indian Tuition Waiver. This means that your tuition charges for attending graduate school at Michigan Technological University will be paid.

## **Teaching Assistantships (GTA, GTI)**

Teaching assistantships are awarded by the department requiring instructional services. The appointment is usually for the academic year of two semesters. Some opportunity exists for summer teaching assignments. The award includes a stipend plus payment of tuition and fees. All duties associated with a standard appointment are expected to total not more than twenty hours per week and may include teaching, grading, or otherwise helping professors with their teaching. Teaching assistants must be registered as full-time graduate students.

## **Research Assistantships (GRA, GA, GACS)**

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Research assistantships, usually associated with a specific research grant, contract, or internally supported research project, are awarded by the professor/department supervising the research activity. The appointment is usually for the academic year, but frequently includes the summer term. Time devoted to the research activity is expected to total twenty hours per week, though in cases where the research is related to the student's thesis or dissertation, additional time is expected to meet requirements for research credits in which the student is enrolled. Research assistants must be registered as full-time graduate students.

## **Administrative Assistantships (GADE, GADI)**

Administrative assistantships are awarded by the department to assist in their efforts to further develop graduate programs and enhance research. Students' duties may include, for instance, system administrator or journal editing responsibilities. The hours, stipend, and tuition support are the same as for a teaching assistant. Administrative assistants must be registered as full-time students.

## **Miscellaneous Awards**

Several other kinds of awards are available to Michigan Tech graduate students:

- Fall Poster Session awards
- Research travel awards in small amounts may be made by the Graduate School to assist students who need to be on location elsewhere for thesis or dissertation research and have no other source of funding.
- Graduate Student Council travel grants

The Graduate School provides funding for the Graduate School Council (GSC) Travel Grant program. GSC solicits applications and awards the grants each semester. Detailed information and applications are available from each department's GSC representative or via the Websites of the GSC and the Graduate School. Each term, following a drawing, the GSC notifies graduate students who will receive the travel grants via written memo. Procedures are sent with the memo. The students complete all travel-related paperwork with the assistance of their department coordinator. Forms are then submitted to the GSO for verification and approval.

## **External Support Opportunities**

MTU is a participant in the following consortia which provide financial and research support to students in the sciences and engineering.

### **National Physical Science Consortium**

The National Physical Science Consortium (NPSC) is a unique partnership between industry and higher education. Established in 1987, the NPSC is headquartered in Los Angeles. The NPSC has one primary objective: Increase the number of qualified U.S.-citizen Ph.D.'s in the physical sciences and related engineering fields, emphasizing women and historically underrepresented minorities. NPSC accomplishes this by awarding doctoral fellowships to outstanding students and by facilitating research and employment opportunities. Strengthening diversity among U.S. scientists and engineers is more than a worthy goal; it is an imperative. The United States has long led the world in advancing the physical sciences. But if we are to continue competing on a global scale, we must be able to train and recruit a diverse pool of qualified scientists.

Initially funded by the National Science Foundation, the Lawrence Livermore National Laboratory, and

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the U.S. Department of Energy, the NPSC is now self-sustaining through annual membership fees from employer members and a modest endowment. Since granting its first fellowship award to seven young scholars in 1989, the NPSC partnership has provided fellowships to nearly 300 aspiring scientists and engineers. Of these, nearly half are minorities and three-quarters are women. By helping to provide a continuous source of U.S.-born scientists, employers and universities can achieve diversity and balance in our nation's scientific community. In turn, the NPSC is helping today's promising young scientists - tomorrow's science leaders - to realize their dreams.

For more information about the NPSC and its programs, contact Marilyn Urion, assistant dean of the Graduate School, or visit the [NPSC's website](#).

### **Oak Ridge Associated Universities**

Since 1994, students and faculty of Michigan Technological University have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 85 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available [here](#).

For more information about ORAU and its programs, contact David D. Reed, Vice President for Research and ORAU Councilor for Michigan Technological University,

or visit the [ORAU homepage](#).

### **Co-ops and Internships**

Graduate students may seek placement in co-ops with corporations and service groups and receive academic credit as well as the co-op salary. The [Career Center](#) assists students looking for co-ops, internships, and employment following degree completion.

## ***Need-based Financial Aid***

To be considered for need-based financial aid, you must submit the [Free Application for Federal Student Assistance](#) (FAFSA) to the federal processor with Michigan Technological University (federal school code 002292) listed to receive the result. You have the option of applying over the [Internet](#), or using the paper form. To assure optimum processing, file the FAFSA by March 15. Awards will be determined prior to July 1.

Financial assistance is awarded for one academic year at a time. After January 1, you must reapply utilizing the FAFSA or Renewal FAFSA provided by the US Department of Education.

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For more information regarding financing opportunities available through the [Financial Aid Office](#).

## Loans

Loans are available to students who meet the scholastic and loan program requirements.

**Federal Stafford Loans**—Students may be eligible for a student loan from the William D. Ford Federal Direct Loan Program. The FAFSA or FAFSA Renewal form is the only application form needed.

**Federal Perkins Loans**—These loans are provided by federal and University funds. Students may borrow up to a cumulative maximum of \$20,000 as an undergraduate and up to \$40,000 as a graduate student, provided they demonstrate financial need. As long as the borrower is engaged in at least half-time study, there is no interest or repayment. Interest begins nine months after the borrower ceases to be at least a half-time student and may extend over a maximum period of ten years. Minimum payments are required. Deferment of repayment is permitted for certain kinds of federal and volunteer service.

## Work-Study Programs: Michigan and Federal

These programs provides financial assistance through employment on campus. Every effort is made to place students in jobs related to their skills, interests, and field of study. Work-study participants generally are employed ten hours per week. Money awarded for a work-study job will be paid through biweekly paychecks after the work has begun.

## Bureau of Indian Affairs Program

Financial assistance based on need is available to students who are enrolled Native American tribal members. Students should contact their tribal education office for application procedures.

## Financial Aid Policies

### Satisfactory Progress Policy

At Michigan Tech, in order to maintain consistency, the following policy is the minimum requirement for financial aid; however, there may be some types of aid (e.g., scholarships) with more-stringent requirements.

Graduate students receiving any kind of financial assistance are required to maintain, at the end of each term, a cumulative grade point average (GPA) of at least 3.0. Failure to do so will result in the student being placed on academic probation and may result in the loss of funding.

After receiving notification of probation, graduate students must meet with their graduate program director as soon as possible to plan a course of action for resolving the situation.

Federal financial aid regulations require that a student must make satisfactory progress to remain eligible for financial aid. Graduate student financial aid programs affected by this policy are the Federal Stafford Loan, Federal Perkins Loan, and Work-Study.

Credits earned at MTU by graduate students must be at least four times the number of full-time semesters at MTU. When full-time semesters at MTU exceed eight for MS students, fourteen for PhD students, federal financial aid is no longer available.

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In addition, each student must progress along the following schedule of credits earned as appropriate in order to be eligible for financial aid:

Semesters full-time at MTU	Master's cr earned at MTU	PhD cr. earned at MTU
1	4	4
1.5*	6	6
2	8	8
3	12	12
4	16	16
5	20	20
6	24	24
7	28	28
8	32	32
9	no aid	36
10	no aid	40
11	no aid	44
12	no aid	48
13	no aid	52
14	no aid	56
more than 14	no aid	no aid

\*half-time example

Credits earned include Progress grades (P). Audit grades (U or V) do not count as credits earned.

### **Eligibility Defined**

MS students' records of full-time semesters increase by one each semester in which they are enrolled for 6 or more credits at the end of the official add period. If an MS student is enrolled for 3–5 credits, the full-time semesters increase by one-half.

PhD students' records increase by one full-time semester each time they are enrolled for 6 or more credits at the end of the official add period. The full-time semesters increase by one-half when a PhD candidate is enrolled for 3–5 credits.

### **Application of Policy**

GPA is calculated using all courses that appear on the graduate transcript.

Students who do not meet the cumulative GPA requirement after any semester are not considered to be making satisfactory progress, and the affected financial aid for subsequent semesters will be cancelled. Students not meeting the schedule of credits earned after spring semester are not considered to be making satisfactory progress. Both GPA and credits earned requirements must be met for aid to be reinstated.

### **Appeals and Reinstatements**

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Because financial aid dollars are applied to the first billing each semester and the progress status is not determined until semester-end grades are processed, necessary adjustments will appear on a subsequent billing of the semester following a change in progress status.

If completion of temporary grades (I or X) or other record (transcript) changes warrant reinstatement, written notice from the Office of Student Records and Registration must be presented to the Financial Aid Office by the end of the semester following unsatisfactory progress.

Students not meeting the satisfactory progress requirements because of mitigating or extenuating circumstances may request reinstatement by a letter of appeal. Letters of appeal should be presented to the Financial Aid Office early in the first week of the semester following unsatisfactory progress. Full-time semesters are adjusted, when appropriate, if a student's written appeal is approved, thus allowing continued eligibility.

### **Financial Aid Refund/Repayment Policy**

Adjustment of Tuition/Fees—For students withdrawing from the University, a tuition adjustment may be required according to a schedule available in the Office of Student Records and Registration. The adjustment will appear on the student's subsequent billing statement. Non-tuition refunds will be prorated according to the week of withdrawal. Withdrawing students must repay any financial aid that exceeds the charges incurred for the term.

## ***Tuition and Fees***

### **Financial Obligations**

Having fulfilled all other requirements, a student is eligible for registration or graduation only if all financial obligations to the University have been met. Student Records and Registration, on notice from the Accounting Office, will withhold transcripts and grades, and deny registration to a student who owes money to the University. Scheduled classes will be dropped if the amount due is not cleared by the due date. Also, students with an outstanding balance will not be permitted to schedule classes.

### **Fees**

Tuition/Fees—All charges for tuition, fees (including computer access and individual course/lab fees), and room and board are payable each term and will be charged and due prior to the posted final payment date.

- Payments may be made after the Cashier's Office window has closed by using the drop box located in the main lobby of the Administration Building. Payments will be processed the next business day.
- Payment is declared void if a check is returned for insufficient funds. A \$35 tendering fee plus applicable late fees will be assessed.
- Authorized financial aid, except employment, will be credited against the balance due.
- A check with restrictive notations can be accepted only for the purpose noted.
- Courses taken for audit are charged the same fees as courses taken for credit.

Lab/Course and Computer-Access Fees—All enrolled MTU students are required to pay their academic departments a fee for basic computing. In addition, if required of the course, a student will be assessed a

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lab/course fee and will be liable for this fee if the course is not dropped by the fifth day of class. Co-op students, student teachers, and off-campus students may be exempt from the computer access fee.

Apartment Rent Payments—Daniell Heights rent payments are due on the first of each month and payable by the fifth of each month without a penalty. Bills are not issued. A late payment will be assessed per your contract.

Thesis and Dissertation Fees—An \$18 per copy fee is charged for the binding of theses and dissertations and is payable at the time of submission.

Dissertation Microfilming Fee—PhD candidates must have their dissertations microfilmed and entered in Dissertation Abstracts International. The fee is \$55 for either paper copy or ETD.

Inspection Trip Fee—A service charge is made for students required to take certain courses involving inspection trips.

### **Late Payment of Fees**

Students registering or validating billing statements after the posted final payment date are required to pay the amount due plus a \$50 late fee. This policy is for all fees included in the University's combined billing program. No student registering or paying fees late may be excused from paying the late registration fee, nor will the fee be refunded unless there are extreme, unusual circumstances. The bursar will determine eligibility for a waiver or refund at the discretion of that office.

### **Refunds of Tuition/Fees**

Students will be assessed tuition according to the number of credits for which they are registered on the fifth day of instruction. The adjustment will appear on the student's subsequent billing statement. Non-tuition refunds will be prorated according to the week of withdrawal. The bursar determines whether extraordinary circumstances warrant exceptions to the refund policy in individual cases.

Change of Credit Status—Refunds for enrolled students who change credit status downward or drop a course with a course/lab fee will have tuition and course/lab fees refunded according to the following schedule. Accelerated courses and summer term adjustments of tuition assessments are calculated on a pro rata basis.

Time of Status Change	Refund Percentage
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On or before 5th day of class	100%
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After 5th day of class	0%
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University Withdrawal—Students withdrawing from the University or dropping all courses will receive a refund according to the following schedule. Unpaid charges such as library fines, traffic fines, lab deposits, and other penalties (excluding housing deposits) shall be deducted from the refund.

Time of Withdrawal	Refund%
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1st week	90%
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2nd week	80%
3rd week	70%
4th week	60%
5th week	50%
6th week	40%
7th week or later	0%

Room and Board—Refunds of residence hall room-and-board charges will be prorated on the basis of the number of weeks used.

## Basic Expenses

The basic estimated expenses of a full-time graduate student living in a University residence hall for a two-semester year are shown below. When estimating annual expenses, students should also figure in travel and personal allowances. While the University reserves the right to change fee schedules and other student charges without advance notice, every effort is made to maintain high academic standards and adequate living facilities at the lowest possible cost to the student.

### Graduate Student Expense Budgets 2002-03

Resident (RES-GR/GREES)	One Semester	Two Semesters
Tuition (6–12 cr.) (\$531/credit)	\$3,186	\$6,372
Required Fees	406	813
Room & Board/Fee*	2,733	5,465
Lab & Course Fees	200	400
Books & Supplies	450	900
Personal & Travel	750	1,500
Total	\$7,725	\$15,450

Non-Resident (NR-GR)	One Semester	Two Semesters
Tuition (6–12 cr.) (\$1,091/credit)	\$6,544	\$13,088
Required Fees	406	813
Room & Board/Fee *	2,733	5,465
Lab & Course Fees	200	400
Books & Supplies	450	900
Personal & Travel	750	1,500
Total	\$11,083	\$22,166

Semester Dates	Fall	Spring	Summer
From	8/26/02	1/13/03	5/19/03
To	12/20/02	5/9/03	8/7/03
	17 wks	16 wks	Total

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*Room	\$1,309	\$1,232	\$2,541
Board	\$1,496	\$1,408	\$2,904
Social Fee	\$10	\$10	\$20

### Required Fees per Semester

SDC Support:	\$31
MUB Support:	\$37.10
Student Activity Fee:	\$44.30
Matriculation Fee:	\$25.50
MUB Expansion Fee:	\$22.50
Total per Semester:	\$160.40
Average Graduate Basic Computing Fee:	\$246

The University offers both an installment prepayment plan, whereby tuition, fees, and room and board are billed monthly with no service charge, and a deferred payment plan. Contact Accounts Receivable for further information: 906-487-2243.

### Repayment of Financial Aid

#### Return of Title IV Funds

Students who completely withdraw from all courses prior to completing more than 60 percent of a semester will have their eligibility for aid recalculated based on the percent of the semester completed. This policy shall apply to all students who withdraw, drop out, or are dismissed from the University and receive financial aid from Title IV funds.

The term "Title IV Funds" refers to the following Federal financial aid programs: Federal Direct Unsubsidized Loan, Federal Direct Subsidized Loan, and Federal Perkins Loan.

Title IV aid is earned in a prorated manner on a per diem basis up to and including the 60 percent point in the semester. Title IV funds and all other aid is viewed as 100 percent earned after that time.

The percentage of Title IV aid earned shall be calculated as follows:

$$\frac{\text{(Number of days completed by the student)}}{\text{(Total number of days in the semester)}} = \text{Percent of Title IV aid earned}$$

\*The total number of days in the semester includes weekends, but does not include any scheduled breaks of more than five days.

A student's withdrawal date is determined by the University as (1) the date the student began the University's withdrawal process or officially notified the Office of Records and Registration of intent to withdraw; or (2) the midpoint of the semester for a student who leaves without notifying the University; or (3) the student's last date of attendance at a documented academically related activity.

University's Portion to be Returned—The percentage of Title IV aid unearned (i.e., to be returned to the appropriate program) shall be 100 percent minus the percent earned. Any unearned aid to be returned by the University is the lesser of (1) the entire amount of unearned aid or (2) the total institutional charges multiplied by the percentage of unearned aid.

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Unearned Title IV aid shall be returned according to the following priority up to the amount received for the semester (1) Direct Unsubsidized Loan; (2) Direct Subsidized Loan; (3) Perkins Loan.

Student's Portion to be Returned—When the total amount of unearned aid is greater than the amount returned by the University from the student's account, the student is responsible for returning unearned aid to the appropriate program(s). The same priority as above would be used. Any loan funds that must be returned by the student will be repaid according to the terms of the promissory note.

### **Return of Non-Title IV Funds**

The portion of state, university and other assistance that must be returned will be calculated based on the particular program's return policy.

The student will be billed for any amount due to the University resulting from the return of Title IV and Non-Title IV funds.

## ***Academic and Conduct Policies***

All members of the University community—students, faculty, staff, and administrative officers—are jointly involved in maintaining a moral and social pattern in keeping with acceptable conduct as found among educated persons. Students are expected to exhibit behavior which is indicative of good citizenship and to accept personal responsibility for their conduct that may be incongruent with University community standards. The University reserves the right to discipline any student for violation of any rule, ordinance, or law, or for any conduct damaging to the University, by such means as it considers suitable, including dismissal. Refer to the MTU Student Handbook, Student Rights and Responsibilities in the University Community document, and the Academic Integrity at MTU guide for more information on disciplinary procedures and specific policies.

### **Academic Integrity**

Academic integrity and honesty are central to a student's education. Ethical conduct in an academic context will be carried forward into a student's professional career. Academic honesty is essential to a community of scholars searching for and learning to seek the truth. Anything less than total commitment to honesty undermines the efforts of the entire academic community. Both students and faculty are responsible for insuring the academic integrity of the University.

In their academic work, students are expected to maintain personal academic integrity; treat all academic exercises as work to be conducted privately, unless otherwise instructed; ask faculty to clarify any aspects of permissible or expected cooperation on any assignment; and report any cheating activity. Please note that use of "scoop" material (old exams) is prohibited unless specifically authorized by the instructor.

Students found guilty of academic dishonesty can receive a sanction ranging from academic integrity warning to expulsion.

Definitions of academic dishonesty, including plagiarism, cheating, fabrication, and facilitating academic dishonesty, can be found in the Academic Integrity Policy booklet. Copies of the policy can be obtained from the Office of Student Affairs and from chairs of academic departments.

### **Admission/Withdrawal**

#### **Educational Opportunity**

Michigan Technological University is an equal opportunity educational institution/equal opportunity employer.

In keeping with its responsibilities as an educational institution, Michigan Technological University is committed to a policy of affording equal opportunity to all of its employees, students, applicants for employment, and applicants for admission without regard to race, religion, color, national origin, age, sex, sexual orientation, height, weight, or marital status. The University is also committed to a policy of educating and employing handicapped individuals and veterans without discrimination. These policies are to be implemented with due regard for the relative qualifications of all involved. The Affirmative Action Officer is Sherry Kauppi, 207 Administration Building, 906-487-3310.

#### **Application Procedure**

1. Obtain an application packet from the department of interest. Basic forms are available in the Graduate School and on the Graduate School Website. Materials and forms specific to individual departments are

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available only from those departments and departmental Websites.

2. Complete all application forms and return them to the Graduate School office, along with the nonrefundable application fee.

3. You may also apply on-line.

*Note:* The application fee is nonrefundable and cannot be credited toward tuition or any other fees. It must be paid in the form of a check or money order drawn on a United States institution or by an International Postal Money Order, payable in United States currency.

MTU graduate students applying for a different graduate program should fill out a new application for database purposes, but a second application fee is not necessary.

4. Request that the registrar of each college or university attended send official transcripts directly to the Graduate School. Transcripts of course work completed at Michigan Tech will be obtained by the Graduate School.

*Note: Transfer Credits (Provisional)*—A limited number of graduate course credits taken as a graduate student at other colleges or universities may be accepted for graduate credit at MTU. If these credits were taken before enrollment at MTU, a request for transfer credit must be made during the student's first term on campus. 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 major 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. In no case may the total of transfer credits exceed one-half of the non-research course credits.

5. The Graduate School recommends that applicants take the general test of the GRE exam. It is not required by the Graduate School; however, it is required or encouraged by most departments. In some departments it is required if you wish to be considered for financial assistance. Test results should be sent directly to the Graduate School by ETS. Our code number is 1464.

6. Applicants whose native language is not English must supply results of an English proficiency examination. Usually, the Test of English as a Foreign Language (TOEFL) is submitted. Although a TOEFL score of 550 (213 on the computer-based test) is recommended by the Graduate School, the applicant should also check with individual departments to determine if a higher TOEFL is required for admission to that department or program. Applicants who have completed a degree in the U.S. may have the TOEFL requirement waived.

7. Please read the departmental requirements carefully because procedures vary from department to department. Strong emphasis is placed on the statement of purpose. If reference letters are required, the application may not be reviewed by the Graduate Committee until the forms/letters have been received.

The Graduate School does not have application deadlines; however, some departments do have deadlines and they should be consulted regarding dates.

## **Admission Requirements**

To be considered for admission to the Graduate School as a regular student, the applicant must be

- the recipient of a bachelor's degree or its equivalent from an accredited institution,

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- adequately prepared for advanced study in the chosen field of specialization as demonstrated by the previous program of study and the scholastic record, and
- recommended for admission by the head of the program or concentration.

*Alumni*—Those who were Michigan residents as MTU undergraduates will be admitted as residents for tuition purposes regardless of current address.

*Employee Admission*—Any University employee may enroll in any graduate course, if properly qualified, subject to the approval of the appropriate supervisor.

*Undergraduate Enrollment in Graduate Courses: Senior Rule*—An MTU senior with a satisfactory undergraduate record may apply for permission to take courses for graduate credit while completing the bachelor's degree requirements. The forms are available in department offices and in the Graduate School office. Permission to take classes should be obtained from the chair of the major undergraduate department, the chair of the prospective graduate department, and the dean of the Graduate School. A student so enrolled and carrying 6 credits or more in 5000- or 6000-level courses may carry no more than 16 credits of course work per semester.

*Note:* After the application has been approved, senior rule students may elect to have these credits appear on their graduate transcripts and be applied toward an advanced degree. In that case, these credits will not be used to calculate the undergraduate GPA. This decision is irrevocable and must be made prior to the awarding of the undergraduate degree. The student will still have to officially apply for admission to the Graduate School. These courses may be used on the graduate degree schedule provided the courses are approved by the chair of the major department and, eventually, the advisor.

## **Withdrawal**

Students who withdraw from the University must obtain a withdrawal card from the Office of Student Records and Registration and obtain the required signatures as indicated.

## **Readmission**

Any University graduate student whose enrollment is interrupted for one or more non-summer semesters or who has been dismissed or requested to withdraw must obtain permission from the dean of the Graduate School to re-enter. Permission should be requested in writing and well in advance of the beginning of the term in which the student wishes to resume his or her degree program. If a student gets a waiver of continuous enrollment before leaving, readmission is much easier.

The student's letter of request is to be sent to the dean of the Graduate School by way of and with the approval of the major advisor and the chair of the major department. This letter should (a) list the dates of past enrollment, (b) indicate the semester for which reenrollment is requested, (c) give a brief chronological account of activities since last attending MTU, and (d) describe the strategy by which the student plans to complete the degree in a timely fashion.

## **Computer Use Policy**

MTU considers access to computer resources to be a privilege granted on the condition that each member of the University Community uses these resources responsibly, and in accord with professional and university standards. This section describes MTU's computer resources, the responsibilities assumed by users of the system, the services provided to support and assist users, and professional and university standards that must be observed.

## **Use of Computers and Networks**

Computer and network facilities are provided for educational, research and administrative use. All access and use of University computing resources and services is presumed to be consistent with University rules and regulations, including University personnel policies, faculty and student codes of conduct and departmental policies and procedures. All use is also subject to the University's Conflict of Interest and Intellectual Property policy and procedure. Use of Michigan Technological University's computers and networks for non-MTU-related business purposes or personal gain without authorization is prohibited.

Individuals who are provided access to MTU's computer facilities and to the campus-wide communication network assume responsibility for appropriate use of these resources. The University expects individuals to be responsible in the use of computers and networks. Those who use wide-area networks (such as the Internet) to communicate with others or to connect to computers at other institutions are expected to abide by the rules of the remote systems and networks as well as those for MTU's systems. In addition to being a violation of University rules, certain computer misconduct is prohibited under Michigan Laws. Act 53 of the Public Acts of 1979 of the State of Michigan (as amended by Act 326 of 1996), states "An act to prohibit access to computers, computer systems, and computer networks for certain fraudulent purposes; to prohibit intentional and unauthorized access, alteration, damage, and destruction of computers, computer systems, computer networks, computer software programs, and data; and to prescribe penalties." In addition, individuals may be held responsible for misuse which occurs by allowing their account to be accessed by a third party.

Individuals must consult their department System Administrator or other designated individual prior to any activity that might threaten the security or performance of University computers and networks. Failure to do so may result in disciplinary action. An individual who may have unintentionally or inadvertently participated in or caused such an event, must notify the System Administrator as soon as possible.

## **Use of Facilities**

MTU computer and network facilities have tangible value. Consequently, attempts to circumvent accounting systems or to use the computer accounts of others will be treated as forms of attempted theft.

## **Dismissal (Academic) Procedure**

If for any reason the faculty concludes that a student is not meeting the expected standards, the dean of the Graduate School, on the advice of the student's Advisory Committee and the department chair, may require the student to withdraw. This procedure will be followed:

1. The Advisory Committee meets with the student and provides the student with the reasons which, in their professional judgment, indicate that the course work or research work has not been satisfactory and that completion of the degree program is not likely. The student is given the opportunity to reply orally or in writing. The committee evaluates the student's reply and subsequently forwards a written recommendation to the department chair; copy goes to the student.
2. The department chair evaluates the Advisory Committee's recommendation and discusses the recommendation with the student. If the chair agrees with the recommendation and is satisfied that the student understands the basis for the recommendation and has had an opportunity to reply, a letter recommending dismissal is sent to the dean of the Graduate School, together with supporting documentation.
3. If the dean of the Graduate School is satisfied that there is a basis for dismissal and that the student has been afforded due process, the dean writes a letter to the student on behalf of the University

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terminating the student's status in the Graduate School.

**Grievance Procedures Following Dismissal**—Following receipt of a letter of dismissal from the dean of the Graduate School, the student has two weeks to appeal the dismissal. If the student wishes to appeal, the student should write a letter to the dean explaining the specific reasons for reinstatement. The dean will review the case and notify the student of the disposition of the case. In general, reinstatement will be granted only in cases where either the intent of the dismissal procedure was not followed or where there are additional, extenuating circumstances that affected the student's performance and were unknown at the time of dismissal.

## **Freedom of Information Act and University Information**

Michigan Tech is committed to maintaining a free exchange of information throughout the University community, and it is our general practice to release most types of information immediately upon request.

In addition, as a publicly funded institution, Michigan Tech is subject to the provisions of the state and federal Freedom of Information Acts (FOIA). FOIA requires the University to provide copies of most administrative documents, with the exception of certain legal and personnel records, to anyone filing a FOIA request. If you wish to file a Freedom of Information Act request, or if you would like to view University documents, contact the Office of the President, 487-2200.

## **Grading Policies**

Grades are assigned in accordance with University procedures. A grade of A, AB, or B must be obtained in each course used for credit toward a graduate degree with the exception that a total of 6 credits taken in cognate departments may carry a grade of BC or C, if approved by the chair of the major department. Graduate students must maintain a minimum 3.0 cumulative GPA in all course work taken while in graduate status.

### **Grading System and Grade Points**

The grades awarded by the University are

A	Excellent	4.00 grade points/credit
AB	Very good	3.50 grade points/credit
B	Good	3.00 grade points/credit
BC	Above average	2.50 grade points/credit
C	Average	2.00 grade points/credit
CD	Below average	1.50 grade points/credit
D	Inferior	1.00 grade points/credit
F	Failure	0.00 grade points/credit

I *Incomplete* (no grade points per credit)—Given only when a student is unable to complete a segment of the course because of circumstances beyond the student's control. It must be made up by the close of the next three semesters in residence or the incomplete grade becomes a failure (F). An I grade may be given only when approved in writing by the department chair. At graduation, an I grade is considered an F grade in computing the final GPA.

X *Condition* (no grade points per credit)—Given only when the student is at fault in failing to complete a segment of a course, but in the judgment of the instructor does not need to repeat the course.

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The X grade becomes a failure (F) if it is not made up within the next semester in residence. An X grade is computed into the GPA as an F.

M *Missing grade*—See instructor for clarification.

W *Late Drop* (no credit, no grade points)—From the beginning of the fourth week through the end of the eighth week of a term, course drops will be indicated by a grade of W on a student's transcript. For the remainder of a term, special late drops for graduate students (also indicated by a W) will only be issued by the dean of the Graduate School to correct errors in registration or events of catastrophic impact beyond a student's control, such as serious personal illness, serious accidents, emergency hospitalization, etc. ( See page 31.)

N *No grade* (no credit, no grade points)—Given when a student officially withdraws from the University after the regular drop period, passing the subject. In these cases, the registrar notifies the instructor that the student has withdrawn from the University and should receive an N grade if passing as of the date of withdrawal. The student's grade form will come to the instructor at the end of the course in the normal manner. The instructor will enter the appropriate grade, N or F, thus notifying the registrar.

P *Progress*—(no credit, no grade points) Should be used with 5000- or 6000-level research courses where projects carry over for more than one semester. May also be used for approved 3000- or 4000-level project courses.

Q *Inadequate Progress* (no credit, no grade points)—Should be used with 5000- or 6000-level research courses where projects carry over for more than one semester. May also be used for approved 3000- or 4000-level project courses.

Cr *Credit*—Given by advanced placement or examination.

S *Satisfactory* (credit given, no grade points)—Given for courses taken under the Pass-Fail option. A grade of S is given for performance equal to a letter grade of A, AB, B, BC, or C. Also indicates successful completion of research courses as evidenced by a successful defense of report, thesis, or dissertation.

E *Effort Unsatisfactory* (no credit, no grade points)—Given for courses taken under the Pass-Fail option. A grade of E is given for performance equal to a letter grade of CD, D, or F.

*Note: Audit Option*—Courses are typically taken for audit by students wishing to refamiliarize themselves with the material. A course taken as an audit may be taken at a later date for credit subject to the approval of the student's committee. Changes to audit option must be approved by the instructor.

V *Satisfactory audit* (no grade points or credit)—Given for courses taken under the audit option.

U *Unsatisfactory audit* (no grade points or credit)—Given for courses taken under the audit option.

## **Grade Reports/Transcripts**

*Semester-End Grades*—Students may access their semester-end grades through the [Office of Records and Registration Website](#). Access to the Website requires that the student provide both an ID number and a PIN number. The default PIN number is the 6-digit date of birth (mmddy). Grades are mailed to the student only upon request. Grades submitted to the Office of Student Records and Registration will be available by 8:00 am the following day.

*Disputed Grades*—A student having an error in a final course grade should contact the instructor and the

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registrar as soon as possible but no later than one month after the beginning of the next semester. Graded student work (exams, papers, homework, etc.) that has not been returned to the student should be retained by the instructor of record for at least one month after the beginning of the next semester or until existing disputes have been resolved.

*Official Transcripts*—Students or alumni may request official transcripts of their academic records from the Office of Student Records and Registration at no charge. Write a brief letter and fax it to 906-487-3343 or mail it to

Office of Student Records and Registration

Michigan Technological University

1400 Townsend Drive

Houghton, MI 49931-1295

The letter must include the exact address where each transcript should be sent and also contain your

- Full name and any former names
- Social Security Number

(for verification purposes only)

- Graduation date or the year you last attended MTU
- Address and telephone number
- Signature

*Unofficial Transcripts*—Available through the [Office of Student Records and Registration Website](#).

## **Intellectual Property and Trademark Licensing**

Corporate Services handles the licensing of MTU

- technologies (intellectual property)
- logos/trademarks

All graduate students are required by Board of Control policy to sign the MTU Proprietary Rights Agreement which establishes the ownership and disposition of intellectual property developed at MTU. The Office of Corporate Services provides assistance to inventors (including graduate student inventors) in the patenting, commercialization, and ultimate licensing of technologies developed at Michigan Tech. This assistance can involve direct support for patenting the technology and identification of potential commercialization partners or licensees. Invention Disclosures on any new technologies should be submitted to Corporate Services for review and possible patent application. In some cases, the rights will be returned to the inventor(s).

Corporate Services is also responsible for licensing the use of the MTU logo, which is a registered

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trademark. Any use of the MTU logo/trademark should first be approved by Corporate Services. The office maintains a list of licensed vendors who are authorized to use and reproduce the logo and a specification sheet of approved MTU logos. The office also handles the approval and licensing of new vendors and logo uses.

## Late Drop Request Instructions

You must have clearly extenuating circumstances that prohibit you from completing a course.

### Procedure

1. You must make a written request to the assistant dean of the Graduate School explaining what your circumstances are. After reviewing your request, the assistant dean will schedule an appointment to meet with you. Your written request must include your name, student identification number, and the course(s) you wish to drop.

Documentation is needed to substantiate your extenuating circumstance. It could include, for example, hospital or doctor receipts, the recommendation of the instructor of the course to be dropped, or the recommendation of a counselor from Counseling Services.

2. The day after you submit the written request, you must check back to learn the preliminary decision. If preliminary approval is given, you will receive two “Comment Slips”—one for the instructor of the class and one for your academic advisor.

3. The two comment slips must be returned to the Graduate School office. Some advisors/instructors will send them through campus mail; others will give them to you to return.

4. A final decision will be made after both comment slips are returned. If final approval is granted, a grade of “W” will appear on your grade report and transcript.

## Michigan Residency

The governing board at each university in Michigan has the authority to determine residency classification guidelines for admission and tuition purposes. Therefore, residency guidelines may vary from school to school and are independent of guidelines used by other state authorities to determine residency for purposes such as income and property tax liability, driving and voting.

A resident student is defined as a student domiciled in the State of Michigan. Dependent students must have the same residency as their parents. Independent students must have a physical presence in Michigan. Students who enroll in the University as nonresidents shall be so classified throughout their attendance as students unless residency reclassification is granted. Continuously enrolled nonresident students are not eligible for reclassification.

Students who believe their residency status has changed since their first enrollment may seek an evaluation of their status. Contact the Office of Student Records and Registration—487-2319. MTU alumni who were Michigan residents as undergraduates will retain that residency status for tuition purposes, regardless of current address.

## Scientific Misconduct Procedures

(For further information, see appendix F of the *Faculty Handbook*.)

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A major goal of the University is the furthering of research. The University upholds the scientific method in the conduct of research and is committed to the ethical conduct of research by its faculty, staff, and students.

A requirement of valid experimental observation or theoretical deduction is that the data and/or the conditions of obtaining the data and results can be verified, either by scrutiny of accurate records made at the time of experimentation or by repetition of the experiments or theoretical deduction.

Conduct inconsistent with the ethical conduct of research and which is considered scientific misconduct includes

1. Serious deviation from commonly accepted practices in the scientific community in proposing, conducting or reporting research, such as fabrication, plagiarism, falsification, deception, misrepresentation, or arbitrary selection of data;
2. Plagiarism or other appropriation of the work of another individual and presenting it as if it were one's own or without credit to the originator as is required by commonly accepted practices in the scientific community;
3. Material failure to comply with funding agency (federal, state, or private, etc.) requirements that uniquely relate to the conduct of the research; and
4. Retaliation against a person who, acting in good faith, has reported or provided information about suspected or alleged misconduct.

Faculty, staff, and students involved in scientific misconduct or false accusations of such conduct may be subject to University disciplinary procedures.

Possible University sanctions may include, but are not limited to, sending a letter of reprimand, setting special conditions on research activities, requiring special certifications or assurances of compliance, dismissal from degree programs and/or termination of employment. Any termination of employment shall occur in a manner consistent with existing applicable University policies on employment practices and academic tenure. The University may impose limitations or special reviews on the research activities or expenditures of affected individuals.

## **Sex Discrimination/Sexual Harassment**

Michigan Tech is committed to providing a fair and responsible environment for all of its students. Federal and state law prohibit discrimination in the use of educational facilities because of gender. Discriminatory treatment on the basis of one's status as cited in the Michigan Tech Equal Opportunity statement (see page 27) is prohibited. Title VII of the Civil Rights Act expressly prohibits sexual harassment. According to the MTU Sexual Harassment Policy, unwelcome sexual advances, requests for sexual favors, and other verbal and physical conduct of a sexual nature constitute sexual harassment when submission is either explicitly or implicitly a basis for academic advancement (e.g., for better grades, advancement in an academic program); or when submission or rejection affects the targeted person's employment (e.g., their evaluation, advancement, salary); or when the conduct has the purpose or effect of unreasonably interfering with the targeted person's work performance or learning environment; or when it creates an intimidating, hostile, or offensive work, academic, or residential living environment. For information on the University's sexual discrimination policies, see the *MTU Student Handbook*, "Rules" section (Code of Conduct, Sexual Harassment, Sexual Misconduct) or contact the Office of Affirmative Programs—487-3310.

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## **Student Records—Privacy and Access**

### **Public Student Information**

Michigan Technological University, Houghton, Michigan, hereby by public notice, and in order to comply with Section 438 of Public Law 93-380 designates the following student information as public or “directory information”: student name, local address, telephone number, hometown, e-mail address, date and place of birth, major field of study, participation in officially recognized activities and sports, weight and height of athletic team members, attendance dates, degrees and awards received, and most recent previous school attended.

**Withholding Disclosure**—Currently enrolled students may withhold disclosure of the above information, except name, under the Family Education Rights and Privacy Act of 1974, by submitting written notification to the Public Safety Office of Michigan Tech within two weeks of the start of classes for any semester. Such notification will prevent disclosure to non-University personnel.

**Records Request**—Requests for review of a record other than grades should be made in writing to the Graduate School office.

## **Substance Abuse**

The University encourages and promotes an environment where healthy life-style choices can be made every day by the students, faculty, and staff. Students may take advantage of the substance abuse assessment and counseling available to them through Counseling Services. MTU is committed to following the guidelines of the Drug-Free Schools and Community Act of 1988.

MTU recognizes that substance abuse has a detrimental effect on the University’s goals and objectives. It affects the intellectual, social, physical, and moral growth and development of the individual and the campus community. To reduce the effects that substance abuse promotes, Michigan Tech expects each person to accept the responsibility for their own choices and behavior. The University will intervene in any substance abuse-related behaviors that have a negative effect on any segment of the University community or violate any city, state, or federal law. See the *MTU Student Handbook*, “Rules” section for specific drug and alcohol policies.

## ***Campus Community—Campus Life***

### **Activities and Organizations**

Michigan Tech offers opportunities for students to participate in a multitude of activities. There are more than 200 registered student organizations on campus, which include media, governmental, cultural/ethnic, Greek, social, special interest, honorary, religious, service, leadership, professional, and club sports groups. A number of professional chapters are listed in the descriptions of the appropriate academic departments.

**Sigma Xi**—Sigma Xi, the Scientific Research Society of North America, is an honor society established to reward excellence in scientific research and to encourage a sense of companionship and cooperation among scientists in all fields. Graduate students may be elected to associate membership in this Society upon nomination, application, and recommendation by two members of the MTU Chapter of Sigma Xi. Calls for nominations are generally requested in March each year. The chapter usually has four to six meetings and technical presentations during the academic year, including the Annual Initiation Banquet.

**Graduate Student Council**—The Graduate Student Council (GSC) of Michigan Tech exists to serve graduate students through the following objectives:

- to represent the professional, intellectual, and academic concerns of graduate students to the various governing and policy-making bodies of the University;
- to inform graduate students of newly developing policies and procedures affecting them;
- to support and promote policies and events that foster cooperation and understanding among graduate students, with faculty, and with the University.

The council meets twice per month and hosts several social/seminar meetings per term. Departments elect representatives in proportion to their graduate enrollment. In addition, GSC publishes *Call of the Keweenaw*, an amusing yet practical guide for graduate students living in the local area.

### **Cultural Activities**

**MTU Ticket Offices**—Tickets for University-sponsored events can be purchased from the Central Ticket Office located in the Student Development Complex, the Tech Express office, or the Rozsa Center for the Performing Arts ticket office. Student and group discounts are available, as well as subscriptions for the MTU Great Events series. Tickets may be [purchased online](#).

**Arts Activities**—All University music and theater activities offered through the Fine Arts Department are open to student participation. Most activities require an audition for membership or casting. Musical organizations at Michigan Tech include three choral groups, two bands, three jazz bands, and a symphony orchestra. Theater activities include several main-stage productions each season and an improvisational comedy troupe.

**Art Exhibits**—Students, faculty, and staff can exhibit their artworks at juried shows at the Copper Country Community Arts Gallery in Hancock, at the Copper Country Gallery Exhibition, and at the Tech Arts Festival, a non-juried competition, sponsored by the Memorial Union Board each April. In addition to the art competition, TAF features a week-long schedule of arts-related events, including performances, films, and workshops.

**Cultural Events**—The University Cultural Enrichment (UCE) office publishes an annual [Great Events](#)

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Series Calendar detailing all performances and public lectures on campus. UCE coordinates and administers the activities of the three major campus programming boards responsible for providing a broad spectrum of cultural activities, including national and international theatre and dance touring companies, chamber orchestras and other musical ensembles, performing artists from a variety of disciplines, and lectures by leading figures in politics, technology, science, and the humanities: Student Entertainment Board, the Memorial Union Board (specifically Tech Arts Festival), and the Committee for Campus Enrichment.

**Film**—The MTU Film Board, a student group, offers a wide variety of general release movies on campus. The cities of Houghton and Hancock have three movie theaters offering nine film screens. Classic film theaters in Calumet and Laurium offer dinner/discussion with movie showings.

## **Athletics**

**Athletic Facilities**—The University owns and operates multiple athletic facilities and recreation areas for the benefit of its students, faculty, and staff. Facilities include the Student Development Complex, the Gates Tennis Center, and numerous other indoor and outdoor facilities, both on and off campus, for team sports, skiing, golf, tennis, and bowling.

The Student Development Complex (SDC) is a 235,000 square-foot, indoor sports arena located on the Michigan Tech campus. Students may use the facilities free of charge. The SDC features the following:

- weight room with Hammer equipment
- racquetball and squash courts
- basketball and volleyball courts
- running track
- swimming pool (8-lane, 25-yard)
- diving pool
- gymnasium
- dance room
- gymnastics room
- rifle range
- ice arena
- locker rooms with showers and saunas
- sports equipment rentals
- University Images (MTU apparel)

**Gates Tennis Center**, also located near the SDC, features the following:

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- tennis courts, indoor (4 with a minimal fee)
- ball machine
- locker rooms with showers
- pro shop for racquet stringing and repairs

**Other facilities** (on and off campus)

- bowling alley (6 lane) in the Memorial Union Building
- golf course (18-hole), Portage Lake Golf Course south of Houghton
- downhill ski area at Mont Ripley in Hancock
- cross-country ski trails (19 k ) near the SDC
- tennis courts, outdoors
- play/practice areas
- softball fields
- football/track stadium

**Intercollegiate Athletics**—Michigan Tech has a thirteen-sport intercollegiate athletic program, highlighted by its Division I men's ice hockey team, a program that has captured three national championships. Other men's programs include football, basketball, cross country, track and field, tennis, and nordic skiing. A strong women's program, one which has witnessed eight NCAA tournament appearances in basketball in the 1990s and five in volleyball, also includes programs in cross country, tennis, nordic skiing, and track and field.

**Intramural-Recreational Sports Services**—The Department of Physical Education, through its Intramural-Recreational Sports Services Office, offers competition in more than thirty different intramural events—from badminton to water polo—for Michigan Tech's students, faculty, and staff. Stop by the Intramural Office, Room 202, student Development Complex for IM handouts and information.

## Living Accommodations

A variety of housing options is available to Michigan Tech graduate students, including University residence halls, University apartments, and off-campus housing. Based on the usual high demand for on-campus housing, it is a good idea to secure housing as early as possible. Check the [Residential Services homepage](#) for more information.

### University Residence Halls

Graduate students are not required to live on campus in the residence halls but certainly are welcome to do so. Priority for honoring hall and roommate preferences is based on the date your housing contract is received by Residential Services.

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MTU has three residence halls with their own dining facilities, study areas, television lounges, fitness room, game room, and laundry facility. Each room has been wired for cable TV and a high-speed computer connection (ResNet). Professional residence-life staff and student resident assistants help students make the most of their living and learning opportunities. Wadsworth Hall, the largest, houses 1,220 students; McNair Hall, 660; and Douglass Houghton Hall, 360.

Each hall offers a variety of lifestyle choices. Residents and guests in the chemical-free sections may not smoke or consume alcohol. Other areas are smoke-free. The Community Governed area is for students who are 21 and older or are entering their third year of college. Students living in this area will have the opportunity to assist in determining some of the policy guidelines, like quiet hours, through the development of a Community Living Agreement. The International House pairs students from different nations and provides an opportunity to learn more about other cultures.

### **MTU Apartments—Daniell Heights**

Graduate students with or without children may apply for one- or two-bedroom apartments located on campus. These economically priced apartments are close to main campus classrooms and athletic facilities. Placed throughout the complex are several children's play areas and school bus stops. The City of Houghton provides bus transportation to campus, to downtown Houghton, and elsewhere.

*Applications*—Apartment assignments are based on the date the application is received at the apartment office. University apartment applications and brochures can be obtained from the MTU Apartments-Daniell Heights, Michigan Technological University, 2001B Woodmar Drive, Houghton, MI 49931-1017; call 906-487-2727, or fax 906-487-2801. [Applications can also be downloaded.](#)

*Preschool*—A preschool nursery is conducted for a fee in the University Apartments Community Building.

### **Off-campus Housing**

Many graduate students live off campus in either Houghton or one of the surrounding communities, renting or purchasing homes, cabins, or apartments. The Undergraduate Student Government office maintains a list of [off-campus rentals](#) and makes copies available.

The local and student newspapers also list available off-campus housing—The Daily Mining Gazette, Houghton, MI 49931 (906-482-1500); The Lode, MTU, Houghton, MI 49931 (906-487-2404).

The Call of the Keweenaw, distributed to new students by the Graduate School office, is a guide to housing and other aspects of graduate student living at Michigan Tech.

## ***Campus Community—Support Services***

### **Office of Student Affairs**

The Office of Student Affairs provides support to students in co-curricular and extra-curricular areas, including academic counseling. Students may contact the office for clarification on issues of academic integrity or student conduct as well as for accommodation for physical or learning disabilities. The office makes referrals to the appropriate resources or offices for a variety of student issues and problems.

**Residence Life Staff**—Providing help to students who reside in University housing with adjustment, personal, or academic problems, residence-life staff also make referrals to appropriate resources or offices.

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## **Counseling Services**

Counseling Services assists students with social and personal/emotional issues that may interfere with the effective use of their talents at MTU. Professional counselors staff the Counseling Center, located on the main campus in the white house between Fisher Hall and Walker Arts and Humanities Center. Confidential individual and group services are available.

Counseling helps students and their significant others improve their feelings of well-being by helping develop decision-making skills, stress management skills, interpersonal communication skills, and self-awareness. Any concern a student may have, including depression, pregnancy, anxiety, loneliness, substance abuse, or relationship problems, can be discussed with a counselor.

The Myers-Briggs Type Indicator is administered and interpreted. Workshops are offered in the areas of time management, study skills, eating disorders, substance abuse, and self-defeating behaviors.

## **Health Services**

The local Houghton-Hancock-Calumet community includes two hospitals as well as convenient clinic locations near campus and in the surrounding area with a range of physicians and health care providers. The Houghton Community Health Center is located on campus adjacent to the Student Development Complex, with regular weekday and special Saturday hours. The Portage Medical Group, which operates the center, provides primary medical care for Michigan Tech students, their spouses, and their dependents on a fee-for-service basis. After-hours and hospital emergency care are available at Portage Health System in Hancock and Keweenaw Memorial Medical Center in Laurium.

Students insured under the MTU student health plan and their insured dependents may use any qualified and licensed health care provider appropriate for the loss or injury.

## **Center for International Education**

From the time of enrollment to the time of graduation, international students at Michigan Tech receive specialized assistance and support. The Center for International Education co-sponsors an orientation program for new students that includes information about registration procedures; immigration regulations; health insurance; banking, shopping, and community services; and many other matters. Students also receive a detailed handbook, which supplements orientation information, and a quarterly newsletter to keep them informed of immigration requirements and registration procedures and deadlines. Students are invited to visit the CIE for individual assistance at any time.

## **Child Care**

MTU and the Baraga-Houghton-Keweenaw Child Development Board have joined efforts to provide high-quality child-care facilities for Michigan Tech students, faculty, and staff. Care is available for children from 4 weeks to 4 years of age. For more information, call 906-482-3663 or 800-236-5657.

## **Educational Opportunity**

Educational Opportunity (EO) provides academic, professional, and personal educational opportunities for students. The EO office

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- directs programs focusing on topics that address the needs of precollege, women, minority, and nontraditional students;
- assists in the recruitment and retention of a diverse undergraduate and graduate student pool;
- coordinates conferences and institutes, summer session, and continuing education programs that benefit all Michigan Tech students;
- builds alliances with state and national organizations that provide graduate fellowships and research experiences for graduate and undergraduate students;
- coordinates the King-Chavez-Parks Future Faculty Program and the GEM (Graduate Education for Minorities) Program for Michigan Tech;
- hires and trains a large number of students, including graduate students, to work on or teach for a variety of academic and diversity projects.

## **Tax Issues for Graduate Students**

### **General Information for Supported Graduate Students, Scholars, and Fellows**

Generally, the funding you receive for tuition, fees, books, and required supplies and equipment is tax free. Although the remainder of your stipend is taxable, educational institutions are not required to report fellowship dollars to US residents or the IRS. For income tax purposes, your department assistant can issue a calendar-year statement of the amount of the fellowship you received.

The Tax Reform Act of 1997 includes some federal tax credits for education. See a tax specialist and IRS Publication 970 for more information on your taxes. Other IRS publications that you might find useful are

Pub. 4—Student's Guide to Federal Income Tax

Pub. 515—Withholding of Tax on Nonresident Aliens

Pub. 519—U.S. Tax Guide for Nonresident Aliens

Pub. 520—Scholarships and Fellowships

Pub. 596—Earned Income Credits

Pub. 901—U.S. Tax Treaties

Pub. 970—Tax Benefits for Higher Education

These may be downloaded from the [IRS Website](#).

Circumstances and situations differ for each student, and, as a result, some tax questions should be answered on a case-by-case basis.

For more information, contact Brenda Sutherland, tax accountant, Admin. 231, 487-3149.

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### **Graduate Teaching and Research Assistants**

Wages received for services as an employee are taxable and are subject to graduated withholding rates. University-paid tuition is nontaxable. You will receive a W-2 form by January 31.

### **International Students**

The United States currently has tax treaties with more than fifty countries. Some of these treaties may allow some additional nontaxable benefits. Also, since most international students are not eligible for the additional personal exemption or the standard deduction, the W-4 forms must be completed differently.

## *Campus Community—Facilities*

### Computing Facilities

MTU graduate students use computers and network services for a range of activities from the computation of assigned classroom problems to the design and solution of specialized research projects.

**Access to Facilities**—Access to computer labs and network services is coordinated through the individual departments.

**Cost of Facilities**—All academic departments charge laboratory fees for computer access; the costs vary depending on the type of equipment and software used. All students are guaranteed access to e-mail, printing, and the use of basic spreadsheet and word-processing software.

**Information Technology, Office of Information Technology (IT)** provides campus-wide services in the areas of educational technologies, distance education, distributed computing support, networking, system administration services, and administrative support. IT, located in the basement of the EERC building, supports MTU's academic and administrative computing requirements. IT provides faculty, staff, and students with the tools and resources they need to accomplish their computing goals and helps to ensure a positive and productive computing environment by carrying out research and development work aimed at making the computer an effective tool for problem solving.

**Educational Technology Services** provides instructional resources, media productions, satellite/videoconferencing, distance learning technologies and the Electronic Display System.

**Telecommunications Engineering/Telecommunications Customer Service** provides campus with communications services such as data networking, telephone service, voice mail, pager rentals, Apple sales, and cable TV.

**Distributed Computing Services** provides campus network and information services such as e-mail, World Wide Web, systems security, and directory technical support and coordination.

**System Administration Services (SAS)** offers low-cost, basic computer system administration services to University departments.

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Administrative Computing Services provides support for ongoing operations of the University administrative functions.

Data Solutions provides test scoring, page scanning, Elixir (forms), print form, surveys, and scan tools.

**Graduate Computer Facilities** All University departments and schools maintain labs of PCs, SUN Microsystem workstations, Macintoshes, or other specialized computational or visualization facilities. Some departments maintain dedicated graduate student facilities, while other departments maintain shared facilities for all department majors.

**Career Center** The University Career Center is designed to help all MTU students with career and employment decisions. It is located in the Harold Meese Center and is open 8:00 am–5:00 pm Monday–Fridays. Call 487-2313 for information. The services listed below are of greatest interest to graduate students.

**Computer Lab—UCC** maintains a computer lab for students to work on resumés, cover letters, and electronic resumés for a referral service database, as well as electronic sign-up for interview times.

**On-Campus Interviewing—**Use on-campus interviews as one of many strategies during your employment search. Graduate students who want to work in industry should visit the Career Center six to twelve months before completing their thesis or dissertation. Many corporations visit MTU looking specifically for candidates with graduate degrees. Employers usually want to interview students during the academic year in which they are graduating. Because the majority of interviews for the entire year occur in October, graduate students should register with the Career Center in the spring before the academic year in which they graduate or as soon as possible in the fall.

**Special Programs—**Corporate speakers, Career Day, and job fairs (on and off campus) are offered regularly. Seminars about resumé writing and interviewing help graduate students prepare corporate and government interviews. Individual consultation is also available to assist students with employment concerns. Contact the Career Center to request a special program.

**Career Resource Information—**The Career Center has corporate videotapes and literature, computerized resumé-writing programs, and federal government applications and information.

**Student Advisory Council—**The Career Center's Student Advisory Council meets regularly to advise the staff about programs, policies, and any issues which affect student career and employment concerns. Students interested in serving as a Graduate School representative should contact the Career Center. Council members sometimes have the opportunity to meet with corporate recruiters.

**Alumni Referral Service—**Graduate students who leave campus without finding employment may register with the Alumni Referral Service. Participants' resumés will be forwarded to interested employers free of charge for one year after completion of graduate studies and for a nominal fee thereafter.

J. R. Van Pelt Library

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Reference and Research Assistance,

Telephone: (906) 487-2507

E-mail: [refib@mtu.edu](mailto:refib@mtu.edu)

Website: <http://www.lib.mtu.edu>

## Collections

Centrally located, the J. Robert Van Pelt Library provides electronic and print information resources to support the instructional and research programs of the University. The print collection totals more than 800,000 volumes, including government documents. Approximately 3,000 serials and periodicals are received annually in printed formats. Web-based access is provided to over 100 databases, some of which include full-text articles from journals. Individual electronic journal titles are also accessible on the library's Website. *MTU Archives and Copper Country Historical Collections*—Houses historically significant University material, including faculty publications and files, and student theses and dissertations. It also houses materials on the social, economic, and political history of the Copper Country and western Upper Peninsula. *Government Documents/Maps Department*—A selective federal depository, housing publications and maps from such federal entities as the Energy Department, Environmental Protection Agency, Forest Service, Bureau of Mines, and Geological Survey. Also contains publications and maps from Michigan's Department of Natural Resources, Labor Department, and Attorney General's Office.

## Borrowing Privileges

Graduate students may borrow books for seventeen weeks. However, after three weeks, books may be recalled at the request of another patron. Bound and unbound periodicals may be borrowed for three days. Materials may be renewed three times. Books may be renewed by in person, by telephone, or via e-mail; periodicals must be renewed in person. Fines are assessed for overdue and lost materials. Contact the Circulation Desk (487-2508) or e-mail: [circlib@mtu.edu](mailto:circlib@mtu.edu).

## Interlibrary Loan and Document Delivery Services

Interlibrary loan and document delivery services provide access to materials not owned by the Van Pelt Library. Lending libraries and institutions establish the loan periods for these items. Contact the Interlibrary Loan Office (487-3207), e-mail: [ill@mtu.edu](mailto:ill@mtu.edu), or use library forms on the Website.

## Online Search Service

Online Search Service provides access to more than 1,000 commercial bibliographic and factual databases covering current and historical scholarship in virtually all subject areas. Contact the Reference Desk (487-2509) or use library forms on the Website.

## Getting Assistance

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*Instruction in Using Library Resources and Technologies*— Librarians can provide individuals, groups, and classes with customized instruction in the use of the library's print and electronic resources and technologies. Contact the Instruction Office (487-3041), e-mail: [instrlib@mtu.edu](mailto:instrlib@mtu.edu), or use library forms on the Website. *Reference and Research Assistance*—Contact the Reference Desk (487-2507), e-mail: [refib@mtu.edu](mailto:refib@mtu.edu), or use library forms on the Website.

## Mineral Museum

With 60,000 specimens, the [A.E. Seaman Mineral Museum](#) houses one of the premier mineralogical collections in North America and features the world's finest display of specimens from Michigan's historic Lake Superior Copper and Iron Mining Districts. The museum's scientifically valuable collection and outreach program complement University academic programs and provide research support for university, national, and international earth scientists. Added to the Seaman Mineral Museum's reputation at MTU is its designation as the official "Mineralogical Museum of Michigan" (State Res. 677). The museum serves the state by preserving its unique mineral specimen resources and by educating its citizens about the value of mineralogy and geology in general and specifically about Michigan. More than one-half of the collection has been organized to augment students' education and research in mineralogy and geology. The museum also contains mineral suites from selected mining districts throughout the world, as well as an exhibit of economically important minerals. Displays of ornamental stones and dimension stones of various kinds are included in the exhibit. The remainder of the museum is devoted to aesthetic arrangements of exceptionally well-crystallized minerals.

## Research and Sponsored Programs

Research and Sponsored Programs' primary mission is to administer research proposal activities, and negotiate grant and contract agreements with outside sponsors. Research and Sponsored Programs monitors potential funding sources (including external graduate fellowships) and establishes and maintains contact with funding sources. All proposals submitted to an outside sponsor to fund a project/program need to be submitted through the Research and Sponsored Programs office. Research Centers and Institutes Keweenaw Research Center

Jay Meldrum, director ([jmeldrum@mtu.edu](mailto:jmeldrum@mtu.edu); 906-487-3178; <http://www.mtukrc.org>)

The Keweenaw Research Center uses full-time staff and Michigan Tech faculty to provide engineering solutions to government and industry. KRC provides laboratory-based evaluation, computer-based modeling and analysis, vehicle testing and evaluation, and snow research. KRC's staff includes engineers and scientists. Contracts vary from large vehicle noise-vibration harshness work and dynamic simulation to snowmobile safety study and Antarctica research expeditions. The center includes an extensive all-season test course.

Remote Sensing Institute Bill Rose, director ([raman@mtu.edu](mailto:raman@mtu.edu); 906-487-2367)

Mission: Promote research and education in remote sensing and related areas through interdisciplinary course work and programs, developing funding for equipment and research, and providing interdisciplinary seminars and short courses.

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Carbon Technology Center Julie King, director ([jaking@mtu.edu](mailto:jaking@mtu.edu); 906-487-3106)

Mission: Develop fundamental and applied carbon materials technology. Emphasis include characterization and end-use applications.

Center for Advanced Manufacturing and Materials Processing Neil Hutzler ([hutzler@mtu.edu](mailto:hutzler@mtu.edu), 906-487-2005) and Jay Meldrum ([jmeldrum@mtu.edu](mailto:jmeldrum@mtu.edu), 906-487 3178), co-directors.

Mission: Provide the infrastructure for interdisciplinary research in advanced manufacturing and materials processing.

Center for Manufacturing Research Klaus Weinmann, director ([kjweinma@mtu.edu](mailto:kjweinma@mtu.edu); 906-487-2154)

Mission: Research in materials processing, automated manufacturing, metrology, and computer modeling of manufacturing processes. Facilities include modern sheet metal forming lab and an automated manufacturing cell.

Center for Mechanics of Material Instabilities and Manufacturing Process Elias Aifantis, director ([mom@mtu.edu](mailto:mom@mtu.edu); 906-487-2518)

Mission: The study of material instabilities and applications into manufacturing processes, nanotechnology, and surface engineering. One of the objectives is to establish and maintain continuous cooperation with other centers of excellence throughout the world.

Center for Scientific and Environmental Outreach Neil Hutzler, director ([hutzler@mtu.edu](mailto:hutzler@mtu.edu); 906-487-2005)

Mission: Provide objective information, educational programs, and technical expertise on environmental-related issues to promote informed local and regional decision-making.

Center for Technological Innovation, Leadership and Entrepreneurship Karol Pelc, director ([kipelc@mtu.edu](mailto:kipelc@mtu.edu); 906-487-2663)

Mission: CenTILE is charged with the responsibility of promoting interdisciplinary education and research at MTU. In addition, it will seek to develop cooperative initiatives across the campus aiming at advances in technological innovation, leadership, and entrepreneurship.

Engineering Research Center for Wireless Integrated Microsystems Robert Warrington, director ([row@mtu.edu](mailto:row@mtu.edu); 906-487-2005)

Mission: Integrating wireless technology and microelectronic systems. This center will be pioneering the frontiers of microelectronics, micromachines and wireless technology and plans to create miniature, low-cost microchip systems with medical and environmental applications to replace bulky and currently limiting technologies. miniature tools.

Environmental Engineering Center John Crittenden, director ([jcritt@mtu.edu](mailto:jcritt@mtu.edu); 906-487-2798)

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Mission: Facilitate interdisciplinary research and education in environmental science and engineering. Provides home for nondepartmental PhD in environmental engineering, Educating Engineers for the Environment project, and the National Research Center for Clean Industrial and Treatment Technologies.

Fluids Research Oriented Group (FROG) Robert Kolkka ([rwkolkka@mtu.edu](mailto:rwkolkka@mtu.edu); 906-487-2695) Faith Morrison ([fmorriso@mtu.edu](mailto:fmorriso@mtu.edu); 906-487-2050), co-directors

Mission: Focus on interdisciplinary research in fluid mechanics, including turbulence, non Newtonian flows, and heat and mass transfer.

Institute of Materials Processing Jim Hwang, director ([jhwang@mtu.edu](mailto:jhwang@mtu.edu); 906-487-2600; <http://www.imp.mtu.edu>)

Mission: The Institute of Materials Processing is a multi-discipline industry-oriented research and development center, focusing on materials, environmental, and mineral processing challenges. Areas of expertise include powder metallurgy, mineral processing, industrial waste recycling, polymeric materials, and material characterization. The staff includes full-time engineers and scientists.

Interdisciplinary Center for Advanced Propulsion Duane Abata, director ([duane@mtu.edu](mailto:duane@mtu.edu); 906-487-2151)

Mission: U.S. Department of Energy Center of Excellence focused on internal combustion engine education and research.

Keweenaw Interdisciplinary Transport Experiment in Superior (KITES) Sarah Green, director ([sgreen@mtu.edu](mailto:sgreen@mtu.edu); 906-487-3419)

Mission: Five-year project studying the Keweenaw Current in Lake Superior, including sampling, remote sensing, and modeling.

Lake States Forest Resource and Environmental Management Cooperative Dave Karnosky, director ([karnosky@mtu.edu](mailto:karnosky@mtu.edu); 906-487-2898)

Mission: Initiate and promote forestry research to benefit the northern regions of the U.S., particularly cold-climate research, forest site selection, larch improvement, managing forested wetlands, and northern hardwood management.

Lake Superior Ecosystem Research Center Charles Kerfoot, director ([wkerfoot@mtu.edu](mailto:wkerfoot@mtu.edu); 906-487-2769); Kurt Pregitzer, associate director ([kspregit@mtu.edu](mailto:kspregit@mtu.edu); 906-487-2396)

Mission: Interdisciplinary center to promote and strengthen ecological research, advocate an ecosystem perspective for studying aquatic and terrestrial portions of the Lake Superior watershed, and serve as a resource for basic information on watershed and lake properties.

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Michigan Tech Transportation Institute George Dewey, director ([gdewey@mtu.edu](mailto:gdewey@mtu.edu); 906-487-2522)

Mission: Conduct transportation and transportation materials research and outreach activities. Within the Transportation Center, there are four active programs: the Transportation Materials Research Center, the Local Area Technical Assistance Program, the Tribal Technical Assistance Program, and the Technology Development Group.

Phytotechnology Research Center Wilbur Campbell, director ([wcampbel@mtu.edu](mailto:wcampbel@mtu.edu); 906-487-2214)

Mission: Better understand plant metabolism and the interactions of plants with their environment and develop new varieties of plants and plant products that address specific problems faced by modern society.

Plant Biotechnology Research Center Vincent Chiang, director ([vchiang@mtu.edu](mailto:vchiang@mtu.edu); 906-487-2959)

Mission: Application-oriented basic research on genetic engineering of forest trees important to the paper, timber and wood-products industry. The focus is on a multidisciplinary, research based educational program in forest biotechnology, offering courses about molecular biology, genetics, tissue culture, and transformation of trees.

Power and Energy Research Center Dennis Wiitanen, director ([wiitanen@mtu.edu](mailto:wiitanen@mtu.edu); 906-487-2847)

Mission: Research and educate on environmental and deregulation issues facing the power industry, including public policy, economic, and social concerns.

## *Academic Programs*

### Degree Programs

Master of Engineering

Master of Science

Applied Science Education

Biological Sciences

Chemical Engineering

Chemistry

Civil Engineering

Computer Science

Electrical Engineering

Engineering Mechanics

Environmental Engineering

Environmental Engineering Science

Environmental Policy

Forestry

Geological Engineering

Geology

Geophysics

Industrial Archaeology

Mathematics

Materials Science and Engineering

Mechanical Engineering

Mineral Economics

Mining Engineering

Physics

Rhetoric and Technical Communication

Doctor of Philosophy

Biological Sciences

Chemical Engineering

Chemistry

Civil Engineering

Computer Science

Electrical Engineering

Engineering (non-departmental)

*-Computational Sciences and Engineering*

Environmental Engineering

Engineering Physics

Forest Science

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Forest Molecular Genetics and Biotechnology  
Geological Engineering  
Geology  
Mathematical Sciences  
Materials Science and Engineering  
Mechanical Engineering-Engineering Mechanics  
Mining Engineering  
Physics  
Rhetoric and Technical Communication

## *Academic Programs*

### Graduate Degree Programs

Graduate programs generally have sufficient flexibility to permit tailoring study plans to individual needs. The programs available at MTU are listed on this page. Graduate students wanting to also pursue a certificate should check with the GSO. Additional information is available on department Websites.

### Certificate Programs

Certificates can be obtained concurrently with an undergraduate or graduate degree or can be obtained by part-time students without enrolling in a degree program. All students must, however, comply with the procedures for admission to Michigan Tech.

Design Engineering—Contact the College of Engineering

Industrial Forestry Certificate—designed to give students a working knowledge of critical aspects of business and forestry. Contact the School of Business and Economics or the School of Forestry and Wood Products.

International Business Certificate—includes modern language, international affairs, and international business and economics. Contact the School of Business and Economics.

Media —Contact the Humanities Department

Mine Environmental Engineering Certificate

Through this curriculum, mining engineering students gain knowledge and develop skills necessary to solve problems in the area of environmental impacts of mining. Contact the Department of Geological and Mining Engineering Sciences.

Modern Languages, Literatures, and Area Study Certificate Programs and Proficiency Certificates

Certificates and advanced certificate are available in Modern Languages, Literatures, and Area Study (in French, German, or Spanish) to students who meet specified course requirements.

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Students who want an advanced certificate must first complete the Certificate in Modern Languages, Literatures, and Area Study. Contact the modern languages faculty in the Department of Humanities.

In addition, the following proficiency certificates are available: Certificat Pratique de la Chambre de Commerce de Paris—certifies French proficiency adequate for business; Zertifikat Deutsch\*—certifies German proficiency adequate for work; Zentrale Mittelstufenprüfung\*—certifies German proficiency adequate for university work; Prüfung Wirtschaftsdeutsch International\*—certifies German proficiency adequate for business. (\*Tests for these certificates are provided through the Goethe Institute and are recognized worldwide.)

Writing—contact the Department of Humanities.

#### Teacher Certification Program

Michigan Tech offers programs leading to Michigan Secondary School Teacher Certification with majors and minors in biology (clinical laboratory science), chemistry, computer science, earth science, social studies, English, mathematics, science, and physics. Students with undergraduate degrees combine a sequence of professional education courses with student teaching to get teacher certification at the secondary school level. Contact the Department of Education for specific requirements.

#### Center for International Education (CIE)

The Center for International Education provides service-oriented leadership in support of Michigan Tech's goals and priorities in the areas of international programming, education exchange, and student and faculty services. More than 575 students from seventy-two countries are enrolled at MTU. In addition to sponsoring many international events on campus, CIE offers students opportunities to study, conduct research, and/or intern abroad as part of their educational experience.

#### ESL Programs

The Center of International Education offers ESL training and support for both undergraduate and graduate international students.

#### Japan Center for Michigan Universities (JCMU)

JCMU is a unique consortium of fifteen state of Michigan universities that allows students to spend a summer, a semester, or an academic year at the Center in Hikone, Japan. Students study Japanese language and culture intensively and may take such elective courses as Japanese business, history, religion, etc. No prior knowledge of Japanese is required, and scholarships are available.

#### Council on International Educational Exchange (CIEE)

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Through CIEE, students can earn university credit by participating in semester, academic year, and summer programs. Financial aid does apply to most international study programs.

### International Exchanges

MTU maintains cooperative agreements with several institutions of higher learning to expand international educational cooperation through exchanges of students, faculty, and administrators. Programs are available in over twenty countries around the world.

### International Research and Exchanges Board

Through IREX, graduate students and faculty may participate in research-related exchanges in the newly independent states of the former Soviet Union.

### Bahamian Field Station

By agreement with the Bahamian Field Station, students of biological sciences may participate in field work on San Salvador Island in the Bahamas.

### Master's International Program (MIP)

Students may earn an MS in Forestry, Civil Engineering, or Environmental Engineering in conjunction with the US Peace Corps, combining academic study with supervised, practical field experience and research. After completing two semesters of on-campus academic work, students serve two years with the US Peace Corps. Students return to campus for one additional semester. Contact the Department of Civil and Environmental Engineering or the School of Forestry and Wood Products for additional information.

### Summer Internships

In conjunction with the German Academic Exchange Service and the American-Scandinavian Foundation, MTU coordinates summer internships that allow students to work in their fields in Germany and in the Scandinavian countries.

### International Scholarships, Fellowships, and Research Funding

CIE provides detailed information on the many types of funding available to all students and faculty who wish to pursue their learning abroad.

### Extended University Programs

Michigan Tech promotes knowledge enrichment and personal development through credit courses and programs, as well as noncredit courses and seminars offered via distance delivery technologies to individuals and corporate sponsors. The Office of Extended University Programs facilitates the organization and delivery of MTU distance learning programs. Currently, all distance programs are site specific. The BSE, MSME, and PhD degree programs are only available through corporate sponsorship. Delivery methods include satellite, videotape, videoconferencing, and videostreaming.

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Michigan Tech is linked with several consortia that provide distance education courses to major industries and to students throughout the world. These include the Association for Media-Based Continuing Education for Engineers (AMCEE), National Technological University (NTU), and the Michigan Virtual University.

For more information, contact Extended University Programs at 1-800-405-4678 or visit us at <<http://www.admin.mtu.edu/eup>>. E-mail inquiries should be made to [disted@mtu.edu](mailto:disted@mtu.edu).

### **US Army Reserve Officers Training Program (ROTC)**

The Department of Military Science offers instruction in leadership, management, and general military subjects. The U.S. Army provides two-year Army scholarship opportunities to graduate students. Students must attend a five week summer training session, for which they receive a \$750.00 stipend and 10–12 credit hours for the first two years of Army ROTC at Michigan Tech. Two-year scholarships are awarded upon the successful completion of the summer training. Students must have a 2.5 GPA, meet all medical and physical requirements, meet an age requirement of 25 years old or less by June 30 of the year of completion of degree and commissioning. Veterans are given waivers up to 30 years of age. Three Michigan Tech students have been awarded these two-year scholarships.

### **Graduate Faculty (separate pdf file)**

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## *University Administration*

### **Academic Administration**

#### **College of Sciences and Arts**

Maximilian J. Seel, Dean

### **Department Chairs**

#### *Biological Sciences*

John H. Adler

#### *Chemistry*

Pushpalatha P. N. Murthy

#### *Computer Science*

Linda M. Ott

#### *Education*

Bradley H. Baltensperger

#### *Fine Arts*

Milton L. Olsson

#### *Humanities*

Robert R. Johnson

#### *Mathematical Sciences*

Alphonse H. Baartmans

#### *Physical Education*

Cheryl A. DePuydt

#### *Physics*

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Ravindra Pandey

***Reserve Officers' Training Corps***

Anna L. Taylor, U.S. Air Force

George W. Wheelock, U.S. Army

***Social Sciences***

Bruce E. Seely

**School of Business and Economics**

Keith Lantz, Dean

James O. Friendewey, Associate Dean

**School of Forestry and Wood Products**

Glenn D. Mroz, Dean

Margaret R. Gale, Associate Dean

**School of Technology**

Timothy H. Collins, Dean

**J. R. Van Pelt Library**

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Phyllis H. Johnson, Director

## **College of Engineering**

Robert O. Warrington Jr., Dean

Neil J. Hutzler, Associate Dean

Mark R. Plichta, Associate Dean

### **Department Chairs**

#### ***Chemical Engineering***

Michael Mullins

#### ***Civil and Environmental Engineering***

C. Robert Baillod

#### ***Electrical and Computer Engineering***

Timothy J. Schulz

#### ***Geological and Mining Engineering and Sciences***

Theodore J. Bornhorst

#### ***Materials Science and Engineering***

Calvin L. White

#### ***Mechanical Engineering–Engineering Mechanics***

William W. Predebon

## **Board of Control**

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David J. Brule, Sr.

Kathryn Clark

James B. Henderson, Vice Chair

Michael C. Henricksen

Rodger A. Kershner

Martin G. Lagina

Ruth A. Reck

Claude A. Verbal, Chair

Curtis J. Tompkins (ex-officio)

Dale R. Tahtinen, Secretary

Daniel D. Greenlee, Treasurer

## **Administration**

Curtis J. Tompkins, President

Kent Wray, Provost and Senior Vice President for Academic and Student Affairs

James S. Cross, Vice Provost for Information Technology

Martha Y. Janners, Vice Provost and Dean for Student Affairs

David D. Reed, Vice President for Research

J. Bruce Rafert, Dean of the Graduate School and interim Dean of Distance Learning

Fred Hensley, Senior Vice President for Advancement and Marketing

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Dale R. Tahtinen, Vice President for Governmental Relations; Secretary of the Board of Control

William J. McGarry, Vice President for Administration

Mary H. Durfee, Speical Assistant to the Provost

Daniel D. Greenlee, Chief Financial Officer and Treasurer of the Board of Control

## ***Campus Contacts***

### ***Graduate School E-Mail***

[gradadms@mtu.edu](mailto:gradadms@mtu.edu)

### ***Main Switchboard***

906-487-1885

### ***Emergency***

On campus, dial 123

Off campus, call Public Safety 487-2216

### ***Mailing Address***

(Name or department)

Michigan Technological University

1400 Townsend Drive

Houghton, MI 49931-1295

### **University Offices**

Undergraduate Admissions Office

Financial Aid

Housing

Summer Sessions

### **Research/Graduate School**

Scheduling/Registration

### **Telephone (area code 906)**

487-2335

487-2622

487-2684

487-3539

**487-2327**

487-2319

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**Grades by Phone:**

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