# GRADUATE HANDBOOK
# 2024-2025

## Central Michigan University
## Department of Mathematics

# Contents

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# Part I: Graduate Degree Guidelines and Policies[1]

## Introduction

The Department of Mathematics offers the following graduate programs:

- Ph.D. in Mathematical Sciences (Ph.D.): 45 hours (after Master's) – 75 hours (after Bachelors)
- Master of Arts in Mathematics (M.A.): 30 hours
- Accelerated M.A. in Mathematics

The Ph.D. in Mathematical Sciences degree program has two concentrations: Mathematics and Collegiate Mathematics Education. The program has unique components of at least six hours of coursework in teaching pedagogy, and two semesters of teaching internship for students choosing academic careers.

The Master of Arts in Mathematics degree program is aimed at preparing students for further study in Ph.D. programs, for teaching positions at colleges, or for industrial jobs.

The Accelerated M.A. in Mathematics program provides the opportunity for senior undergraduate students to begin graduate coursework during the senior year so that they will be able to complete the Bachelor's and Master's degrees in five years.

The department has an active faculty with particular research strengths in the areas of algebra, algebraic geometry, approximation theory, combinatorics, complex analysis, computational mathematics, differential geometry, fluid dynamics, functional analysis, mathematical biology, operator theory, representation theory, tropical geometry; and mathematics education with focuses in beliefs, cross-cultural studies, equity, ethnomathematics, teacher education, and technology.

Classes are small, allowing students to receive individual attention. An active colloquium program draws speakers with varied research interests from a wide range of locales. Graduate student seminars give students the opportunity to explore topics that extend beyond the required coursework. Research groups have strong links with science and engineering departments within Central Michigan University, other universities, and industry.

Facilities within Pearce Hall, where the department is located, include two teaching laboratories with Mac computers on the 4th floor and a research computer lab on the 2nd floor.

## Being a Graduate Student

The primary activity of graduate student life is the role of being a student. The pursuit of a graduate degree requires dedication to the ideal that learning is a life-long endeavor; a graduate student is expected to be uncommonly committed to academic scholarship. As a graduate student, maintaining strong academic work is your primary responsibility.

Many of our graduate students are supported as Graduate Assistants (GA). Most GAs teach as Graduate Teaching Assistants and they work closely with undergraduate students. Teaching duties occupy a

[1] Any exceptions to the guidelines and policies in Part I of this graduate handbook may be granted by the Graduate Committee of the Department of Mathematics.

significant amount of time and energy. Duties related to this work include preparing lessons, teaching classes, holding office hours, tutoring in the Mathematics Assistance Center, responding to student e-mails, grading, and reflecting on teaching. The experience of teaching is particularly important for students in the Ph.D. program as the Ph.D. program is designed to prepare graduate students to take positions in academia primarily at teaching institutions. It is the balance of scholarship and teaching that can prove to be a challenge to many beginning teaching assistants.

Besides academic work and teaching/research duties, the life of being a graduate student should also include social and networking activities at personal and professional level. The Mathematics Department has a Graduate Student Chapter of the American Mathematical Society and several student clubs that are available for both undergraduate and graduate students, including Kappa Mu Epsilon, a chapter of the national Math Honor Society.

**Academic Integrity**

Academic integrity is essential to your development as a scholar. The University's policy on Academic Integrity can be found here:

https://www.cmich.edu/offices-departments/office-of-student-conduct/university-policies

Performing your academic duties in accordance with this policy is expected at all times. It is essential that any work you submit for academic credit meet the high professional standards expected of all students. Violations of this policy will be taken very seriously. Please review this policy and familiarize yourself with these expectations.

## The Role of the Academic Advisor

When a graduate student is admitted to a program, they are assigned an academic advisor. The academic advisor will be available to help throughout your program of study.

The responsibilities of the academic advisor include:

- Providing advising on coursework planning throughout the student's academic program. A plan for the student can be created on Degree Progress (accessed). Typically, this takes the form of a MAP, created by the advisor via Degree Progess Admin. Each graduate student must have a two-year plan of study completed in consultation with and approved by his or her advisor every Fall semester. To access Degree Progress, go to the following link:

  https://www2.cmich.edu/centrallink/Pages/default.aspx

- Login using your CMU ID and Password. Click on the "My Account" link. Look for the "Degree Progress" site. This site also saves your updated course work progress.
- For Ph.D. students, once a student has successfully completed the required qualifying exams and has chosen a dissertation advisor, the academic advisor will be changed to their dissertation advisor. For M.A. students who have selected the Plan A option, the academic advisor will be changed to the thesis advisor. The Graduate Coordinator must be emailed by the student informing them of the change, with the thesis/dissertation advisor copied, in order for the change to be made in Degree Progress. This must be done before any thesis/dissertation committee is formed. There is no change of advisor for students who choose to do Plan B papers.

- Various requests made by students will also need the advisor's approval, including:

- Requests for an independent study course that is used to substitute for a regular course. (See the policy of Independent Study section below for details).
- Approval for the M.A. Plan B elective course.
- Providing advising if a student is on academic probation.

Note: Students intending to complete a thesis or dissertation in a specific area should also discuss this with members of the faculty who do research in that area, as these faculty can advise the student which courses should be taken. For instance, those wishing to do a dissertation in Applied Mathematics may be advised to take MTH 634 and 734.

## Transferring from M.A. to Ph.D.

There is no direct transfer from M.A. to Ph.D. in the Department of Mathematics. If a student in the M.A. program is interested in the Ph.D. program, they are required to go through the same admission and financial support application process as students from external institutions. **The student must reapply and compete with new applicants for funding for the following academic year.** The student should have completed at least two semesters in the M.A. program prior to considering applying for admission to the Ph.D. program.

## Transferring from Ph.D. to M.A.

In cases when a student decides to transfer from the Ph.D. program to M.A. in Mathematics, the student needs to inform their academic advisor and the Graduate Coordinator and follow the following steps to complete the transfer.

1. The student must apply to the M.A. via the website: https://apply.cmich.edu/. Students will NOT have to submit any documents besides the application.
2. A staff member in the Application Processing Office will send a new evaluation form to the Graduate Coordinator to sign off on approving the transfer from Ph.D. to M.A. Once the evaluation has been completed and returned to the staff member the student will be withdrawn from the Ph.D. program and admitted to the M.A. program and a new letter of admission will be sent to the student.

## Reclassification from Regular Admission with Stipulations to Regular Admission

From time to time, some students are offered "regular admission with stipulations" instead of regular admission. These students are required to successfully complete the required work listed in their admission letter. These students are required to consult with their academic advisor to sign up for the required courses during their first year at CMU. Once the stipulations have been met, the admission will be automatically reclassified as regular admission.

## RCR Training

Graduate students in the Master's program must complete the Responsible Conduct of Research (RCR) training by the **end of their third semester** in the program. Graduate students in the Ph.D. program must complete RCR training **no later than one semester after completing all of the Ph.D. qualifying exams**. Students will be ineligible to register for thesis, dissertation, or Plan B credits until they have completed the RCR training. In addition, students awarded Research Assistantships must complete the RCR training before the start of their assistantships.

RCR training is through the website: www.citiprogram.org. The procedure for the RCR Training is given in Appendix A.

Any first-time user must register and choose an ID and password. Upon completion, email the confirmation to your academic advisor, the Executive Secretary for the department, and the Graduate Coordinator.

## The Role of the Plan B Supervisor and Research Advisor

A Plan B supervisor/research advisor is a graduate faculty member selected by a graduate student based on their academic area of interest; the graduate student should select this person as soon as they decide on their area of research interest. The Plan B supervisor/research advisor will guide the student throughout the entire process of Plan B/thesis/dissertation research and writing.

*For the Plan B Paper:*

Your Plan B supervisor advises you and oversees the completion of the paper.

*For the Thesis/Dissertation:*

- The research advisor introduces and sets up expectations for the student to begin *original* research.
- The research advisor oversees the completion of the prospectus.
- Your research advisor helps you to form a thesis/dissertation committee.
- Your research advisor chairs the thesis/dissertation committee.
- The student is responsible for writing, editing, correcting, and revising the thesis/dissertation, overseen by the research advisor.
- Your research advisor schedules the final oral examination in which you will defend your thesis/dissertation.
- Your research advisor advises you on and oversees the completion of final revisions to the thesis/dissertation requested by the research advisor and the thesis/dissertation committee.

## The Role of the Thesis/Dissertation Committee

In consultation with your thesis/dissertation advisor, you will form a thesis/dissertation committee. The approval of each committee member on both the prospectus and the thesis/dissertation is required. This is managed through the Prospectus form located here:

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

- The committee may make suggestions for revising the prospectus.
- The committee must meet and be updated at least once per year on the student's progress.
- The committee may make suggestions for revising the thesis/dissertation.
- The committee conducts the final oral examination.
- The committee determines whether the student passes the oral examination.
- The committee may request final revisions/corrections for the student to make after the student passes the oral examination.

The committee members should receive a copy of the thesis/dissertation before the date of the final oral examination. Adequate time (suggested amount of time is at least **one month**) should be given to committee members for reading the thesis/dissertation.

## Guidelines for Plan B Papers for the M.A. in Mathematics

This section describes the non-thesis Plan B option for the Master of Arts (M.A.) degree in Mathematics. The Plan B option requires six credits hours as described below:

- Students must complete <u>two</u> Plan B papers; each one under the direction of a graduate faculty member, called the Plan B supervisor. For each Plan B paper, students must enroll in one credit of MTH 698.
- Students must register for a one-credit hour of the Graduate Student Seminar (MTH 693).
- Students must choose and have approved by the academic advisor an elective course at the 500 level or higher.

If a Master's student passes a Ph.D. qualifying exam, it may count as a Plan B paper. Note that to count the Analysis Qualifying examination as a Plan B paper, a student must also earn credit in either MTH 633 or MTH 637.[2]

*<u>Procedure for signing up a Plan B option</u>*

After the student has selected their Plan B supervisor and topic, the student should register for one credit of MTH 698 for the term in which the student plans to complete the paper.

*<u>Time Limit</u>*

The Plan B paper should be completed during the semester for which the student is enrolled in MTH 698.

*<u>Guidelines</u>*

The purpose of the Plan B paper is to allow the student an opportunity to go beyond the normally expected coursework by presenting significant evidence of scholarship and/or creative activity in an area of Mathematics or Mathematics Education studied by a member of the Department graduate faculty.

The topic will usually involve extensions or applications of material learned in graduate level classes. The topic does not necessarily have to lead to new results and may be expository in nature, but it should require a significant amount of work on the part of the student. Students are expected to spend at least three hours per week working on the project during the semester they are enrolled in MTH 698.

Appropriate topics will vary depending on the subject matter area, but some possibilities include:

- A solution of a suitable problem, perhaps from a journal.
- A computer simulation design.
- An investigation of a topic in mathematics education.
- An analysis of a "real world" problem.
- An exposition of a theory or a collection of results.

[2] As per the Graduate Bulletin, Plan B papers must contain a research component. In the case of qualifying exams, this is justified by taking an extra course not required by the program. The algebra and math education exams automatically satisfy this, but the analysis exam does not; thus, the extra analysis course is required in this case.

*Completion of Plan B*

Once a student completes each requirement of the Plan B option, the student must complete the "Plan B Completion Approval Form" (found in Appendix G of this handbook or on the Graduate Student MS Team) and submit it electronically to the Graduate Coordinator and the Executive Secretary of the Department of Mathematics (math@cmich.edu). A copy of each Plan B paper should also be submitted electronically to the Executive Secretary of the Department of Mathematics (math@cmich.edu).

## Guidelines for Master's Thesis (Plan A) for M.A. in Mathematics

*Thesis Committee*

The thesis (Plan A) committee must consist of a total of three faculty members, chaired by the student's thesis advisor. It is the responsibility of the student to select the committee members in consultation with the thesis advisor. All members of the committee must be graduate faculty at Central Michigan University. One member of the committee may be from outside the area of specialization or department.

After the committee has been selected and the thesis topic has been chosen, a Thesis Prospectus must be filed online at the Office of Research & Graduate Studies before the work is formally initiated. Further guidelines for choosing the committee, writing the Prospectus, and "Prospectus DocuSign" form, can be found here:

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

*Time Limit*

At the direction of the thesis advisor, the student usually takes about three semesters to complete the thesis. The candidate may enroll for all or part of MTH 798 during any semester or summer session (the maximum number of credit hours in MTH 798 is six), although only three credit hours are permitted before the Prospectus is approved.

*Thesis Defense*

There will be an oral examination covering the student's thesis topic. The examination will be conducted by the student's thesis committee in a colloquium format. The examination must take place at least four weeks prior to the student's graduation date**.**

*Completion of Plan A*

Once a student completes the requirements of the Plan A option, the "Plan A Completion Sign-off" form must be submitted online along with the thesis to the Office of Research & Graduate Studies. This form can be found at:

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

## Ph.D. Qualifying Examination Policy

On the Ph.D. qualifying examinations, students are expected to demonstrate a broad knowledge of the topics being tested, be able to integrate mathematical concepts, and explain them at an appropriate level. Qualifying examinations will be offered in the following subjects, based on the material in the courses listed.

1. Algebra (MTH 623, 625)
2. Analysis (MTH 632, 636)
3. Mathematics Education (MTH 761, 762)

Each doctoral student must pass two examinations in two different subjects chosen from those listed above.

- Students choosing the Concentration in Mathematics must pass examinations in Algebra and Analysis.
- Students choosing the Concentration in Collegiate Mathematics Education must pass examinations in Mathematics Education and at least one of Algebra or Analysis. Students must take MTH 761 and MTH 762 before their first attempt of the Mathematics Education qualifying exam.

If a student decides to switch to a different concentration after completing two qualifying exams, whether they will take an additional qualifying exam is determined by the Graduate Committee.

## Timeline for Taking/Passing Qualifying Exams

Examinations will be offered twice a year. The August Exam Period will take place prior to the start of classes in the Fall Semester (in August or September depending on the Academic Calendar) and the January Exam period will take place in January. Each examination will be prepared and graded by at least two graduate faculty members in the area covered by the examination. The format of the exam will be determined by the Examination Committee in consultation with the Graduate Committee.
The student will be asked to sign up for one or more examinations by email by early April for the August Exam Period and by late October for the January Exam Period. The Graduate Committee will announce the Examination Committee within two weeks after the sign-up deadline.

Students are strongly encouraged to **take the examinations as soon as possible**.

- Full-time students must have passed two qualifying exams immediately after the exam period prior to or during **their sixth semester**. See the first table below.
- Part-time students may request additional time from the Graduate Committee.
- Students must take MTH 761 and MTH 762 before their first attempt of the Mathematics Education qualifying exam.

The Examination Committee will assign an overall grade of pass or fail for each student and will report to the Graduate Committee its recommendations. The Graduate Committee will inform the student, in writing, the results of the qualifying examination and its decision within three weeks after the exam.

The qualifying exam timeline is summarized in the tables below:

| If your first regular semester was: | Must pass two at the latest by: |
|---|---|
| Fall 2022 | January 2025 |

| | |
|---|---|
| Spring 2023 | August 2025 |
| Fall 2023 | January 2026 |
| Spring 2024 | August 2026 |
| Fall 2024 | January 2027 |

## Guideline for Appealing

Students who do not meet the exam deadlines for a valid reason (for example, switching concentrations) must appeal to the Graduate Committee in order to remain in the Ph.D. program. The appeal must include **a timeline for completion of all remaining exams**. **A letter of support from a faculty member** is required for those students who do not meet the six-semester deadline and is recommended for all appeals. Students who do not meet the exam deadlines and students who exceed the timeline determined through the appeal process are automatically eliminated from the Ph.D. program.

In the case of a student who fails to satisfy a qualifying exam requirement during the August exam period and the Graduate Committee rejects the appeal in the Fall Semester, the student's GA support (if supported) will be terminated at the end of the Fall Semester. The student may stay as a regular student without support until the end of the Spring Semester and will be eliminated from the Ph.D. program at the end of the Spring Semester. In the case of a student who fails to satisfy a qualifying exam requirement during the January exam period and the Graduate Committee rejects the appeal in Spring Semester, the student will be eliminated from the Ph.D. program at the end of Spring Semester.

If a student is unable to take his/her qualifying examination at the scheduled time due to serious illness or emergency, the student must contact the Graduate Coordinator prior to the examination. The Graduate Coordinator will decide based on the evidence whether to make alternate arrangements. If the Graduate Coordinator is not available, the Department Chair or the Associate Chair should be contacted.

**Can M.A. students take Ph.D. qualifying exams?**

Students in the M.A. program may attempt any of the qualifying exams any number of times. They may only take the exams as scheduled for the doctoral program.

- If a Master's student passes a qualifying exam, it may count as a Plan B project and can carry forward as a passed exam if they choose to continue in the doctoral program.
- If a Master's student does not pass a qualifying exam, it will not be considered as a failed attempt should they continue in the doctoral program.

Note that to count the Analysis examination as a Plan B project, a student must also earn elective credit in either MTH 633 or MTH 637. Also, a student must have taken MTH 761 and 762 to take the Mathematics Education qualifying exam.

## Guidelines for Ph.D. Dissertation

*Dissertation Advisor, Committee, and Prospectus*

Upon successful completion of the qualifying examinations, the student will select a dissertation advisor(s). The dissertation advisor(s) must be a graduate faculty member(s) in the Department of Mathematics. A dissertation topic is chosen in consultation with the dissertation advisor(s). The dissertation must consist of original work and can combine scholarly, analytical, creative, and expository

skills. It could consist of research on a topic in mathematics, or research on a topic related to the teaching of collegiate mathematics.

Before starting the dissertation work, the student will form a Dissertation Committee in consultation with the dissertation advisor(s). This **Dissertation Committee will be chaired by the advisor(s) and must include at least two other graduate faculty members.** Two members of the Dissertation Committee must be from the Department of Mathematics, and members from outside the Department cannot serve as the only chair. The dissertation topic must be approved by the Dissertation Committee, and a Dissertation Prospectus must be filed online at the Office of Research & Graduate Studies before the work is formally initiated. Further guidelines for choosing the committee, writing the Prospectus, and "Prospectus DocuSign" form, can be found here:

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

If human subjects, animals, or recombinant DNA are involved, the student must receive approval from the appropriate committee. The department requires that a student whose dissertation work does not involve human subjects, animals, or recombinant DNA submit his/her prospectus within **one year** after completing qualifying exams.

*Preparation and Completion of Dissertation*

Students are required to successfully complete at least 12 credit hours of MTH 898 (Dissertation). (A maximum of 6 credit hours of MTH 898 are permitted before the prospectus is approved.)

The dissertation must be prepared according to the regulations prescribed in the Office of Research & Graduate Studies' most recent edition of the "Thesis/Dissertation/Book(s)/Journal Article(s) Guidelines", which can be downloaded from

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

Upon completion of coursework, qualifying examinations, internships, and the dissertation, the candidate for the Ph.D. degree must pass a final oral examination, which is a dissertation defense in a colloquium format. The student's Dissertation Committee determines whether the student passes the oral examination. The student is required to address any changes/revisions (in consultation with the dissertation advisor) requested by the Dissertation Committee presented before or immediately after the oral examination.

Once a student passes the dissertation defense, addresses the changes/revisions requested by the Dissertation Committee, and obtains the final approval of the Dissertation Committee members, the final copy of the dissertation must be submitted to the Office of Research & Graduate Studies, along with the "Dissertation/Doctoral Project Completion Sign-Off" form, which is signed by every committee member and the Department Chair. This form can be found at

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

## Internship Application Policy

Each Ph.D. student is required to take 6 hours of MTH 766 (Intership: College Teaching) after passing the qualifying exams. Details about the internship policy and procedure for applying for the internships are available in a separate Internship Handbook.

## Independent Study Policy

A student may not take more than one independent study course with the same faculty member per semester.

(A) If the independent study topic is related to your research work and not part of a regular course, the course number is MTH 597, 697, or 797. The following is the procedure to sign up for the independent study course:

(1) The student searches for a faculty member who is willing to give the independent study.
(2) The faculty sends an e-mail to the Executive Secretary (with the student copied) that (i) indicates that the faculty member agrees to offer the independent study, (ii) includes the topic (e.g., related to dissertation/thesis), and (iii) asks the Executive Secretary to register the student for the course.

(B) For courses not described in (A), these are regular courses, and they should not be offered as MTH 597, 697, or 797. For example, a student should not sign up for MTH 632 as MTH 697. Any regularly scheduled course like MTH 632 can only be taken as an independent study with prior approval of the Graduate Committee. A student must complete any Common Core Course (MTH 525, MTH 623, MTH 625, MTH 632, MTH 636, MTH 761, MTH 762) at least once as a class before their request for retaking the course as an independent study. An exception can be made in an academic year that the regular class is canceled by the department. The following is the procedure to sign up for such an independent study:

(1) The student consults with their academic advisor and has the advisor approve the request.
(2) The student finds a faculty member (hereafter referred to as Instructor) who has taught the course before and is willing to give the student the independent study.
(3) The student sends an e-mail to the Graduate Coordinator (with the advisor and the instructor copied) requesting approval for the independent study.
(4) The Graduate Coordinator takes the request to the Graduate Committee for final approval.
(5) Once the decision is made, the Graduate Coordinator will inform the academic advisor, instructor, student, and Executive Secretary.
(6) If the request is denied, the student can appeal to the Chair of the department within one week of such a decision.

## Time for Completion of Degree

Students are expected to complete all degree requirements in a timely manner. Coursework and other requirements must be completed within the following time limits:

a. Within seven years prior to the award of a Master's degree.
b. Within eight years prior to the award of a doctoral degree if the student had a relevant graduate degree when beginning the program.
c. Within ten years prior to the award of a doctoral degree if the student began doctoral study without a prior relevant graduate degree.

## Graduate Teaching Assistantships

The department has teaching assistantships available for students in the graduate program. Graduate Teaching Assistantships (GTAs) are awarded on a competitive basis. A student who is supported by a GTA must complete the GTA Workshop offered by the department either prior to their first semester of GTA duties, or prior to the GTA's first time teaching in-person. Usually, the workshop is offered during a week prior to the first semester of the Fall semester. This policy applies to all new Teaching Assistants, regardless of their status as a new or returning student and regardless of prior teaching experiences. Students who will be new Teaching Assistants will receive a stipend for attending the workshop. Returning students and students who are not offered a TA position are welcome to attend the workshop, but there is no stipend for these attendees.

Graduate assistants must maintain a cumulative graduate GPA of 3.0 and take a minimum of six (6) graduate credit hours in both Fall and Spring Semesters. Students receiving summer funding need to take a minimum of one (1) graduate credit hour during the Summer semester.

Graduate Teaching Assistants (GTAs) normally teach two sections (or two sections in one semester and one section in the other semester of a given year, in the case of a doctoral GTA) of Elementary Algebra (MTH 101), Intermediate Algebra (MTH 105), or College Algebra (MTH 107) per semester. These courses have a coordinator whose responsibilities include:

- Preparing a course-pack for MTH 101/105/107
- Writing all tests for MTH 101/105/107
- Holding regular meetings to discuss issues related to the instruction of MTH 101/105/107.
- Supervising the teaching of Graduate Teaching Assistants.

Experienced GTAs may teach courses besides MTH 101, MTH 105, and MTH 107, although some courses require that the GTA have Ph.D. Candidacy (see below). If a student is supported during the summer sessions, the duties normally include tutoring for students in lower-level mathematics courses, or assisting a faculty member with a research project, or with grading. Detailed descriptions of teaching policies are in Part II of this handbook.

Early Termination of Funding: If an instructor of a graduate level course files an Incident Report to the Office of Student Conduct, then the instructor should also report the incident to the Graduate Committee. The Graduate Committee will decide on appropriate measures up to and including the termination of funding.

## Stipend and Tuition Benefits

For information regarding stipend and tuition benefits for graduate teaching assistants, please refer to the agreement between CMU and the Graduate Student Union at http://www.fps.cmich.edu or contact Faculty Personnel Services.

## Graduate Research Assistantships

The department may have a number of Doctoral Research Assistantships available for students in the Ph.D. program. Research Assistantships are awarded on a competitive basis. Students who are more likely to be awarded Research Assistantships may include:

- A student chosen by a faculty member within the department who has a research grant to support the student.
- A student who is at the final stage of completing their dissertation work, especially for those who will graduate within one year.
- New Ph.D. students who have excellent academic credentials.

Graduate research assistants (RAs) must maintain a cumulative graduate GPA of 3.0 and take a minimum number of graduate credit hours in both Fall and Spring Semesters determined as follows. Students who receive a Research Assistantship before passing all required qualifying exams need to take at least nine (9) graduate credit hours during a regular semester. Students who receive a Research Assistantship after passing all required qualifying exams need to take at least six (6) graduate credit hours during a regular semester. Students receiving summer funding need to take a minimum 1 graduate credit hour during the Summer Semester.

Students who receive Research Assistantship positions during the summer may be assigned to work on a project with a faculty member.

Early Termination of Funding: If an instructor of a graduate level course files an Incident Report to the Office of Student Conduct, then the instructor should also report the incident to the Graduate Committee. The Graduate Committee will decide on appropriate measures up to and including the termination of funding.

## Policy on Reappointment of Graduate Assistantship (TA or RA)

The Graduate Assistantships offered by the Department of Mathematics are awarded for one academic year. **Reappointment is not guaranteed.** The reappointment decisions for Graduate Teaching Assistants are made by the Graduate Committee based on the Criteria for Evaluation for Graduate Students (see below). If a GA fails to meet any of the Criteria for Evaluation, then the GA is either conditionally reappointed or their reappointment will be denied.

Assistantships awarded to students in a Master's degree program are renewable for one (1) additional year. Graduate Assistants enrolled in a Master's degree program requesting assistantships beyond two years must compete with new applicants for such awards.

A doctoral student who is supported with assistantships and/or fellowships by the Department of Mathematics is eligible for such support for a maximum of six (6) years. If students were admitted and supported in our Master's program, the years they were supported as Master's students counts toward their six (6) years of funding.

## Criteria for Evaluation of Graduate Students

Graduate students will be evaluated periodically to track performance. Students will be evaluated both in their progress towards their degree and in their teaching performance (if they are Graduate Teaching Assistants). The criteria for the evaluation of a graduate student are the following:

*Progress in the Degree Program*

1. Progress in coursework: To determine the progress in coursework, The Graduate Committee will examine the grades earned in the student's courses; the student's program and overall GPA must each be at least 3.0.

2. Completion of Ph.D. qualifying examinations: The Graduate Committee, in determining the completion of this requirement, will use the letters on file regarding qualifying examination results.
3. Completion of RCR training: The Graduate Committee, in determining the completion of these requirements, will use the record on file regarding the training.
4. Completion of Ph.D. teaching internships: The Graduate Committee, in determining the completion of the teaching internship requirement, will use internship portfolios and comments from course supervisors.
5. Completion of Ph.D. Prospectus: The Graduate Committee, in determining the completion of this requirement, will use the Prospectus submission form approved by the Office of Research & Graduate Studies.
6. Progress in Ph.D. Dissertation/Master's Plan A or Plan B: Advisors/supervisors of Plan A Theses, Plan B projects, or Ph.D. dissertations will be consulted by the Graduate Committee to determine student's progress.

*Teaching Performance of Graduate Teaching Assistants*

1. Preparation for and delivery of instruction:
    - Is the GA well-prepared for their class?
    - Does the GA prepare and take all needed materials to the class?
    - Does the GA use the class time effectively?
    - Does the GA deliver mathematics instruction soundly and logically?
    - Does the GA attempt to help connect mathematical ideas in his/her lessons?
    - Does the GA assess students' progress using various methods, such as homework, quizzes and tests, in a timely manner?
    - Does the GA grade and return graded material promptly?

2. Communication with students:
    - Does the GA speak clearly and write legibly?
    - Does the GA take questions from students and answer them clearly and completely?
    - Does the GA provide students with information about syllabi, exams, tutoring hours, and department and university policies?
    - Does the GA give adequate office hours? Does the GA hold those office hours?

3. Other teaching related duties:
    - Does the GA have a clearly stated grading policy in her/his syllabus?
    - Does the GA keep accurate record of students' grades?
    - Does the GA attend all required course meetings?
    - Has the GA completed RCR training?

## Admission to Candidacy for Doctoral Degree

Doctoral students must complete an Admission to Candidacy for Doctoral Degree form in order to teach University Program courses like MTH 113 and 132. Graduate students need to complete at least one of their teaching internships and have already formed their Dissertation Committee in order to be able to receive to the status of Ph.D. Candidate. The application form can be found in Appendix F of this handbook, in the Graduate Student MS Teams site under Files, or can be obtained from the Graduate Coordinator.

## Additional Funding Opportunities from the College or University

(A) The Department of Mathematics and the College of Science and Engineering may have funds available for graduate student professional growth activities (for example, travel funds to present research results at a conference.) The application for this program can be found at:

https://team.cmich.edu/sites/cst/CST%20Student%20Organizations%20Forms/CSE%20Student%20Presentation%20Grant%20App%20Fillable%20PDF.pdf

(B) The Office of Research & Graduate Studies has a number of programs that provide support for graduate students. Students may apply for these grants in Fall or Spring Semesters. These programs include:

- Graduate Assistant (GA) Conference Grant
- Student Performance, Exhibition, Competition, or Presentation (PECP) Grant
- Student Endeavors Grant

Further information and application forms for these programs may be found at:

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

# Part II: Timeline of Important Activities and Tasks

Beginning in the first year of your graduate program, there is a list of activities and tasks you need to complete on an annual basis, or that you have the option of participating in. It is essential that you carefully read through this handbook to learn about various activities and tasks along with departmental policies that are related to your responsibilities or your rights as a current graduate student in the Department of Mathematics.

*The Approximate TimeLine of Important Activities and Tasks:*

| Timeline | Activities | Remarks |
|---|---|---|
| August | New TA Teaching Workshop | This is required for all first time TA's |
| | New Student Orientation | This is required for all new graduate students, but optional for current students. |
| | August Qualifying Exams | August Qualifying Exams are usually scheduled during Preparation Week, just prior to the first week of classes in the Fall Semester. |
| September | Qualifying Exam results are announced | The results will be announced about 3 weeks after the August exams. |
| | With the Academic Advisor, update Degree Progress with a MAP. | This should be done during the early fall semester. |
| | Teaching Internship Application for Spring semester (Ph.D. students only) | Students will receive the form from the department. |
| | Graduation Application for December graduation | See exact date on the College of Graduate Studies website. |
| October | Sign-up for January Qualifying Exams | Students will be emailed by the Graduate Coordinator to sign up for the qualifying exams by the end of October. |
| | Graduate Course Exhibition | Faculty will advertise graduate courses to students, and students will complete a survey indicating which courses they prefer to have run. |
| | Thesis/Dissertation Submission for December graduation | See exact date on the Office of Research & Graduate Studies website |
| November | In-class visit for TA evaluation: The GTA Coordinator will visit every TA each semester. | The visits usually occur in October or November for Fall. |
| December | Reminder of January Qualifying Exams | Graduate Coordinator sends a reminder of January Exams to students and to Exam Committee Members. |

| | | |
|---|---|---|
| January | January Qualifying Exams | January Qualifying Exams are usually scheduled during the Spring Semester. |
| | Applications for Graduate Student Admission & Financial Support are processed. | http://apply.cmich.edu |
| February | Requests for Renewal of GA support and requests for Summer funding are submitted. | A form will be sent to supported students near the end of January or early February. Students must have an up-to-date MAP on Degree Progress. |
| | Graduation Application for May graduation | See exact date on the Office of Research & Graduate Studies website. |
| | Thesis/Dissertation submission for May graduation | See exact date on the Office of Research & Graduate Studies website. |
| | Application for graduate admission & support. Admission decisions are made once the admission materials are complete. Deadline for full consideration of financial support is February 15. | More details are on the Department of Mathematics website. |
| March | Teaching Internship Application for Fall semester (Ph.D. students only) | Students will receive the form from the department. |
| | Sign-up for August Qualifying Exam | Students will be emailed by the Graduate Coordinator to sign up for the qualifying exams by the end of March. |
| | In-class visit for TA evaluation: The GTA Coordinator will visit every TA each semester. | The visits usually occur in March or April for Spring Semester. |
| April | Announce support renewal for Fall of the next academic year | Students who receive support will be informed of their duties in early April. |
| | Conduct a survey of TA's course schedule for the next Fall semester. | To properly assign TA's teaching schedule(s) for the next academic year, a survey to collect TA's course schedule(s) is conducted in early April. |
| May | RCR Training. Master's: end of 3rd semester. Ph.D.: one semester after completing Qualifying Exams. | See Appendix A of the Graduate Handbook for detailed instructions. |
| June | Graduation application for August graduation. | See exact date on the Office of Research & Graduate Studies website. |
| | Thesis/Dissertation submission for August graduation. | See exact date on the Office of Research & Graduate Studies website. |
| July, August | | |

*Seminars and Colloquia:*

The department often has colloquia 4:00-5:00 pm on Thursdays, a weekly Graduate Student Seminar 4:00-5:00 pm on Tuesday, along with other seminars (such as the AMS Graduate Student Chapter seminar) which also occur regularly. Students are highly encouraged to attend these for their professional development.

# Part III: Departmental Information for Graduate Assistants

*Office Hours and Emergency Contact Info*

Please email the Executive Secretary, Michelle Mowat (mowat1m@cmich.edu), with your office hours and a current personal phone number at the beginning of each semester. The phone number is available only to the Executive Secretary and Chair, and only used in urgent circumstances. If you change your office hours at any time, please notify Michelle as soon as possible. The office hours are displayed in multiple locations in the department and online, so we request minimal changes, if possible.

To update your personal information with the University, log onto the Central Link website https://www2.cmich.edu/centrallink/Pages/default.aspx) with your global ID and password; click on "My Account"; "My Profile"; "Address Change" and make the necessary changes. "My Profile" also contains your "Emergency Contact Information." ***It is important to keep this information up to date***.

*Keys*

All GAs will receive a key for their office door and a 71-5 key. The 71-5 key will open:

- PE 215 (the workroom/photocopier location),
- PE 216 (the conference room),
- PE 201 (hallway door to PE 201F),
- PE 201F (photocopier/printer location),
- PE 206/207 (printer location),
- PE 125 (printer location),
- PE 404 (Math computer lab),
- all common classrooms in Pearce (classrooms not assigned to specific departments).

You will be required to sign a *Key Receipt* acknowledging the keys you receive. **Please read this receipt carefully BEFORE you sign it** and feel free to ask questions**.** There are consequences for losing keys.

*Mailboxes*

All department members have a mailbox in the workroom (PE 215). You should check your mailbox daily and empty it on a regular basis.

*E-mail/Computer Assistance*

All graduate students should use their CMU email account and check it (at least) daily. If you need computer assistance, you can either contact the CMU Help Desk at 989-774-3662 or submit an email request to helpdesk@cmich.edu.

*Photocopying*

Prior to using either photocopier, please ask the department staff for a brief explanation of how to operate the machine properly. Please do not run blank sheets of paper through the copier! The department will be charged for all sheets run, blank or not. Use of colored paper is acceptable.

It is important that you observe U.S. copyright laws. Do not put yourself or the Department of Mathematics in legal jeopardy by making unauthorized copies of copyrighted material.

*Supplies*

Office supplies for teaching purposes are available in the unlocked cabinets in the workroom (PE 215). If you are unable to find the supply you need, ask the department staff for assistance. Please return any unused supplies to the workroom when you no longer need.

*Payroll*

Graduate Assistants are paid bi-weekly. A calendar showing your pay dates is available at:

https://www.cmich.edu/offices-departments/finance-administrative-services/financial-services-reporting/payroll/time-attendance

At Central Michigan University, we strive to be environmentally friendly. As part of this effort, we pay each of our employees electronically. Please sign into Central Link as soon as possible to select from one of the following pay options.

- Direct Deposit: Your pay will be deposited into a checking or savings account anywhere in the United States
- CMU Rapid Pay Card: This is a MasterCard debit card that can be used anywhere MasterCard is accepted.

Follow the link

https://www.cmich.edu/offices-departments/finance-administrative-services/financial-services-reporting/payroll

for more information. ***Failure to select from one of the two options will result in an automatic default to the CMU Rapid Pay Card option.***

You can retrieve your pay statements electronically on Central Link by clicking on "My Account", "My Work Day"; "My Pay Statement". If you have further questions, please call CMU Payroll and Travel Services at (989) 774-3481.

*Custodian Issues*

If there is any type of spill or accident that needs to be cleaned in Pearce Hall on Monday through Friday between the hours of 7:00 a.m. and 5:00 p.m., call Facilities Management at ext. 6547 for a fast response. For less urgent matters, complete a Work Order Request at:

https://apps.cmich.edu/FMServiceRequest/Home/RequestService

For any issues before 7:00 a.m. or after 5:00 p.m. or on the weekends, call CMU After Hours at 989-774-1847. Please indicate the location and type of cleanup needed when you call. **DO NOT** try to clean up any type of body fluid (blood, vomit, etc.) on your own.

*Office Etiquette and Professionalism*

Most GAs will have a desk and two drawers in a filing cabinet. Your desk and drawers are labeled with your name. Please do not remove the labels.

You should keep your office clean and organized. Custodians are not able to clean your offices effectively if there is litter on the floor. It is your responsibility to clean/dust your desk/tabletop.

All food and trash should be disposed of in the trash receptacles so as not to attract ants and other bugs.

PLEASE DO NOT store items on the tops of file cabinets or in the common areas. DO NOT write on furniture or post any items on furniture or walls that will not remove easily or that will leave marks.

Remember, the impression students and other visitors get from your office/desk area reflects upon the Department as a whole. Please do your best to make it a positive impression.

*Questions*

Feel free to contact Michelle Mowat (mailto:mowat1m@cmich.edu; PE 213; 989-774-3597) or Ben Salisbury (salis1bt@cmich.edu).

# Part IV: Graduate Teaching Assistant Information

**If you have any questions or need further information, contact the Graduate Teaching Assistant Coordinator:**

**Reggie Becker**
**Office Location: Pearce 201J**
**Office phone: 989 774 3295**
**Email: becke2ra@cmich.edu**

## Introduction

The information in this section is designed to answer common questions you may have as a Teaching Assistant in the Mathematics Department at Central Michigan University and should be used together with the textbook publisher's material to aid you in your job of teaching. Be sure to read through all material in this part of this handbook ***before*** teaching your first class.

Sometimes TAs will teach online asynchronous classes. In this case, all materials for the course will be provided to you. While you do not formally teach lectures in this class, you are expected to be available to students for at least three office hours per week for the course, both in-person and online (over Webex or MS Teams). Additionally, you are expected to respond to student emails within 24 hours.

Most new TAs will be teaching MTH 105 in person (Intermediate Algebra) in their first semester. This three-hour course meets for either two 75-minute or three 50-minute periods per week for the entire semester. MTH 105 is a highly coordinated course; the coordinator establishes the semester grading scale, curriculum, and calendar, and creates the exams and keys. You will proctor and grade exams, create and grade weekly quizzes and/or other assessments, and you will assign final semester grades for your students.

Your MTH 105 students should be familiar with basic arithmetic (fractions, decimals, percent, and ratios) and Beginning Algebra concepts including linear equations, graphing, exponent rules, factoring, and applications using these concepts. In MTH 105 the emphasis is on solving application problems (mixture, distance/rate/time, inequalities, etc.) using algebraic methods (factoring, use of systems of equations, etc.).

Some of your MTH 105 students dislike and/or fear mathematics and have never been very good at it. As a teacher you will need to be non-threatening and supportive. Go as slow as the syllabus in the student course pack allows (this will still be too fast for some). Give your students opportunities to ask questions, and never belittle or embarrass them, even if you think a question is trivial.

After your first semester of teaching, you may be asked to teach other courses besides MTH 101 or 105, in which case you will be responsible for preparing all exams and materials for the class. You will still be supervised by the Graduate Teaching Assistant (GTA) Coordinator when teaching these classes.

# Your Responsibilities

*Classroom Instruction*

Most of you will be teaching sections of around 35-40 students. For in-person classes, do prepare written lesson plans, even if this material is pretty easy for you. Have a **written** set of lecture notes, and have examples and problems, especially story problems, **worked out completely**. Try to find more than one approach to get to the solution of a problem so that you can explain problems effectively. You should be prepared to set up and work every problem in the assignment. If you do run into trouble in explaining a problem during class, politely ask if you could have some more time to think about the problem and that you will finish the problem next time. Then be sure to return to it the next class period! There is nothing students hate more than a teacher who promises to show them something next time and then forgets to do it (or still cannot do it the next day!) –See the Graduate Teaching Assistant (GTA) Coordinator if you have questions or concerns regarding classroom or teaching issues/techniques.

*If You Can't Make Your Class*

During the semester, you may end up getting sick, having to go to a funeral, or having some other situation happen where you will need to miss class. Contact the Department of Mathematics chair as soon as you know you need to arrange for a substitute. As per the Graduate Assistant Contract, you should make reasonable effort to find a substitute. Once arrangements are made notify the chair and the GTA Coordinator, with the name of the person substituting, the section(s), location, and day/time. If after reasonable effort you are not able to find a substitute notify the chair and the GTA Coordinator so a replacement may be found. **Classes will not be canceled** unless there is a University-wide closure. Never cancel class for a personal reason! Information about weather-related University cancellations can be obtained by calling 1-989-774-7500.

*Class Times*

It is important to be on time for all scheduled classes. Also, you should **NOT** dismiss your scheduled classes early before the end of the time period. Have **plenty of problems available** for student practice in case you finish early.

*Office Hours*

You are required to hold a minimum of three office hours per week. The hour you tutor in the Mathematics Assistance Center (MAC) counts as one of the office hours. Schedule office hours so they DO NOT follow class sequences – stagger your posted hours. For example, if you have office hours on Monday and Wednesday 1-2pm those students who cannot make Monday 1-2pm due to a class will not be able to make Wednesday's either. Rather have Monday and Tuesday 1-2pm, or Monday 1-2pm and Wednesday 2-3pm. Whatever time you schedule and announce to your students should be rigorously observed. If you need to cancel an office hour for some reason, let your students know ahead of time, and schedule another make-up hour sometime in the near future. Submit your office hours to the Department office for posting on the Mathematics Department web page and on the office bulletin board.

**Note:** A graduate assistant must tutor in MAC in-person (even in case of online asynchronous teaching load).

*Testing and Grading*

If you are teaching MTH 101 or MTH 105, all sections take the same exams and use the same grading scale. Information about grading and testing is found in the Course Pack and will be discussed at instructor meetings for these courses. If you are teaching courses other than MTH 101 or MTH 105, you will create your own exams and grading scales. Whatever course you teach, it is important to be consistent and fair in assigning grades. Grading scales should be determined in time to include in your syllabus the first week of class.

All Math 101 and Math 105 students will be using an on-line homework system called MyMathLab. Student~~'s~~ homework will be graded automatically and students will receive instant feedback. In addition to homework, students should be evaluated in some way (quiz, written work, or exam) at least once a week. They need frequent feedback on how they are doing. Frequent evaluation encourages attendance and motivates the students to do the work. The daily grade should accurately reflect what the student knows and what effort he/she is putting forth. Use a combination of in-class quizzes, take-home quizzes (no more than one) or group work. DO NOT rely solely on take-home quizzes or group work, as on exams a student is expected to recall information without notes, textbook, or friends to help.

For MTH 101 and MTH 105 classes, no extra credit is allowed during the semester, except for that which is on the exams. It is not fair if one instructor is handing out extra credit opportunities. It is fine to drop some quiz scores or give a makeup quiz if the class did not do well on a particular quiz, or give an open book or group quiz.

*Attendance*

Take attendance each day in some way. During the semester you may be contacted by academic advisors, scholarship programs, or the athletic department checking on how many times a student has missed class, what assignments are missing, etc. If a student has financial aid and fails the course, at the end of the semester you are required to provide the student's last day of attendance. If you are giving a quiz or exam this can act as an attendance check; otherwise, you can just pass a sheet of paper around and have everyone sign in. This takes no additional class time. If a student has poor attendance, his/her daily grade is normally affected by lowered quiz or homework scores, etc. You can also use attendance as a decision-making factor in assigning grades at the end of the semester for students with borderline grades.

*Instructor Meetings*

Instructor meetings, prep-week, and mid-semester meetings are REQUIRED for MTH 101 and MTH 105 instructors. **Time of the MTH 105 instructor meetings will be determined during the prep week meeting**. A time will be determined for MTH 101 meetings as needed. Do not schedule office hours or other activities during this hour. The intent of our weekly meeting is to share problems and concerns, to plan teaching strategies, and disseminate exam material.

*Other Responsibilities*

You may be asked to help construct, proofread, or critique exams, and to conduct review sessions before exams. The GTA Coordinator will try to distribute these tasks equally among the instructors.

*Syllabus*

Create a syllabus with pertinent information for your class. Post a pdf syllabus in your Blackboard course – you do not need to provide paper copies. Required information on the syllabus: Office hours, contact information (office number and phone, email), required materials, course objectives and outline, grading scale and policies (including if you allow for making up missed work), and the accommodation statement – which must be copied and pasted exactly as written in the sample syllabus on the next page. If you are teaching MTH 101 or 105 you may reference the Course Pack for objectives, outline, grading scale, and general course policies. Below is a sample of a course syllabus, which you may adapt to fit your needs. Again: the University statement on students with disabilities (see last paragraph of the sample syllabus) must be copied verbatim. All GTAs are required to submit a copy of their syllabus to their supervisor for each class, each semester.

*End of Semester*

At the end of each semester, for each class that you teach, you need to turn in a copy of your final grades, a copy of your grade records (grade book or spread sheet,) and graded final exams to the GTA Coordinator (archiving final exams is optional for courses other than 101 and 105). Make sure to keep all grade records accessible to answer a student's questions about the final grade.

GTAs should not leave campus at the close of a semester until after they have submitted their web grades and grade reports to the GTA coordinator for archiving.

At the end of your contract, you need to return all keys, textbooks, etc. as required by the department. Also leave your forwarding address and other contact information (telephone number, e-mail address, etc.) with the department secretary.

# Syllabus Example

**Fall 2015 ~ MTH 105: Intermediate Algebra**

**INSTRUCTOR**: Mrs. Julia Burch
**E-mail**: burch1j@cmich.edu
**OFFICE**: Pearce 201B
**OFFICE PHONE**: (989) 774-1390 **MATH DEPT. PHONE**: (989) 774-3596

**OFFICE HOURS**: Monday 10:00 a.m. – 12:00 p.m., Tuesday 9:00 – 10:30 a.m. and 12:30 – 2:00 p.m.

Other times available by appointment via e-mail, or use walk-in tutoring.

**CLASS TIME/ROOM** Section # 22172792 TR **11:00 a.m. – 12:15 p.m. Pearce 136**

**MATERIALS**

- Required: Course Pack for MTH 105 (available at both bookstores)
- Required: MyMathLabPlus Online access (e-book included)
- Optional text: Lial, Hornsby and McGinnis, Beginning and Intermediate Algebra, 6th ed.

**CALCULATOR:** See Course Pack for details.

**COURSE OUTLINE:** See **Course Pack** for assignments and exam schedule.

**COURSE OBJECTIVES:**
The study of algebraic rational expressions and equations, functions, linear and quadratic equations, linear inequalities, systems of linear equations, radicals, negative and rational exponents.

**METHODOLOGY:** Lecture, discussion, and teacher directed activities.

**ATTENDANCE:**
***Regular attendance is essential for success in this class***. If for some reason you are unable to attend class, it is *your responsibility* to read through the material presented during your absence and to do the homework assigned. Ten points of the daily work grade are assigned for attendance. Two points are deducted for every unexcused absence. An absence is considered excused for *participation* in university related activities with *advance notice*, and *documented* heath issues. Make-up exams are given the *Friday* of exam week for those with *excused absences* only.

***Be courteous to others.***

- Arrive on time.
- Once in class, plan on staying the entire class period.
- Come to class prepared to work for the full 1¼ hours: bring tissues and bottled water, and visit facilities before class, as needed.
- Coming in late, frequent trips to the hall/facilities/drinking fountain, and/or capriciously leaving class early is disruptive to everyone and will be considered an unexcused absence regardless of the amount of time late, missed, or remaining.
- While in class, you are expected to be focused on the topic at hand.
- Texting, surfing the Internet, etc., is considered disruptive behavior, and may result in disciplinary action. (See sections 3.2.3 and 3.2.4 of Code of Students Rights, Responsibilities, and Disciplinary Procedures in your Undergraduate Bulletin.)

**HOMEWORK:**

Homework is worth a total of 100 points of the 650 points for the course. All homework is graded online. Be aware of the due dates online. Homework deadlines will not be extended. See Course Pack for complete details.

**DAILY WORK GRADE:**

The daily work grade is worth a total of 100 points. Ten of these points are for attendance. Two points will be deducted for every unexcused absence. The other 90 points will be from quizzes. There will be 8 quizzes worth 15 points each; the lowest 2 quiz scores will be dropped. There will be **no make-up quizzes.** If you will miss a quiz due to *participating* in a university-sponsored event, see Mrs. Burch to arrange to take the quiz before you go.

**GRADES:**

There are a total of 650 points for the class**.** Homework is worth 100 points and the daily work grade is worth 100 points. There are three exams worth 100 points each, and a final exam worth 150 points. **Grades will be assigned as described in Course Pack. Final letter grades with +/– will be determined at the end of the semester.**

**FINAL EXAM**:

The final exam is comprehensive. See bulletin or Central Link for schedule.

**WEATHER ISSUES:**

University cancellations due to weather can be obtained by calling 7500.

**ACCOMODATIONS:**

***CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first register with the Office of Student Disability Services (120 Park Library, telephone# (989) 774-3018, TDD #2568), and then contact instructors as soon as possible.***

## Additional Remarks and Helpful Suggestions

The GTA Coordinator of the Graduate Teaching Assistants will observe each of you at least once during the semester. As per Graduate Teaching Assistant contract, you will be notified at least 5 days prior to any observation. You will be given a copy of written comments for your use, with suggestions on teaching style, hints, preparation, and general improvement. These visits usually start the second week of the semester and will not necessarily be before the first test. So, if you have questions sooner, do not hesitate to contact the GTA Coordinator. New instructors will be observed first. If the GTA Coordinator's schedule makes it impossible for him/her to see you teach, then another professor will observe your teaching.

*Dress code*

While the University does not have a formal dress code for students, student employees are expected to dress in a professional manner as it relates to the area of the University for which they are working. Please keep in mind that impressions of an office are often formed through the dress and manner of its employees. There are a few instances in which it would be appropriate to wear items such as mathematically themed shirts sold through KME or AMS. Please see the GTA Coordinator or the Graduate Coordinator if you have questions about attire.

https://www.cmich.edu/about/human-resources/student-employment-opportunities/student-information

*Make an effort to learn your students' names as soon as possible*

This is useful in so many ways, and the students notice and appreciate a teacher who knows them by name. It will help in maintaining good attendance and class order because they will realize you notice when they are absent (or inattentive). Make a seating chart or pass an attendance sheet around each day, then glance at it while you are lecturing and use the students' names as you teach. Hand back quizzes and tests individually to each student if you have time and look at their faces when you do this. It will help you connect names with faces. You should recognize each of your students' names by the end of the second or third week of class, even if you cannot connect the name and the face yet. You should know, for example, when you are grading a test that a particular student is not yours, and you have an exam that belongs to another instructor by mistake. Learning students' names will pay big dividends!

*Discipline Problems—Student Code of Conduct*

Disruptive behavior should not be tolerated and be addressed as soon as it starts. Visit the GTA Coordinator any time with any issue for advice and guidance. The University Undergraduate Bulletin gives support for an instructor to remove a disruptive student from class. You should be aware that these statements exist and that you have the right to use them if necessary.

*Grade books*

For online asynchronous classes, grading will be automatically recorded for you on the homework/exam system being used; however, you may be required to manually update the Blackboard gradebook each week.

For in-person classes, grade books may be kept in an electronic spreadsheet, a hand-written offline grade book, or a dedicated grade book program (that is not housed externally). [Useful hint: If you use a hand-written grade book, do not write names in it until after the drop/add period has ended (about the 2nd week of classes). Keep any daily work grades before that time on your class list until then.] You are also required to update grades in Blackboard for students each time you update your grade book (i.e., any time you add a quiz, test, other assessment, or copy over their homework grade). Enter grades to both the grade book and Blackboard directly from their assessment or the homework system, rather than from one to the other, and compare the resulting grades afterward; this helps you catch errors if they do not match. The "external grade" in Blackboard should match their grade to that point in the grade book and should be the best representation of their grade to that point based on the details for determining grades detailed on your syllabus. Use a separate column for each assessment, labeled Quiz #1, Quiz #2, Test #1, etc.; if using an online homework system (for example, WebWork, MyMathLab, etc.), you may simply copy over the homework average into a single column since the homework system automatically keeps track of all homework scores. Contact the GTA Coordinator, if you need any help or have any questions.

*Lesson Plans*

In planning your presentation of the material for MTH 101 or MTH 105, look at the Course Packet and text assignments first to see exactly what is to be covered. Course Objective sheets will be provided to help you with content for lesson plans. Sometimes not everything in a section is covered and you do not want to use valuable class time discussing something the students are not going to be responsible for. Do the homework problems (or at least the harder ones) to see how involved your lecture will have to be to cover everything adequately.

*Classrooms*

You will be teaching in either Moore Hall or Pearce Hall. Classrooms that we use in Pearce Hall and Moore Hall are equipped with visualizers and computers. Familiarize yourself with your classroom before the first week of classes. If you need help with working the visualizer or computer, see the GTA Coordinator. You will need a code to operate these machines. Access codes are different in every building and change each semester. You will be given the code(s) for the building(s) you teach in.

*What to Do if You Finish Your Lecture Early*

The usual situation is that we never seem to have enough time to get through all the material in MTH 101/105. No matter which course you teach, if you are consistently finishing with your lessons early, you may be going too fast. Most of your students are lost, even though they may not tell you. They may not even realize that they are lost until the exam, when it is too late. Be sure to allow time for students to ask questions about homework or quiz problems, or about material you are presenting in a lecture. Come prepared to class with extra examples for student practice. Do not dismiss class early – use every minute available.

Ask your students questions! Questions do not have to be fancy! Some sample questions you could ask your students might include:

- Who did this problem a different way? What was your way?
- Which solution to this problem is easier to understand, mine or Student X's? Why?
- What homework problems did you have trouble with? (You may not have time to go through many of them in class, but at least you will know what problems you are going to be seeing in office hours!)

- Is there some rule or formula that we need for this problem? Tell me the name if you cannot remember exactly what it says.
- We just subtracted five from both sides of this equation. Can somebody please tell me what we should do next? Can someone explain why we did that?

If you are allowing plenty of time for questions and you still have time left over, try these suggestions:

- Give students some review problems over a topic covered earlier in the week. Let them work in groups while you walk around and answer questions.
- Give a quiz (real or practice—have it made up in advance or pull problems out of the book.)
- Do some review word problems—these are always confusing for these students.
- As a last resort, start some new material, particularly if the topic you are covering seems easy for your students and you know something hard is coming up. (Note: word problems and graphing are always hard for 101/105 students.)

*Grading Hints*

Keep your quizzes short: 10 to 15 minutes. Use two or three problems. If you do not like making up quiz problems, use homework problems: it encourages students to do homework. Short, frequent quizzes are more helpful for feedback than long, infrequent ones. They are easier to make and to grade and they do not take as much class time.

*Promptness in Grading*

It is a courtesy to your students to get their quizzes, and exams graded as soon as possible, ideally by the next time that class meets. This is particularly important on the first test, when students with scores below 70% will be thinking seriously about dropping the class and may wish to come in for advice on what to do.

## Resources for Undergraduate Students

The **Mathematics Assistance Center** has two locations: Park Library (room 428) and 002 Troutman Hall (Towers Basement). Free walk-in tutoring is available. The hours for the Math Assistant Center are announced at the beginning of each semester, and can be found on the following webpage:

https://www.cmich.edu/academics/colleges/college-science-engineering/centers/mathematics-assistance-center

Tutoring will begin on the first day of the second week of classes and will run through the last week of classes. The Center is not open during finals week. The goal of the Math Assistance Center is to give students additional help and explanations for math concepts being taught in their courses. Tutors **should not** do homework assignment for students; they **should not** substitute as a student's instructor when the student has missed class, and they **should not** do problems on take home quizzes.

**Supplementary Instruction Sessions** for many university courses are set up by Academic Advising and Assistance. You will be notified of times and locations and are expected to pass on the information to your students.

**Review Sessions** will be held by the MTH 105 coordinator before each MTH 105 exam. These are in addition to any review you may have time for in class. They will generally be held in the evening a day or

two before the test. Some of you will be asked to run a review session. Encourage your students to attend these sessions. We try to accommodate the wishes of the students as far as days/times. Be sure to hand out the exam information sheets, which you will be given before each test. MTH 101 instructors will review in class and may schedule out-of-class reviews at their discretion.

## Other Information

*University Mathematics Competency*

The University has a competency requirement for Mathematics. The competency requirement is the minimum mathematics required for a student to graduate with a Bachelor's degree from Central Michigan University. More information is outlined in the MTH 101 and 105 Course Packs and is available in the Undergraduate Bulletin.

*Adding (Bumping), Withdrawing, and Dropping a Class*

Students may drop and add classes online through mid-night of the first Friday of the semesterR via Central Link's course registration site. In general, if a student desires to "bump" into a closed section, they must seek the instructor's approval. Check with your course coordinator for confirmation of the course's "bump" policy. Students on waitlists have priority over bump requests.

The last day for students to drop back to a lower-level class or move to a higher-level class is the first Friday of the semester. Late enrolled students will be taking the first exam at the regularly scheduled time—they are NOT eligible for a make-up on Exam #1 unless they have an excused absence for exam day. You need to set your own policy, before the semester starts, for how you will handle make-up work (quizzes, etc.) for these students on their daily work grade.

The last day to withdraw from a course occurs at the tenth week of the semester. Students will be doing this online via Central Link. **Note:** The terms "withdrawing" and "dropping" are used interchangeably by many people, but "dropping" a class implies that the student will get a refund of money; "withdrawing" does not. Dropping a class only occurs during the first week's "Drop and Add" period.

*Class Lists*

You will access your class lists by using Central Link. You will probably have 35-40 students in each of your classes. You should compare your attendance sheets to your class lists to determine any inconsistencies. Check the online class list frequently during the first few weeks, because it will be updated regularly by the Registrar. Once you have the official class list, compare it with your sign-in attendance sheets and make note of any student who is on your list but who has never attended. If using an online homework system, you will want to cross-reference the CMU class list and the list of online registered students: email students on the CMU class list not registered for the online homework. You will need to do this multiple times during the first couple of weeks of a semester.

*Report of Non-Attendance*

As previously mentioned, it is highly recommended you take attendance each day. At the end of the third week of class, you should submit a Report of Non-Attendance for students who have never attended your class. The form can be completed on-line at the Office of the Registrar's website, which may be accessed via Central Link. There is also a place on the Non-Attendance Report form where you can report that a

student has quit coming to class. You can submit this report to the Registrar at any time during the semester before the final date to withdraw from a class (tenth week.) Also check to see if you have students attending your class who are not on your lists. They might be attending the wrong section and we need to get them into the correct section.

*End of Course Surveys*

At the end of each semester, you are required to administer course evaluations. These student evaluations are on record in the department office and online. Part of the student evaluation includes written comments that are often helpful in improving your teaching.

*Grade Reports*

Final semester grades are submitted on-line to the Registrar's Office. You will receive instructions from the Registrar as to how to complete the necessary forms. For those teaching MTH 101 or MTH 105, you will be given explicit instructions for computing your final grades. You must follow the department and course guidelines for assigning grades. It is patently unfair and unprofessional to give a student a grade that is higher or lower than he/she earned, whether this was done intentionally or unintentionally.

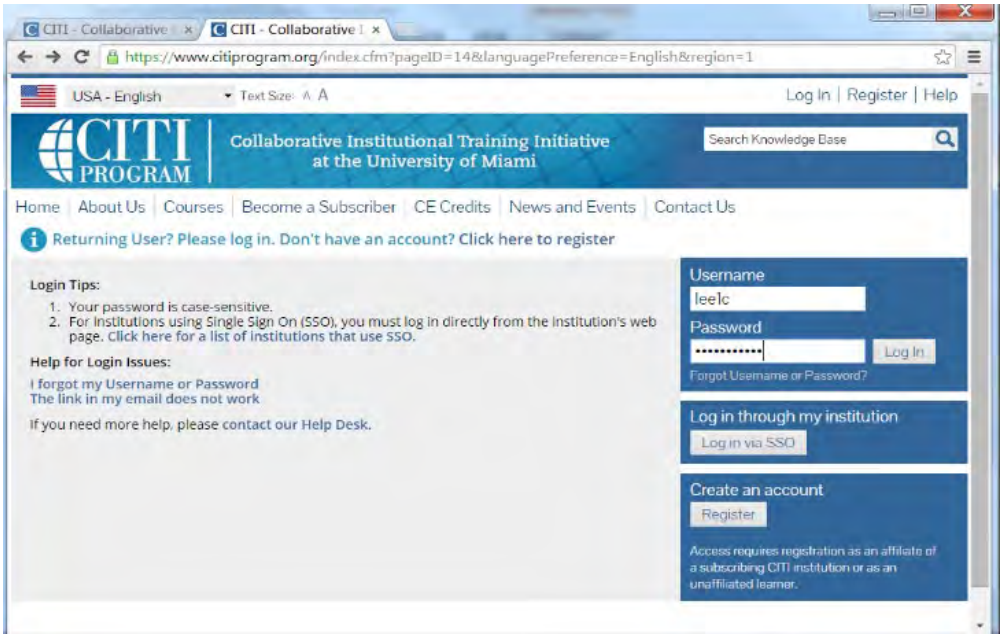
*Giving an Incomplete (I) Grade*

If an undergraduate student requests an incomplete grade, visit the GTA Coordinator to determine if an "I" is appropriate, and instructions for filing such a grade. The CMU policy on giving a student an "I" grade is outlined under Academic Information in the Bulletin. An "I" should be given only when a student has completed with satisfactory grades the major portion of the course requirements and has convinced the instructor of his/her ability to complete the remaining work without re-registering for the course. It is not to be given to a student doing failing work. This is not an easy grade to assign, and although students will pressure you for an "I" rather than an "E" or a "W", you must hold firm to University and Department guidelines. The Department of Mathematics has a special Report of Incomplete form available in the department office.

# Part V: Appendices

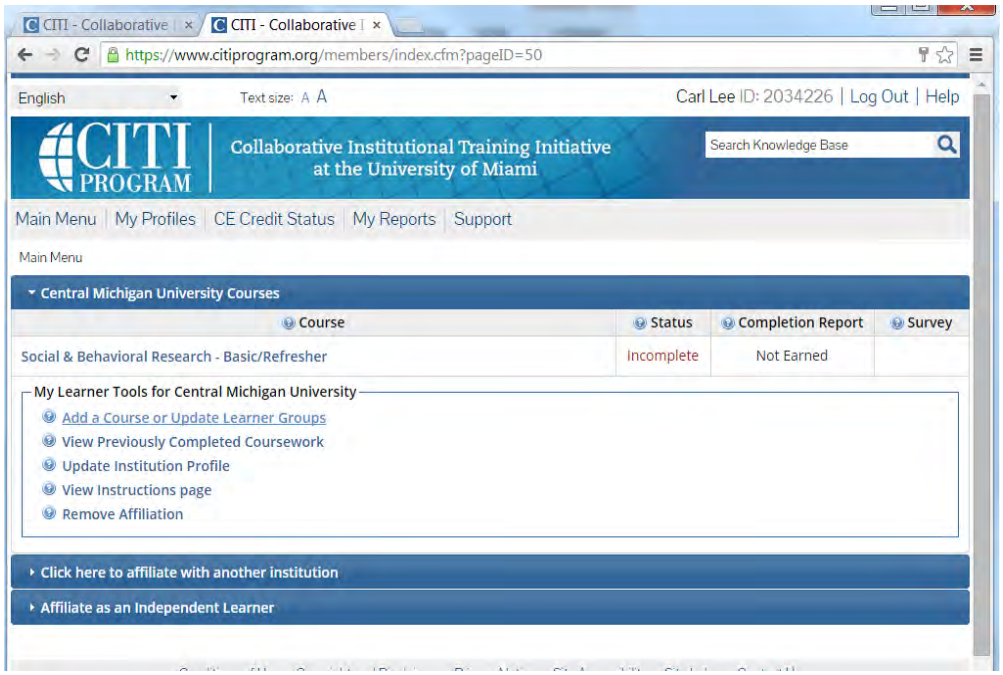
## Appendix A: Instruction for conducting RCR Training

Go to [www.citiprogram.org.](http://www.citiprogram.org.) First time user: You need to register to create your Username and Password.



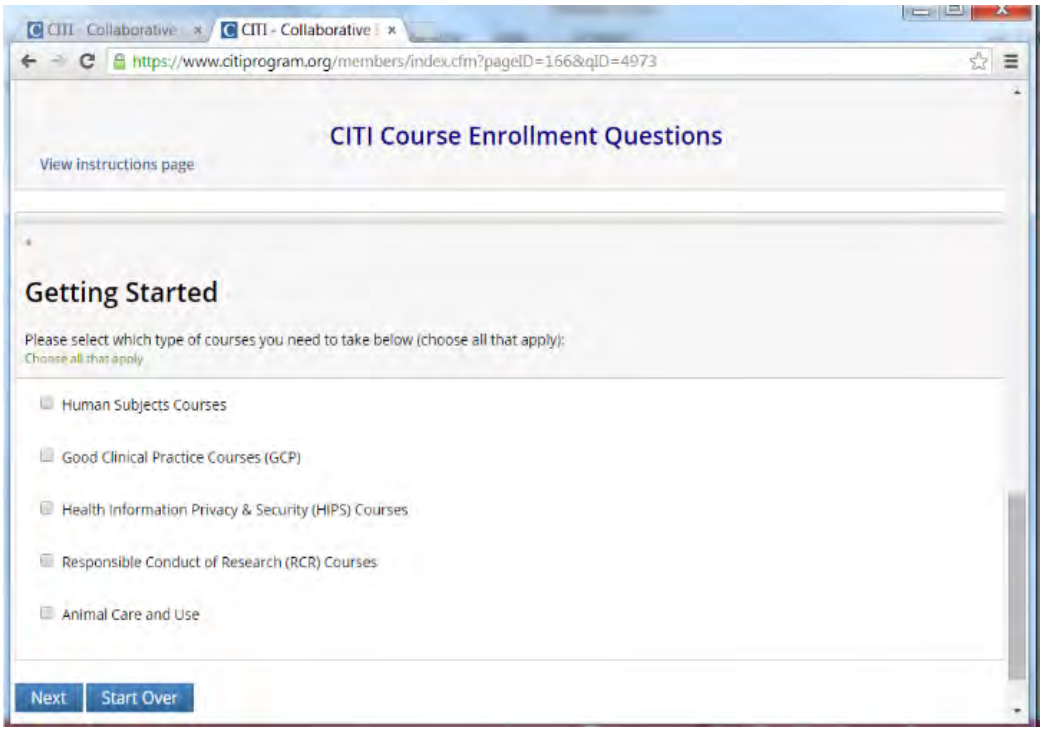

After successful registration, enter your Username and Password to Log In.

Click on 'Add a Course or Update Learner Groups', then, move the cursor down on the page to see the bottom part of the page.

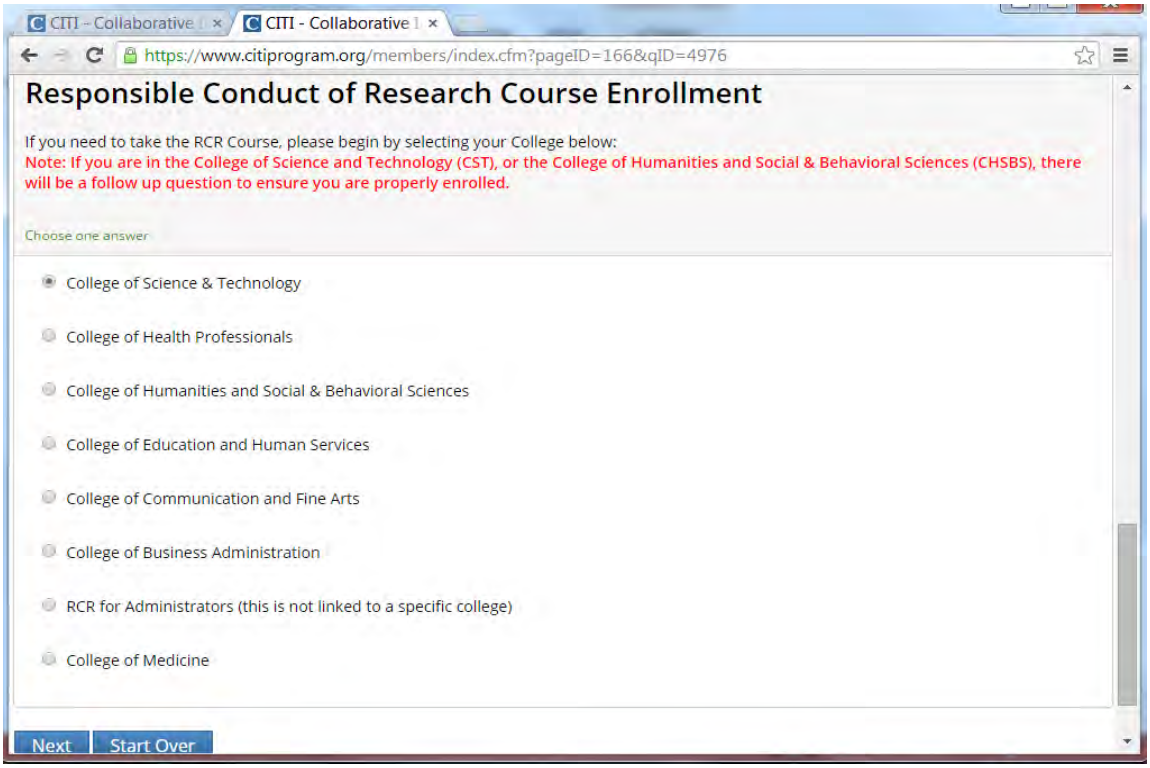


Click on Responsible Conduct Research (RCR) Courses, then, Next.

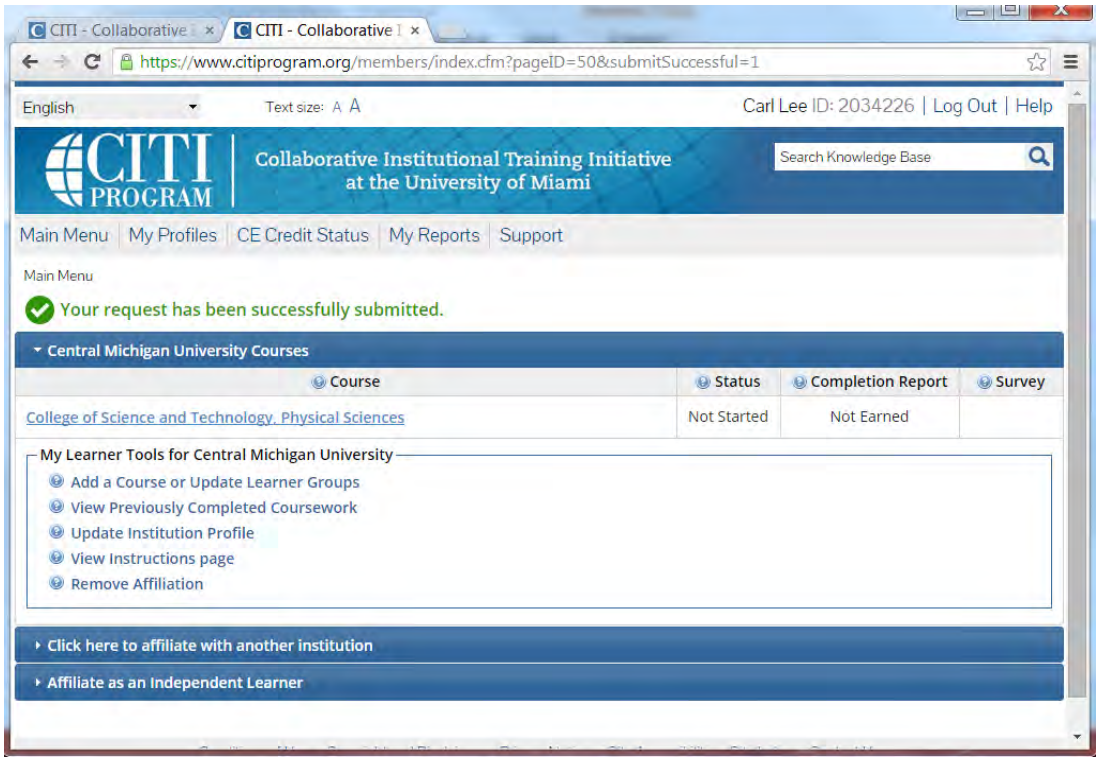
In the following page, move the cursor down to the bottom of the page to select the College.



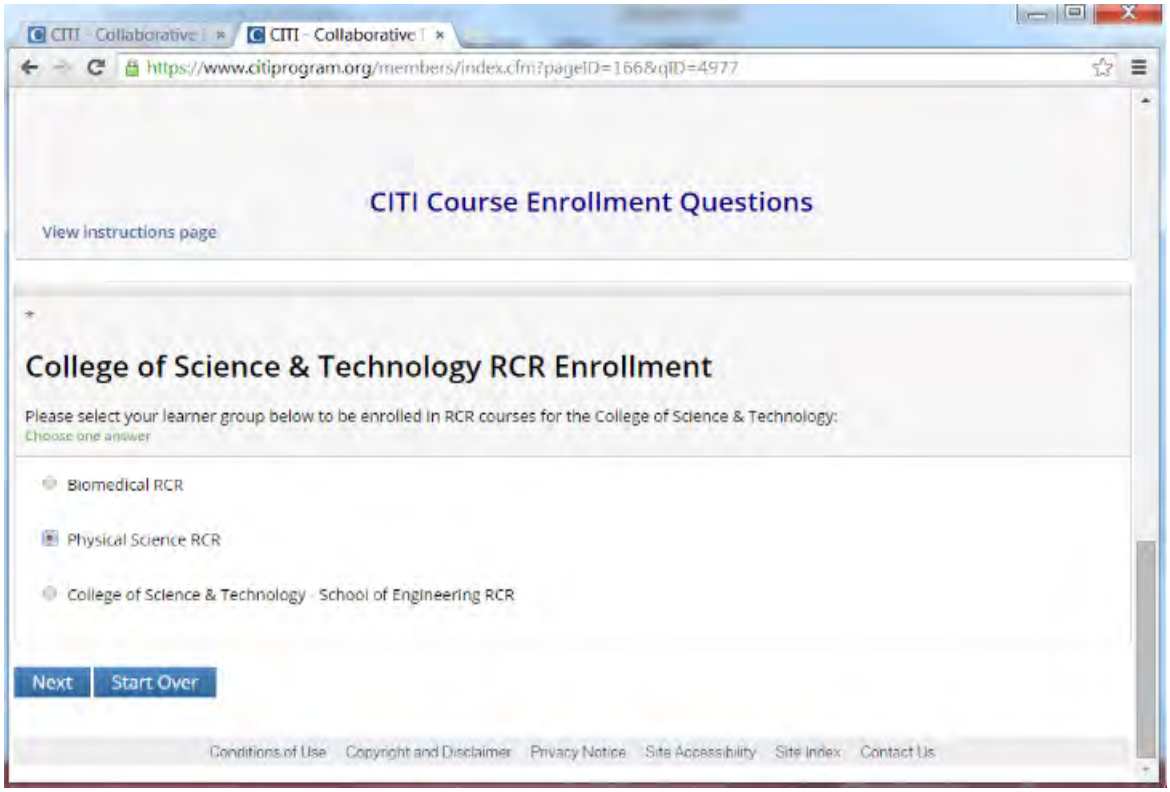

Choose College of Science & Technology,




Next to go to the next page. Move the cursor down to the bottom to see the following




Click on the course you just added: 'College of Science and Technology, Physical Science to begin your training.




Once complete, download your completion report and email it to the Department Secretary and the Graduate Coordinator in order for the department to record your completion record. Please keep a copy of your completion report.

# Appendix B: Graduate College Forms

The following forms can be found at

https://www.cmich.edu/offices-departments/office-research-graduate-studies/graduate-studies/student-services/forms

**Plan A Completion Sign-off**
This form must be initiated by students pursuing a Plan A Master's degree. The form must be completed after all requirements for the degree have been completed, and signed by the student, advisor, and thesis committee.

**Graduate Transfer Credit Request Form**
This form must be completed by a graduate student that has taken classes at another university or college that wants the hours to be recognized.

**Student Performance, Exhibition, Competition, or Presentation (PECP) Grant** This grant is for any student who has research or endeavors that they would like to get published or work they would like to present at a conference. You can apply for a grant to help you out financially.

**Graduate Student Endeavors Grant**
This grant is used to help graduate students with cost for their research or creative endeavors.

**Graduate Assistant (GA) Conference Grant**
This grant is used to help graduate students with expenses for attending conferences.

**Prospectus (for Theses, Doctoral Projects, & Dissertations)**
This form is needed for all Master's students selecting Plan A, and for all doctoral students. The student and the dissertation/thesis advisor together will complete this form. Upon receipt of this form, the Office of Research & Graduate Studies will send the student a copy of the Preparation Guide for Doctoral Dissertations, Doctoral Research Projects and Theses.

## Appendix C: Course Waiver Form

CENTRAL MICHIGAN UNIVERSITY
Department of Mathematics
Course Requirement Waiver Form

NAME _____ Student # _____

Any course requirement to be waived must be discussed with and approved by the graduate student's academic advisor prior to being submitted to the Graduate Coordinator. If the course content is not in the area of expertise of the student's academic advisor, the advisor should consult with a faculty of the area of expertise to ensure the two courses are comparable.

STATE WHICH CMU COURSE YOU WOULD LIKE TO HAVE WAIVED:

STATE THE EQUIVALENT COURSE YOU HAVE TAKEN AND AT WHAT UNIVERSITY YOU TOOK THIS COURSE:

Attach the course description and the syllabus of the course you took.

_____ _____
Student's Signature Date

Advisor's Comments:

_____ _____
Advisor's Signature Date

Graduate Committee's Comments:

_____ _____
Graduate Coordinator's Signature Date

# Appendix D: Scheduling Policy for Graduate Teaching Assistants

Graduate students in the Master of Arts program who are given full TA responsibilities are expected to be given a "full load" during both semesters of the academic year. Similar graduate students in the Ph.D. program, however, are given a "full load" during the Fall semester and a "reduced" load during the Spring semester. Definitions of "full load" and "reduced load" are given below.

**Full load responsibilities**

A graduate assistant assigned a full load will be given precisely one of the following schedules for one semester.

- **3 credit hours teaching load + 2 office hours + 7 hours at the MAC**
- **4 credit hours teaching load + 2 office hours + 5 hours at the MAC**
- **5 credit hours teaching load + 2 office hours + 3 hours at the MAC**
- **6 credit hours teaching load + 2 office hours + 1 hour at the MAC**
- **14 hours at the MAC**

**Reduced load responsibilities**

A graduate assistant assigned a reduced load will be given precisely one of the following schedules for one semester.

- **3 credit hours teaching load + 2 office hours + 3 hours at the MAC**
- **4 credit hours teaching load + 2 office hours + 1 hour at the MAC**
- **8 hours at the MAC**

**Note:** A graduate assistant must tutor in MAC in-person (even in case of online asynchronous teaching load).

The "teaching load" above is determined the same way as it is for faculty, and which is outlined below. Note that the base enrollment ($B$) is 35 students (45 students for online courses), but this may be changed by the Executive Council.

1. For a three-credit course scheduled with a cap $C$, let $E$ be the enrollment in the course after the first month of the semester.
    a. If $C \leq B$, then the course will equate to three (3) credits of teaching load.
    b. If $C > B$ and $E \geq C$, then the number of credit hours of teaching load is given by the integer nearest to $\frac{121+2C-2B}{40}$.
    c. If $C > B$ ad $E < C$, then the number of credit hours of teaching load is given by the integer nearest to $\max\left\{3, \frac{121+2E-2B}{40}\right\}$.
2. For a four-credit course scheduled with a cap $C$ let $E$ be the enrollment in the course after the first month of the semester.
    a. If $C \leq B$, then the course will equate to four (4) credits of teaching load.
    b. If $C > B$ and $E \geq C$, then the number of credit hours of teaching load is given by the integer nearest to $\frac{61+C-B}{15}$.
    c. If $C > B$ and $E < C$, then the number of credit hours of teaching load is given by the integer nearest to $\max\left\{4, \frac{61+E-B}{15}\right\}$.

## Appendix E: Continuous Registration Waiver Form

CENTRAL MICHIGAN UNIVERSITY
Department of Mathematics

NAME _____ Student # _____

According to university guidelines, the Mathematics Department generally requires a graduate student to enroll in at least one CMU graduate credit hour in the Spring or Fall semester of each academic year in order to continue progress on a degree. This requirement can be satisfied by enrolling in course 619.

If a student wishes to leave the program and *not* use university services (*e.g.* university email, library, faculty time, etc.), then they must fill out this form, have it signed by their advisor, and submit the form to the Graduate Coordinator for consideration.

Waiver Reason:

Expected date to resume classes:

New contact information

E-Mail (non CMU):

Phone:

Address:

_____ _____
Student's Signature Date

_____ _____
Advisor's Signature Date

_____ _____
Graduate Coordinator's Signature Date

## Appendix F: Application for Candidacy for Doctoral Degree

COLLEGE OF
SCIENCE & ENGINEERING
MATHEMATICS
CENTRAL MICHIGAN UNIVERSITY

# Admission to Ph.D. Candidacy

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**To be completed by student:**

Name (print): _____

Email: _____

Ph.D. Concentration (Math or Math Education): _____

Dissertation Advisor: _____

Qualifying Exam #1: _____ Date passed: _____

Qualifying Exam #2: _____ Date passed: _____

Internship Course: _____ Internship Semester: _____

Internship Supervisor: _____

Dissertation Committee Members:

1. _____
2. _____
3. _____

Signature: _____ Date: _____

---

**To be completed by dissertation advisor:**

By signing below, you agree that all information above is correct as per your knowledge.

Signature: _____ Date: _____

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**To be completed by Graduate Coordinator:**

By signing below, you agree that all information above is correct as per your knowledge.

Signature: _____ Date: _____

---

**To be completed by Department (Associate) Chair:**

Approve: ☐ Deny: ☐

Signature: _____ Date: _____

# Appendix G: Plan B Completion Approval Form

COLLEGE OF
SCIENCE & ENGINEERING
MATHEMATICS
CENTRAL MICHIGAN UNIVERSITY

## Plan B Completion Approval Form

TYPE or PRINT CLEARLY

**Student Name**: _____ **ID#**: _____

**Email Address:** _____

This project has been completed in partial fulfillment of the requirements for the following degree:

_____

☐ **Passed** _____ **Qualifying Exam held on** _____
Exam Name Date

**Graduate Coordinator:** _____
Signature Print Name Date

☐ **Plan B Paper**

**Title:** _____

**Supervisor:** _____
Signature Print Name Date

**Research involving Human Subjects require approval from Institutional Review Board (IRB)**

☐ Research did not involve human subjects

Human Subjects ☐Yes _____
Approval Date

**Department Chair**: _____
Signature Print Name Date

214 Pearce Hall • Mount Pleasant, MI 48859
✉ math@cmich.edu • 💻 se.cmich.edu/mth • ☎ (989) 774-3597