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2017

2017-2018 Graduate Handbook for the Master of Arts in Educational Mathematics

Otterbein University

Graduate Handbook

MASTER OF ARTS
in
EDUCATIONAL MATHEMATICS
(MAEM)

2017 - 2018

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Mission Statement

The Master of Arts in Educational Mathematics program, upholding the Otterbein University Mission Statement and the Mission of Otterbein's Graduate School, commits to providing mathematics teachers with experiences that will strengthen their pedagogical content knowledge, empowering them (a) to increase instructional effectiveness, (b) to influence the ethos of learning mathematics, and (c) to become teacher leaders in mathematics.

Program Goals and Objectives

The Master of Arts in Educational Mathematics program, designed for teachers holding Adolescent-Young Adult (AYA) Licensure in Integrated Mathematics, focuses on providing professional development in pedagogical content knowledge. Reflecting the tenets proposed by the National Council of Teachers of Mathematics (NCTM), the Mathematical Association of America (MAA), and the Common Core Standards in Mathematics, candidates in this program will explore topics and techniques that directly related to the secondary curriculum and enrichment material that can apply to contemporary mathematics classrooms. Objectives for the program include:

• To increase teachers' mathematical skills and understanding, including the ability to solve problems and to reason mathematically.
• To develop teachers' awareness of historical and contemporary mathematics.
• To improve teachers' ability to represent and communicate mathematical ideas.

Program of Study

To meet these objectives, the Master of Arts in Educational Mathematics requires coursework in three areas:

MATHEMATICAL PROCESSES (6 semester hours)
Courses in the Mathematical Processes component emphasize the theory, research, and practice of teaching mathematics. Determining how adolescents come to understand math, along with ways of fostering those understandings, is the cornerstone to effective math teaching. By applying cognitive learning theories directly to mathematics instruction, teachers are able to design and facilitate lessons that engage students "as mathematicians."

Select two from the following:
EDUC 6880 Problem-Solving in Mathematics Education (3)
EDUC 6881 Discourse in Mathematics Education (3)
EDUC 6882 Representations in Mathematics Education (3)

MATHEMATICS from a MODERN VIEWPOINT (15 semester hours)
Courses in the Mathematics from a Modern Viewpoint component emphasize intensive explorations of core curricular topics. With a deeper understanding of mathematics, teachers are better able to make the discipline meaningful for their students. Having a connected, comprehensive, and detailed view of mathematics enables teachers to make instructional

decisions based, not simply on good practice, but according to fundamental principles that guide all of mathematics.

Select five from the following:
MATH 6110 Algebraic Structures for Mathematics Teachers (3)
MATH 6120 Probability and Statistics for Mathematics Teachers (3)
MATH 6130 Finite Mathematics for Mathematics Teachers (3)
MATH 6140 Number Theory for Mathematics Teachers (3)
MATH 6150 Advanced Geometry for Mathematics Teachers (3)
MATH 6160 Advanced Calculus for Mathematics Teachers (3)

COMPARATIVE STUDIES in MATHEMATICS (6 semester hours)
Courses in the Comparative Studies in Mathematics component emphasize historical, cultural, and contemporary issues related to mathematics and mathematics education. Taking courses in mathematics beyond the traditional core of algebra/geometry/calculus encourages fresh insights into thinking and reasoning mathematically. Looking at mathematics through a variety of social and applied lenses provides teachers an opportunity to strengthen both inter- and intra-disciplinary understandings, ideas that can influence personal and professional definitions of what it means to do mathematics.

Select three from the following:
MATH 6210 Great Theorems in Mathematics (2)
MATH 6220 Combinatorics for Mathematics Teachers (2)
MATH 6230 Topology for Mathematics Teachers (2)
MATH 6240 Dynamic Systems for Mathematics Teachers (2)
MATH 6250 Game Theory for Mathematics Teachers (2)

In addition to graduate courses, candidates must complete Comprehensive Exams related to content & pedagogy and must conduct an Action Research Capstone (EDUC 6890 and EDUC 6895) regarding their classroom practice.

Comprehensive Exams

A comprehensive three-hour written examination will be required for program completion. The exam will include questions from each of the three program components (Mathematical Processes, Mathematics from a Modern Viewpoint, and Comparative Studies in Mathematics). Questions from each component area will be provided by instructors who teach that component. Instructors providing the questions will also be responsible for evaluating student responses. The examination is administered upon completion of course requirements from the three areas. Students are expected to achieve at least 80% proficiency on the exam. A student who does not achieve this level will be encouraged to arrange an independent study with an appropriate instructor to address areas of concern.   The student must then repeat the exam.

Action Research Capstone

Students must design, implement and reflect on an action research project in a mathematics classroom setting. They will complete EDUC 6890 Mathematics Education Research Seminar (2 semester hours) to prepare for the project then EDUC 6895 Master's Research Project (1

semester hour) to conduct the project itself. The project will be designed in consultation with the student's advisor. Students will produce a written report covering both the process and product of their research, and present it to their advisor and a designated second reader. Both the report and presentation will be evaluated by the advisor and the second reader. The report will be submitted to either the Otterbein library or to Otterbein's peer-reviewed e-journal, the Journal of Teacher-Initiated Research.

By definition, action research is designed to produce (a) an awareness of the impact of teaching decisions and (b) how to improve one's teaching practice. As a result, intended outcomes for the Research Project include:

- To create a habit of teaching inquiry and reflective practice (MAEM candidates);
- To improve mathematical understanding and increase academic achievement (students of MAEM candidates);
- To promote a culture of sharing "what works" among teaching professionals (colleagues of MAEM candidates).

Institutional Review Board
Otterbein University recognizes the need for investigations in which human beings may serve as research subjects. The University also acknowledges its responsibility for ensuring that the privacy, safety, health, and welfare of such subjects are adequately protected. Consequently, Otterbein has established the Institutional Review Board committee to review and approve the adequacy of human subject protection. The IRB may approve, disapprove or state conditions for the conduct of human subject research. The ethical principles and guidelines utilized are primarily drawn from the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (The Belmont Report). All MAEM Action Research Capstones are subject to approval by the IRB.

Student Research Fund
Students are encourages to apply for funds for their research. Information on how to apply for such assistance is located on the following Otterbein web-site:
www.otterbein.edu/public/Academics/AcademicAffairsDivision/sponsored_programs/Student_research.aspx

Specialization Certificates

Clusters of courses in the MAEM program can be taken in fulfillment of Certificates of Specialization. Although these certificates fall below the threshold that requires Ohio Board of Regents approval, for completeness they are described here. These certificates are awarded by Otterbein University in recognition of expertise in one of the following areas:

Expertise in Applied Mathematics (13 semester hours)
- Finite Mathematics for Mathematics Teachers (3)
- Probability and Statistics for Mathematics Teachers (3)
- Combinatorics for Mathematics Teachers (2)
- Dynamical Systems for Mathematics Teachers (2) **or** Game Theory for Mathematics Teachers (2)
- One of the Mathematical Processes Courses (3)

Expertise in Foundational Mathematics (13 semester hours)
- Number Theory for Mathematics Teachers (3)
- Algebraic Structures for Mathematics Teachers (3)
- Great Theorems in Mathematics (2)
- Topology for Mathematics Teachers (2) **or** Combinatorics for Mathematics Teachers (2)
- One of the Mathematical Processes Courses (3)

Expertise in Metrics and Visualization (13 semester hours)
- Advanced Geometry for Mathematics Teachers (3)
- Advanced Calculus for Mathematics Teachers (3)
- Topology for Mathematics Teachers (2)
- Great Theorems in Mathematics (2) **or** Dynamical Systems for Mathematics Teachers (2)
- One of the Mathematical Processes Courses (3)

More than one certificate can be awarded to an individual. Certificates of Specialization can be awarded prior to and without completion of the MAEM program.

Admission Policies and Procedures

Admission to graduate programs at Otterbein University is open to graduates of regionally accredited colleges or universities, who hold a four year degree, and have the intellectual, academic and personal ability to succeed in graduate studies. Individual programs establish their own requirements (including but not limited to recommendations, standardized entrance test scores, interviews, and writing samples) that are approved by the University Graduate Committee and administered through the Graduate School office.

Admission to the Master of Arts in Educational Mathematics is open to graduates from a regionally accredited college or university who hold a four-year degree in mathematics, mathematics education, or closely-related field and has a minimum undergraduate cumulative grade point average of 3.0 on a scale of 0-4.

Requirements for Consideration of Admission to MAEM:

1. Completed Graduate School application.
2. Official transcripts for all previous college and/or university work. In order to be considered official, transcripts must be sent directly from the issuing institution to the Graduate School. If hand-delivered, transcripts must be in an unopened envelope from the issuing institution.
3. Current resume.
4. Personal statement that addresses how the applicant's goals and interest in the MAEM program are consistent with the purpose and goals of the program.
5. Two recommendation forms. The recommender should be an employer, a professor or person familiar with your professional or academic career. Otterbein University reserves the right to contact persons providing recommendations and to contact a recommender to acknowledge receipt of a recommendation.

All admission materials including transcripts must be submitted to:

Otterbein University

The Graduate School
Roush Hall, Room 208
1 South Grove St
Westerville, OH 43081

Applications will be accepted for the Fall Semester, Spring Semester or Summer Term, and should be received four weeks prior to the desired admission term. Please contact the Graduate School at 614-823-3210 for specific dates.

Graduate admissions are handled by the Graduate School. The Graduate School processes all of the application materials and has admission recruiters/counselors available to meet with prospective students in individualized face-to-face or online sessions both during regular office hours and at least one evening per week.

Transfer Credit

A maximum of six semester hours of graduate work with a grade of B or higher may be transferred from an accredited graduate program upon approval of the Graduate Program Director. No transfer credit is awarded for life experience, portfolio, or credit by examination.

Interruption in Attendance

After admission to a graduate program, continuous progress toward completion of the degree is expected. Students not enrolled for one year must submit an updated admission application to the Graduate School. Official college transcripts must be submitted if additional college or university courses were taken during the time of absence. Additional documents may need to be resubmitted depending on the length of absence. Contact the Graduate School to verify required materials. Students should be aware that new program requirements may be in effect and are encouraged to contact the program director prior to reenrollment.

Time Limit for Program Completion

After a student has been admitted to the graduate program, continuous progress toward completion of the degree is expected. The time limit for the completion of graduate course work is five years, computed from the first date credit is recorded on the college transcript until the program curriculum requirements are completed. Any transfer courses taken outside of the time limit will not be counted toward the degree. If this cannot be met due to circumstances beyond the student's control, an extension request can be submitted to the Graduate Program Director for consideration.

Academic Advising

Every graduate student is assigned an academic advisor who is a full-time faculty member. Students are encouraged to contact their advisor with questions, concerns and related academic issues. A plan of study is developed between the advisor and the student and reviewed at least annually. MAEM graduate students will have an academic advisor in the Department of Mathematical Sciences to help determine their course of study and a faculty project mentor who has similar interests for their research projects.

Commencement

The University holds two commencement ceremonies in May. The Saturday ceremony is for graduate students and the Sunday ceremony is for undergraduate students. All graduates (Summer, Autumn, and Spring) are invited to the May commencement. Guest seating at commencement is limited according to space availability.

To participate in the graduate ceremony, a student must:
• Complete all academic degree requirements, and
• Request and submit a fully signed Application for Degree, and
• Submit any additional required paperwork as specified in the Application for Degree, and
• Meet all outstanding financial obligations.

Refer to Registrar Forms, Transcripts, and Resources at: website http://www.otterbein.edu/public/Academics/Registrar/FormsResources.aspx and click on Request for Graduation Application Packet.

Grade Policy

For students seeking a Master's degree, a minimum grade of "B" is required in all graduate course work. If a grade lower than a "B" is earned, the course must be repeated and a grade of "B" or higher must be earned in order to satisfactorily complete the course. A cumulative graduate grade point average of 3.0 or higher is required in order to remain in good standing and to graduate. Please refer to the Academic Standing Policy in the Academic Policies section of the Graduate Catalog for further details.

Grading Scale
The following grades are included in the calculation of the grade point average:
A = 93-100 (4.0)
A- = 90-92 (3.7)
B+ = 87-89 (3.3)
B = 83-86 (3.0)
B- = 80-82 (2.7)
C+ = 77-79 (2.3)
C = 73-76 (2.0)
C- = 70-72 (1.7)
D+ = 67-69 (1.3)
D = 60-65 (1.0)
F = 59 & below (0.0)

The following grades are not included in the calculation of the grade point average:

F = failing from pass/fail graded course
IP = coursework is incomplete; temporary condition
NR = grade not reported by instructor; temporary condition
P = passing from pass/fail graded course
R = repeated course
S = satisfactory from satisfactory/unsatisfactory graded course

T = transfer credit from another institution
U = unsatisfactory in satisfactory/unsatisfactory graded course
W = withdrawal with permission

Non-Discrimination Policy

Otterbein University does not discriminate on the basis of race, religion, age, sex, color, disability, sexual orientation, national, or ethnic origin, political affiliation, marital or veteran status in admission of students, educational policies, scholarships and loans, housing, athletics, employment, and other activities. Inquiries regarding compliance with federal nondiscrimination regulations may be directed to the Chairperson of the Affirmative Action Committee; the Vice President for Academic Affairs; or the Director of Human Resources." (University Catalog, front cover).

Health Problems Policy

Students are responsible for informing faculty about any health issues which may affect unexcused absences with any program requirement. Typically when students miss class or any assignments due to health reasons, they will be asked by the instructor to provide a doctor's/health professional's statement for verification of the health issue. Instructors are willing to work with each student when health issues arise; however, communication on the student's part is vital to make this process work.

Student Grievance Policies

There are several different situations where the student may feel obligated to file a grievance.

Sexual Harassment and Social Issues
If the student encounters a sexual harassment situation, the student is encouraged to take the following steps:

1. Engage in direct discussion with the faculty, staff, or students involved in an attempt to solve the problem.
2. If the discussions fail to resolve the issue, students are encouraged to follow the formal procedures listed in the Social Issues Update Newsletter that is provided by the Office of Student Affairs.
3. Student to student sexual harassment complaints will be addressed through the University's Judicial Council.

For any other social issue grievances, the student is encouraged to consult with the Student Affairs Office and/or refer to the Campus Life Handbook for more detailed information.

Academic Issues
"Through the Academic Council, which is a standing committee of the College Senate, an avenue for appealing academic polices is provided for all students. Details regarding the appeal process are available from the Office of Academic Affairs. Minutes from past Academic Council meetings are on file in the library" p. 237. (Otterbein University Course Catalog)

STUDENT GRIEVANCE PROCESS

1. The student identifies the grievance that has occurred.

2. The student should initiate a conversation with the individual course faculty member.

3. Next a conversation with the Graduate Program Director can take place.

4. If no resolution, a conversation with the HSS Department Chair should take place.

5. If no resolution, a conversation with the Dean of the Graduate School should take place.

6. Finally, the University System of Due Process can be activated.

Every effort should be made by the student to resolve the conflict with the individual faculty member. Should no resolution occur the student is urged to discuss the situation with the Graduate Program Director. If there is no satisfactory resolution, the student should speak with the Mathematical Sciences Department Chair. Should resolution still not occur the student should arrange a meeting with the Dean of the Graduate School.

If a student's perceived grievance is not resolved through departmental and/or the professional studies/graduate program, the University's formal system of due process may be initiated by the student as outlined in the Otterbein University Campus Life Handbook under Appeals Council and Academic Council. Please refer to:

http://www.otterbein.edu/public/CampusLife/HealthAndSafety/StudentConduct/JudicialSystem.aspx

Any student who is convinced that his/her academic performance has been evaluated on other than an academic basis or in a prejudiced or capricious manner has the right to appeal.

The evidence leading to this conclusion shall be presented by the student in writing to the Dean of the Graduate School after the student has consulted with the professor involved and the Department of Mathematical Sciences as outlined.

The Dean of the Graduate School shall consult with the student and the faculty member, after which the appeal may be passed on to the Appeals Council for its consultation and judgment. The actual grade change, if deemed in order by the Appeals Council, shall be determined by the Dean of the Graduate School in consultation with the student and the professor involved in the appeal, or, if the professor is unavailable, with the Mathematical Sciences Department Chair.

Academic Appeals

Through the Academic Council, which is a standing committee of the University Senate, an avenue for appealing academic policies is provided for all students. An Academic Appeals Committee of the Graduate Program deals with all issues of academic misconduct involving graduate students. Details regarding the appeal process are available from the Office of Academic Affairs. Minutes of past Academic Council meetings are on file in the Library.

The following sequential steps should be followed in appeal if a student is convinced that he or she is a victim of unlawful discrimination or of decisions arrived at in a prejudiced or capricious manner:

1. Discuss the matter with the professor involved.

2. Discuss the matter with the Director of Graduate Programs in Mathematical Sciences.

3. Discuss the matter with the Chair of the Mathematical Sciences Department.

4. Present evidence in writing, then discuss the matter with the Dean of the Graduate School.

5. Appeal in writing with supporting evidence to the Graduate Academic Appeals Council.

Details regarding the appeal process are available from the Graduate School, the Graduate School Handbook and on the Otterbein website.

Plagiarism

Students will be reminded and instructed in class on the appropriate work and citation expectations required for all course related assignments. Students are expected to complete their own work and without assistance unless otherwise arranged in advance. All work will be checked for potential plagiarism issues, including but not limited to such items as:
• Direct quotations
• Indirect quotations
• Facts, figures, tables
• Secondary sources
• Previously used assignments

If a student is unsure whether or not to cite a particular item, they should consult with their professor.

The first incident of plagiarism activities will involve a penalty to the student(s). Those penalties may include:
• Lowering the grade
• Receiving a "0" for the assignment
• Re-doing the assignment
• Receiving an "F" for the course

The following procedures will take place if a faculty member determines that some academic dishonesty has taken place:

1. The faculty member will inform the student, in writing, within five (5) business days the exact nature of the dishonesty with the corresponding penalty.

2. The faculty member will also send in writing, a memo describing the incident to the Mathematical Sciences Department Chair and Dean of the Graduate School. This memo will be submitted within five (5) business days.

3. A student will have five (5) business days to appeal the decision. The appeal will first take place with the student presenting his/her case to the Mathematical Sciences Department Chair. The Department Chair will consult with the involved faculty member who will present the evidence found with the case.

4. At this time, the student has the option to bring either their advisor or another faculty member to support them in presenting their case to the Mathematical Sciences Department Chair.

5. The Mathematical Sciences Department Chair will make the final decision with the case.

6. The student has the right to appeal the decision and should consult the Otterbein Campus Life Handbook for the appeals procedure.

7. If a second incident of plagiarism or academic dishonesty occurs, the Dean of the Graduate School will select a committee to review the incidence. The committee will include two graduate level faculty members and one graduate level student along with the Dean of the Graduate School who will chair the committee. The probable outcome of a second academic dishonesty offense will be either suspension from the program for a semester or a year or dismissal from the program. The decision of the case will occur in five (5) business days once the committee is selected. The student has the right to appeal the decision and should consult the Otterbein Campus Life Handbook for the appeals procedure.

The Honor Code

In 1987, the Academic Council adopted an Honor Code to be used at the discretion of the faculty. In order for it to be used in a particular class, students must vote unanimously to adopt the Code.

The following statements serve as the rationale for the Honor Code:

- Students should be conscious of the need to take personal responsibility for all their work both as individuals and as members of a class.
- Students and faculty members should actively engage in discussions related to academic integrity (e.g., differences between plagiarism and legitimate scholarly work and appropriate versus inappropriate sharing of information among classmates).
- Faculty members should be able to treat their students as fellow searchers for knowledge; in order to do so; they should not have to police examination rooms.

The following procedures for adopting the Honor Code are suggested:

1. At the beginning of a course, a professor may choose to discuss the Honor Code and academic integrity in general.

2. A class would be asked to vote on the use of the Code. A vote would be taken, by secret ballot, during the first few days of the course. In order to adopt the Code, the vote must be unanimous.

3. All students would sign an Honor Pledge at the end of every examination.

4. The professor would leave the classroom during examinations but would remain available in case of questions.

5. Students would feel obligated to report breaches of the Honor Code to the professor or to the Office of Academic Affairs.

6. Violations of the Honor Code would be handled exactly like any other cases of plagiarism or cheating.

Financial Aid

The Office of Financial Aid works with graduate students to ascertain qualifications for financial aid from the University and from other sources. Graduate students are first asked to go on-line

and complete the FAFSA form and the Graduate Student Institutional Aid Form. The Otterbein University code is #003110 for FAFSA. The Office of Financial Aid has identified a full-time counselor specifically trained to work with graduate students.

Registrar

The Office of the Registrar serves both undergraduate and graduate students. Online course registration is available through Banner. In order to meet the needs of working adults, the Office of the Registrar remains open for evening hours at least one day each week during the academic year.

Information and Technology Support Services

All students are provided with technical support services, from help-lines to technology seminars to self-directed study sessions from a selection of tutorials on the Intranet web site. Otterbein University uses the Blackboard Course Management system. This is supported by the Department of Information & Technology Services. In addition, the Collaborate course webinar platform is available to provide synchronous classroom experiences and discussions.

Blackboard support for students includes:

- Assistance with logon problems
- Enrolling students in special classes such as placement exams that are not captured by daily imports
- Training (usually one on one unless requested by an instructor for orientation e.g. nursing) on how to use the features
- Going as an in between if the class is not available ie. turned on by the instructor.
- Troubleshooting pc environments if features are not working or their Internet browser is not compatible with Blackboard's version.

The Student Help Desk fields questions about computer hardware, computer software, network and system accounts, passwords, residence hall networks, classroom technology and audio-visual equipment.

Blackboard support and the Student Help Desk are available Monday-Thursday 8:30 AM – 9:00 PM, Friday 8:30 AM – 6:00 PM and Saturday 8:00 AM – 2:00 PM.
There are seven general computer labs available to students, with additional smaller labs available in several departments on campus, including Mathematical Sciences.

Academic Services

There are many services available on campus to graduate students in the form of career, health, counseling, tutoring, and disabilities services. Students are strongly advised to take advantage of all services when needed. For a comprehensive list of services provided for all levels of students, please refer to the Campus Life Handbook. This official document of Otterbein University is published annually by the Student Affairs Office and posted on the Otterbein web site; the handbook provides information about policies, procedures, and available resources. Please also refer to the following service areas below:

Center for Career and Professional Development

The Otterbein Center for Career and Professional Development provides a menu of services including resume-building, cover letter writing, practice interviews, and job search assistance. In addition, staff will advise students on assembling a strong credential file, the collection of documents that support your application (transcripts, letters of reference, test scores, etc.). All students are expected to prepare and manage their own credential file.

Contact Ryan Brechbill, Director (823-1456) or Ashley Strausser, Associate Director and Internship Coordinator, to set an appointment to discuss your career plans. For more information on the career services provided at Otterbein, please consult the website: http://www.otterbein.edu/public/CampusLife/ServicesAndResources/CareerPlanning.aspx

Academic Support Center

Students in need of additional tutoring, assistance with writing, or other academic support may contact the Academic Support Center on the second floor of the Library. The Academic Support Center provides a wide variety of support and services, especially in the area of tutoring and writing. Otterbein also provides a supplemental e-tutoring service. Over 31 colleges and universities are members of this collaborative service. For more detailed information on any of the academic services provided by Otterbein please contact the website: http://www.otterbein.edu/public/Academics/AcademicAffairsDivision/AcademicSupportCenter.aspx

Writing Center

The Writing Center provides individual help for the student with writing problems and/or students who would like to have any portion of a major paper or assignment reviewed. Students are advised to bring a sample of their writing to the first appointment. The center is located in the Library on the second floor. Please consult the web site listed above on the steps to set an appointment with the writing center.

Additional Resources and Information

Library Resources and OhioLINK

The Courtright Memorial Library hours and services can be located on their website: www.otterbein.edu/resources/library/library.htm

The Courtright Memorial Library holdings represent a breadth of subject matter across all of the disciplines. The library is part of a consortium of 26 private institutions in Ohio (OPAL). Membership in OPAL allows Otterbein to belong to the statewide consortium called OhioLINK which gives students 24 hour access to any holding in Ohio academic libraries. OhioLINK is a computer network of libraries and electronic information resources, offering access to research databases and a combined Central Catalog from most Ohio Colleges, Universities, Community Colleges along with the State Library of Ohio. Its goal is to provide easy access to information and rapid delivery of library materials throughout the state. For information on how to search for books and articles online, go to the library website and click on the Library Research Tutorial.

Students have direct access to the Otterbein University main campus library by using their Cardinal Card. To learn more about obtaining a Cardinal ID Card, go to www.otterbein.edu, select library, and then go to Frequently Asked Questions on obtaining a library card and accessing library resources off campus.

Copy Center (614-823-1658)

The Copy Center is located in the lower level of Towers Hall and can be used during the day for copying papers, reports, etc. A fee is charged for copying at the Copy Center.

Otterbein University Bookstore (614-823-1364)

The Otterbein University Bookstore hours while school is in session are:
Monday-Friday 9:00 a.m. – 5:00 p.m.
Saturday 10:00 a.m. – 2:00 p.m.
Textbooks must be purchased prior to the start of classes. Course textbooks may be purchased at the Bookstore on the Otterbein campus or students may reserve, pre-pay or purchase books on-line at www.otterbein.bkstr.com

Graduate on-line Orientation

Students are encouraged to visit the Graduate School website to view the on-line orientation page. This virtual page will take students through the registration process as well as provide information on parking, obtaining your ID card and other resources. The orientation page can be found at the following address:
http://www.otterbein.edu/public/TheGraduateSchool/orientation.aspx

Food Locations

Several on-campus eateries are available for purchasing food:
1. The OtterDen (located on the first floor of the Campus Center)
2. Cafeteria (located in the Campus Center, second floor)
3. The Otterbean (located adjacent to the Library)
4. The Roost Express (located on the first floor of Roush Hall)

In addition, vending machines are available in the Commuter Lounge of Towers Hall and in various buildings on Campus.

Parking

Otterbein University campus parking passes are available for part-time students that will be on campus on a regular basis for a fee. A sticker can be purchased at the Security Office located at 194 W. Main Street. Students from distance learning sites will be given a temporary parking permit if required to come to the Westerville campus for class. Visitors on campus can park in any visitor lot.

Student Health Center

Access to the Student Health Center services is limited to full-time students with paid fees and part-time students on an annual fee for service basis. However, part time graduate students may utilize the center to meet selected health requirements. The Center is located east of the Campus Center at 78 W. Home Street or call 823-1345.

Personal counseling is available to students enrolled full-time at Otterbein University. Students wishing to utilize this service can contact the Student Affairs office at 823-1250.

Appendix A: MAEM Course Descriptions

EDUC 6880 Problem-Solving in Mathematics Education (3 semester hours)
Exploration of how students employ strategies and heuristics to solve problems, emphasizing instructional methods that improve problem-solving performance and assess problem-solving skills.

EDUC 6881 Discourse in Mathematics Education (3 semester hours)
Exploration of how students construct mathematics in community, promoting understanding through dialog and writing.

EDUC 6882 Representations in Mathematics Education (3 semester hours)
Exploration of how students create and use representations to organize, record, model, interpret, transform and translate mathematical ideas.

EDUC 6890 Mathematics Education Research Seminar (2 semester hours)
Focuses on action research design in the mathematics classroom, as well as qualitative and quantitative approaches to analyzing data collected in the field.

EDUC 6895 Master's Research Project (1 semester hour)
Candidates must design, implement, and reflect on an action research project within a mathematics classroom, sharing their process and product with a written report and a comprehensive presentation.

MATH 6110 Algebraic Structures for Mathematics Teachers (3 semester hours)
Elementary algebra involves the abstraction of numbers and applying rules for manipulating unknowns and real or complex numbers. Modern algebra takes abstraction to a deeper level by generalizing, not only objects, but operations on objects. From groups to complex analysis, this fundamental principle of mathematics - abstraction to underlying structure - influences the teaching and learning of high school algebra.

MATH 6120 Probability and Statistics for Mathematics Teachers (3 semester hours)
Quantitative reasoning, the study of random events, and the analysis of data has been referred to as "the mathematics for the information age." Going beyond the procedural knowledge of computing probability and interpreting numerical information affords teachers the opportunity to better understand how logic can undergird non-deterministic phenomena. This understanding is crucial to presenting probability and statistics as more than simple number-crunching and reading graphs.

MATH 6130 Finite Mathematics for Mathematics Teachers (3 semester hours)
Although a large percentage of the secondary curriculum has been dedicated to "continuous-based" mathematics, concepts from discrete mathematics is of growing interest to schools supporting a comprehensive math experience. Likewise, most undergraduate programs are weighted toward calculus-oriented work. Preparation for shifts in courses of study and the integration of mathematics requires a purposive and rigorous exploration of enumerable sets.

MATH 6140 Number Theory for Mathematics Teachers (3 semester hours)

Numbers and number sense continues to be a focal point for standards and practice in secondary schools. Examining the development of numbers systems and their properties provides teachers with the background necessary to help students develop computational and algebraic intuition.

MATH 6150 Advanced Geometry for Mathematics Teachers (3 semester hours)
Originally focused on practical measurements of size and shape, geometry is one of the oldest branches of mathematics. Since those early days, geometry has become a foundation for mathematics far removed from the traditional context of the plane. Exploring its influence on the development of the discipline as a whole - from axiomatics to analysis, from physical space to abstractions of space - enables teachers to plan instruction that highlights connections within mathematics, as well as underscoring the significance of geometry.

MATH 6160 Advanced Calculus for Mathematics Teachers (3 semester hours)
By the end of the nineteenth century, mathematics included the study of motion, the study of change. Introductory calculus prioritizes the skills of differentiating and integrating, with restricted attention to theory. Refreshing the main topics of calculus from a conceptual perspective and its historical development supports a mathematical approach to the subject, a complement to the conventional engineering approach.

MATH 6210 Great Theorems in Mathematics (2 semester hours)
Survey of some the the most important developments in mathematics throughout the ages, emphasizing those closely connected to the secondary mathematics curriculum

MATH 6220 Combinatorics for Mathematics Teachers (2 semester hours)
Survey of counting techniques, recurrence relations, and combinatorial designs

MATH 6230 Topology for Mathematics Teachers (2 semester hours)
Survey of the shape and size of mathematical spaces, including the study of knots, non-orientable surfaces, curvature, and systems of measure

MATH 6240 Dynamical Systems for Mathematics Teachers (2 semester hours)
Survey of the study of chaos theory and fractals, with attention to computerized explorations applicable to the secondary mathematics curriculum

MATH 6250 Game Theory for Mathematics Teachers (2 semester hours)
Survey of both combinatorial game theory and classical game theory, including strategic analyses of two-player games and simultaneous multi-play

Appendix B: Sample Program Sequences

Two Year Plan
The program can be completed in two years, with substantial coursework taken during the summer. This "default" plan will be in effect until sizable enrollment justifies adding classes.

Year 1 Summer	Year 1 Fall	Year 1 Spring
EDUC 6882 Representations	MATH 6130 Finite Mathematics	MATH 6120 Probability and Statistics
MATH 6140 Number Theory		
MATH 6210 Great Theorems		
Year 2 Summer	Year 2 Fall	Year 2 Spring
EDUC 6880 Problem-Solving	MATH 6220 Combinatorics	MATH 6110 Algebraic Structures
MATH 6160 Advanced Calculus	EDUC 6890 Research Seminar	EDUC 6895 Research Project
MATH 6230 Topology		

Summers Only Option
If enrollment increases warrant adding classes during Summer, the program can be completed in three summers (with Capstone work done during the academic year).

Year 1 Summer	Year 2 Summer	Year 3 Summer
MATH 6110 Algebraic Structures	EDUC 6881 Discourse	MATH 6120 Probability and Statistics
MATH 6140 Number Theory	MATH 6150 Advanced Geometry	MATH 6130 Finite Mathematics
MATH 6210 Great Theorems	MATH 6230 Topology	EDUC 6880 Problem-Solving
		MATH 6240 Dynamic Systems

One Year (Summer-to-Summer) Option
If enrollment increases warrant adding classes during Summer, Fall, and Spring, most of the program can be completed in one year if courses are taken full-time from summer to summer.

Year 1 Summer	Year 1 Fall	Year 1 Spring
EDUC 6882 Representations	MATH 6130 Finite Mathematics	MATH 6120 Probability and Statistics
MATH 6140 Number Theory	EDUC 6880 Problem-Solving	MATH 6250 Game Theory
MATH 6210 Great Theorems	MATH 6240 Dynamic Systems	EDUC 6890 Research Seminar
Year 2 Summer		
MATH 6150 Advanced Geometry		