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Introduction

This document has been prepared as an overview for the convenience of current (and prospective) students in the Doctor of Philosophy (Ph.D.) of Teaching and Learning with a concentration in Mathematics Education degree program at Georgia State University (GSU). It is not intended for nor should it be used as a substitute for carefully reading the *GSU Graduate Catalog* and other documents prepared by the College of Education and Human Development (CEHD); much of the content in this handbook is restated information from the current catalog. The official document for the degree program is the *Georgia State University Graduate Catalog* of the academic year in which the student is admitted. (Each doctoral student is responsible for knowing about and keeping up with specific degree requirements and expectations as outlined in her or his academic year catalog.)

The website of the **Office of Academic Assistance and Graduate Admissions** (OAA) provides additional information at [Student Services](#).

Important Note Regarding Certificate Upgrade

The completion of the Doctor of Philosophy in Teaching and Learning with a concentration in Mathematics Education degree program at GSU WILL provide for an IN-FIELD certificate upgrade to a T-7 IF AND ONLY IF the student’s previous Georgia Educator Certificate issued by the Georgia Professional Standards Commission includes certification in MATHEMATICS (4-8 or 6-12). For complete information regarding certification upgrades, see Georgia Professional Standards Commission: [Certificate Upgrades](#).
Statement of Purpose

The Ph.D. in Teaching and Learning with a concentration in Mathematics Education prepares professional mathematics educators to make scholarly contributions to both the theoretical and practical knowledge base of mathematics teaching and learning in a broad range of educational settings. Graduates of this program typically assume positions as college or university professors in schools or colleges of education or departments of mathematics. In these positions, their primary responsibilities are to conduct research on elementary, middle, secondary, or post-secondary mathematics teaching and learning, to teach content and pedagogy courses, and to direct theses and dissertations. Graduates are also qualified to assume positions as mathematics education leaders in school districts, research laboratories, or publishing companies.

During the degree program, students develop advanced professional proficiencies and scholarly knowledges through the successful completion of the (a) **Program of Study**, (b) **Residency Plan**, (c) **Comprehensive Examination**, (d) **Research Prospectus**, and (e) **Dissertation**. The degree program, in general, is framed by the principles to guide doctoral programs adopted by the Association of Mathematics Teacher Educators (AMTE) and the National Council of Teachers of Mathematics (NCTM).

Principles to Guide Doctoral Programs in Mathematics Education

In a joint position statement,¹ the AMTE and NCTM recommended a core knowledge base and related experiences that are the essential foundations for high-quality doctoral programs in mathematics education and, in turn, the core knowledge base expected of mathematics educators (i.e., those who hold a doctorate in mathematics education).

Recommendations

The statements below outline the core knowledge base of mathematics educators; most are restated from the AMTE and NCTM joint statement, with additions specific to the doctoral program at GSU (as noted). Students are expected to enter the doctoral program with (some) familiarity of each core knowledge and demonstrate growth in each as they progress through the program, developing in-depth philosophical, theoretical, and methodological understandings in those core knowledges primary to their chosen area of expertise as a mathematics education scholar, researcher, and teacher educator (see **Growth Rubric**). Students develop and demonstrate their expertise and growth through a variety of learning opportunities and experiences available throughout the program, such as coursework, seminars, webinars, writing groups, reading groups, study abroad, teaching internships, research internships, assistantships and/or fellowships, and independent study and research.

Mathematics Content

The mathematics educator has broad and deep mathematical knowledge to identify the “big ideas” in pre-K–14 mathematics and to examine how those ideas are developed throughout school curricula, demonstrating an advanced knowledge in key mathematics topics.

¹ These principles are extracted (and enhanced) from the **Joint Position Statement** of the AMTE and NCTM.
Research
The mathematics educator has the skills and competences to conceptualize and conduct research—qualitative, quantitative, or mix methods—that advances the understanding of mathematics teaching and learning and to communicate research findings clearly to a variety of audiences and in a variety of venues.

Philosophy (GSU)
The mathematics educator possesses in-depth understanding of various fundamental philosophical (i.e., ontological, epistemological, and ethical) positions surrounding mathematics, mathematics teaching and learning, and research in mathematics education.

Educational Contexts
The mathematics educator demonstrates a broad understanding of the cultural, economic, historical, political, and social forces shaping education in general and mathematics education in particular.

Sociocultural and Sociohistorical Contexts (GSU)
The mathematics educator understands mathematics as a human product made and remade within socio-cultural and -historical discourses of inclusion and exclusion and recognizes ethnomathematics not as a derivate of Western (or dominant) mathematics but rather Western mathematics as a derivate of ethnomathematics.

Learning
Mathematics educators understand fundamental theories of learning mathematics and the distinctions among them concerning the kind of learning they are attempting to explain and the theoretical constructs that have proven useful over time.

Teaching and Teacher Education
Mathematics educators demonstrate expertise in designing and teaching preservice and in-service mathematics content and methods courses and organizing professional development experiences for in-service teachers.

Technology
Mathematics educators understand and use technology as a tool of inquiry that has implications for teaching and learning mathematics and curriculum development, acknowledging technology as an agent of curriculum change.

Curriculum and Assessment
Mathematics educators conduct curriculum analysis, design, and evaluation and know the major influences assessment practices have on the intended, implemented, and achieved curricula in mathematics instruction.

The intent of these recommendations (as described by the writers of the joint statement) is to highlight that a high-quality doctoral program in mathematics education comprises more than a set of courses and a dissertation. High-quality doctoral programs must have a critical mass of faculty with expertise in mathematics education to provide program leadership; independent and
collaborative research opportunities; and supervised experiences in collegiate teaching, proposal writing, and publication preparation. Equally important is the environment fostered within an institution where students and faculty learn, work, and interact to create support and respect for diverse identities related to culture, ethnicity, race, religion, gender (identity and/or expression), sexual orientation, and exceptionalities as well as diverse philosophical and epistemological stances. Finally, adequate physical and technological facilities should be available that support an active intellectual learning community of students and faculty.

The Ph.D. degree program at GSU indeed comprises the components of a high-quality doctoral program: a critical mass of mathematics education faculty; independent and collaborative research opportunities; experiences in teaching, writing, and publishing; support and respect for difference (the heart of our program); and extraordinary physical and technological facilities. Nevertheless, it is the responsibility of each student to engage with faculty and other students in seeking ways to maximize her or his learning opportunities and experiences throughout all stages of the degree program—a Ph.D. is not earned in isolation!

Doctoral Students for the Advancement of Mathematics Education (DSAME)

Purpose –
The purpose of this organization shall be (a) to recognize and support scholarship, leadership, and service in the field of mathematics education; (b) to facilitate and encourage collaboration with mathematics education faculty members, researchers, and classroom teachers; (c) to serve as mentors within the Mathematics Education Unit; and (d) to build healthy relationships within the community of doctoral scholars in mathematics education.

Affiliation –
The doctoral student organization is affiliated with the Mathematics Education Unit of the Department of Middle and Secondary Education (MSE) at Georgia State University (GSU).

Requirements of Membership –
Membership in Doctoral Students for the Advancement of Mathematics Education (DSAME) shall be based upon the character and professional attainment of the candidates. Members must be doctoral students admitted to and actively enrolled in the Mathematics Education doctoral degree program in MSE at GSU.
Rudimentary Requirements for Degree Completion

Time Period
All degree requirements must be successfully completed within nine (9) years of the student’s term of first matriculation; all requirements for doctoral candidacy (completion of Program of Study, Comprehensive Examination, Residency Plan, and Research Prospectus) must be completed within seven (7) years of the student’s first term of matriculation. No coursework that was completed more than seven (7) years prior to admission to candidacy may be used to meet any doctoral degree requirement. The purpose of requiring completion of all degree requirements within a fixed period of time is to ensure currency, continuity, and coherence in the academic experiences leading to the degree.

Enrollment
Enrollment for a minimum of 3 semester hours of credit is required during at least two out of any three consecutive terms (i.e., fall, spring, and summer semesters) following successful completion of the Comprehensive Examination until graduation. This enrollment must include a minimum of 15 semester hours of dissertation research (EDCI 9990) ONLY after successful defense of Research Prospectus. The students must be enrolled in and successfully complete 3 semester hours of graduate credit (typically EDCI 9990 or EDCI 9660) during the academic term in which all degree requirements are completed.

Active doctoral students at every stage of the degree program must be registered for at least a total of 6 semester hours of coursework during any three consecutive terms (i.e., fall, spring, and summer semesters) until completion of degree. In other words, the total enrollment of the current term plus the two terms preceding must add to 6 hours or more at all times. Please see Continuous Enrollment Requirements for complete details of enrollment requirements throughout the degree program.

Graduate Forms
Throughout the degree program, students are responsible for the accuracy, timeliness, and submission of all Graduate Forms required in each stage of the degree program as outlined in the GSU Graduate Catalog. These forms (most often) require signatures from committee members, the department chair, and college dean. Students are responsible for ensuring that the most up-to-date forms are used.

Graduation
Students must file a formal application for graduation with the Office of the Registrar at least two (2) academic terms in advance of their expected graduation dates; deadlines are published online each term. Forms for changing the date of graduation may be obtained from the Graduation Service Office. (There are additional costs relative to graduation; students should contact the Office of Academic Assistance and Graduate Admissions for further information.)

Doctoral Assistantships and Fellowships
Graduate teaching assistantships (GTAs) and graduate research assistantships (GRAs) are available to selected doctoral students who demonstrate outstanding academic skills and expertise. Assistantships and Fellowships and Scholarships in general might be available through the department, college, and/or university. The number of GTA and GRA positions and/or fellowships available depends on current class loads, research needs, and internal and external funding.
Doctoral Program Committees
Two student-selected-membership advisory committees² assist the student through the successful completion of the degree program (a) the Doctoral Advisory Committee and (b) the Dissertation Advisory Committee.

**Doctoral Advisory Committee**

The members of the Doctoral Advisory Committee assist the student in:

- Planning an appropriate Program of Study
- Defining non-coursework requirements (e.g., residency, internships)
- Organizing study for the Comprehensive Examination

The members of the Doctoral Advisory Committee also have supervisory responsibility for:

- Approving the Program of Study
- Approving non-coursework requirements
- Preparing and grading of specific areas of study for the Comprehensive Examination
- Mentoring student through successful defenses of the Research Prospectus

When a student is accepted into the degree program, faculty members in the Mathematics Education Unit appoint a temporary advisor. This mathematics education professor assists the student in initial course selection and the selection of the Doctoral Advisory Committee. The full committee membership should be decided as soon as possible, but not later than the accrual of 27 semester hours of coursework, or no later than one calendar year from the beginning of coursework, whichever comes earlier (if a part-time student, two calendar years). The major academic advisor does not become official until the Doctoral Advisory Committee is formed and approved with appropriate form filed, as outlined below.

**The Program Advisory Committee consists of a minimum of three members:**
The major academic advisor (i.e., first member) holds an earned doctorate in Mathematics Education and serves as the chair of the committee. She or he is a full-time, tenure or tenure track member of the CEHD faculty; has been a faculty member at GSU for at least one academic year; has served on a previous doctoral committee in Mathematics Education at GSU; and holds appointment to the CEHD Graduate Research Faculty. The second member of the committee must be a full-time member of the CEHD faculty holding an earned doctorate. And the third member of the committee must represent a major other than Mathematics Education (i.e., holding an earned doctorate NOT in Mathematics Education). All three initial committee members must hold appointment to the CEHD Graduate Research Faculty.

All appointments to the Doctoral Advisory Committee, including chair, are subject to approval by the student, the department chair, and the college dean. After the committee has been established, any subsequent change of membership must be similarly approved. The membership is

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² It is vital to the successful completion of the degree program that the doctoral student and advisor(s) develop and maintain a mutual relationship of respect, expectation, and open and frequent communication throughout the degree program.
recorded on the **Doctoral Program of Study and Advisory Committee Form** and filed with the Office of Academic Assistance (any changes require the completion of additional forms).

### Dissertation Advisory Committee

At the time of preparation of the Research Prospectus, appropriate changes in the membership and/or chair of the Doctoral Advisory Committee are made in order to constitute the Dissertation Advisory Committee. The student and committee members consider reconstitution of the committee to best facilitate the dissertation research.

In most cases, the Doctoral Advisory Committee is expanded by at least one additional member between completion of the Comprehensive Examination and submission of the Research Prospectus. The resulting Dissertation Advisory Committee should represent expertise in both the area of the research topic and the proposed research methodology, and should consist of no fewer than four members with earned doctorates. **At least three (i.e., the majority) Dissertation Advisory Committee members must be CEHD Graduate Research Faculty.**

The Dissertation Advisory Committee aids each student in developing the Research Prospectus, and later the Dissertation. The committee is responsible for judging the significance and acceptability of the Research Prospectus, the soundness and acceptability of the Dissertation, and the competence and acceptability of the student’s oral presentation of the Research Prospectus and defense of the Dissertation.

All appointments to the Dissertation Advisory Committee, including its chair, are subject to approval by the student, the department chair, and the college dean. The chair must be a CEHD Graduate Research Faculty member and have an earned doctorate in Mathematics Education and all other committee members, with the exception of one, must be **CEHD Graduate Research Faculty.** After the committee has been established, any subsequent change of membership must be similarly approved as outlined above (and requires the completion of additional forms).
Flow Chart of Ph.D. Experiences

PhD Students Begin Program

Students engage in philosophical inquiry, historical analysis, and exploration of future directions in mathematics education EDCI 8970
*NOTE: Students work toward Residency Plan THROUGHOUT the degree program.

PhD Students Develop Scholarly Competencies

Students construct and justify initial research agenda. EDCI 9660 (teaching and research internships)

PhD Students Demonstrate Scholarly Competencies

Students refine research agenda, prepare/complete comps, and outline/draft a research prospectus. EDMT 9870; EDCI 9900

PhD Candidates Prepare for Dissertation

Students conduct a pilot dissertation study, propose and defend the research prospectus. EDCI 9850

Initial Advisory Meeting

A Program of Study

B Advisory Meetings (student or professor initiated)

C Comps & Residency*

D Research Prospectus Defense

E Dissertation Defense
Program of Study

A **minimum** of 69 semester hours (54 coursework; 15 dissertation) is required for the Ph.D. in Teaching and Learning with a concentration in Mathematics Education (see Appendix A); this minimum is higher than that required by the CEHD. Additional coursework above and beyond this minimum may be required based on students’ past academic experiences and individual needs. Students should plan their Program of Study to meet *their* objectives for the Ph.D., *not* to conform to the minimum number of semester hours required for graduation. Courses offered in the CEHD applied to this minimum must be at the 8000-level or higher; courses outside the CEHD must be at the **6000-level or higher**.

The Program of Study must be approved by the Program Advisory Committee and filed with the Office of Academic Assistance and Graduate Admissions within the first year (or if a part-time student, second year) following admission to the program or within the first 27 semester hours, whichever comes first.

The minimum grade acceptable for coursework in Mathematics Education is B; for coursework outside Mathematics Education, the minimum grade is C. An overall cumulative GPA of at least 3.5 on all coursework attempted during the degree program is required to be eligible to take the Comprehensive Examination and for graduation.

A minimum of 36 hours of coursework (not including EDCI 9990) in the planned Program of Study must be earned in the Ph.D. degree program in Teaching and Learning with a concentration in Mathematics Education at GSU. The 36-hour minimum may not include credits transferred from other institutions, from another doctoral degree program within the College or University, from a specialist degree program, or from non-degree status; any coursework applied to the Program of Study must be post-master’s.

Areas of Study

The doctoral Program of Study fosters the development of advanced professional proficiencies and scholarly knowledges in four distinct yet overlapping core areas of study: research, major, cognate, and dissertation.

**Research (18 semester hours minimum)**

The purpose of the research core is for students to develop general and specialized research proficiencies, demonstrating expertise in at least one research methodology appropriate to mathematics education and/or the dissertation research. The minimum for the research core is six (6) **required** courses (3 semester hours each), including:

- **EPRS 8500 or EPRS 8530**
- Two course sequence in research methods
- Two course sequence in **advanced** research methods as identified by the Doctoral Advisory Committee
- One course in either **advanced** Social Foundations of Education or Psychology of Learning
See the *GSU Graduate Catalog* for possible course choices; students **must** work closely with their major academic advisor in the selection and approval of courses.

Students may also choose to earn a *Graduate Certificate* in **Quantitative** or **Qualitative** Research by applying for and successfully completing certificate requirements. Both certificates require additional coursework in either quantitative or qualitative methods.

**Major (18 semester hours minimum)**

The purpose of the major core is to increase students’ theoretical and practical knowledge base in education generally and mathematics education specifically. The minimum for the major core is six (6) **required** courses (3 semester hours each), including:

**Required Courses (9 semester hours, select 3*)**
- EDMT 8290
- EDMT 8420
- EDMT 8430
- EDMT 8550
- EDMT 8820

* Course number may be repeated when topic changes

**Required Courses (9 semester hours)**
- EDMT 9870
- EDCI 9850
- EDCI 9900

**Cognate (18 semester hours minimum)**

The purpose of the cognate core is to provide students with opportunities to develop an extended knowledge base associated with a chosen area of expertise in mathematics teaching and learning. Coursework in the cognate area should lead to the development and advancement of an understanding of the origin, history, philosophy (i.e., ontological, epistemological, and ethical), conceptual underpinnings, or appropriate applications of chosen area of expertise. The minimum for the cognate core is six (6) courses (3 semester hours each); two required courses:

**Required Courses (6 semester hours)**
- EDCI 8970
- EDCI 9660

**Dissertation (15 semester hours minimum)**

The purpose of the dissertation core is to provide students with opportunities to work independently with and receive individual advisement from members of their Dissertation Advisory Committee on their dissertation research. The minimum for the dissertation core is 15 semester hours; one (1) required course:

- EDCI 9990 (15 semester hours)*

*Required hours may be distributed over several semesters if needed but only after successfully defending Research Prospectus; students must be enrolled in at least 3 semester hours of EDCI 9990 (or EDCI 9660) during the term of graduation.
Doctoral Seminars and Courses

Seminars—

NOTE: All courses carry letter grades A–F except for EDCI 9660 and EDCI 9990, they are graded “U” Unsatisfactory “S” Satisfactory “I” Incomplete “IP” In Progress

EDCI 8970: Seminar in Teaching and Learning (typically offered fall semester, first year seminar*)
Student will:
- Explore components of the Ph.D. degree program
- Explore components of professional responsibilities of higher education
- Explore components of the mathematics education community
- Examine philosophical and historical components of mathematics education

EDCI 9900: Critique of Education Research (typically taken in preparation of comprehensive examinations during fall semester)
Student will:
- Critique and examine dissertations, historical and current literature, and research methodologies
- Learn about and critique various theoretical and conceptual frameworks
- Develop research problem statement and research questions
- Develop and write full (but brief) concept paper that provides the problem statement and research questions, philosophical and theoretical framework(s), and methodology of proposed research study

EDMT 9870: Advanced Research Seminar (typically taken after EDCI 9900 during spring semester)
Student will:
- Develop full literature review and framework of your proposed study
- Identify and detail methodology of your proposed study (i.e., mixed methods, quantitative, qualitative, etc.)
- Plan (and may conduct) a pilot study
- Complete Institutional Review Board (IRB) online for pilot study

EDCI 9850: Research Seminar (typically taken after students has completed comprehensive examinations)
Student will:
- Refine research problem statement and research questions
- Plan, develop, and write Research Prospectus
- Complete Institutional Review Board (IRB) online for future study

Courses—

EDMT 8290 Study of Learning and Instruction in Mathematics:
Students examine psychological and/or sociocultural foundations for the study of teaching and learning of mathematics. Findings of research in mathematics education related to the learning of selected topics in the school curriculum are explored. Research methods, theoretical constructs, and research perspectives in mathematics education are investigated (repeatable).

3 For additional information about seminars and courses see GoSolar.

* Subject to change depending on program needs; see Projected Schedule for more details.
EDMT 8420  Topics in School Mathematics Curriculum:  
Students explore the content and pedagogy related to selected topics in the school mathematics curriculum (repeatable).

EDMT 8430  Sociocultural and Sociohistorical Issues of Mathematics Education:  
Students explore cultural, economic, political, and social structures and discourses as they relate to mathematics, mathematics teaching and learning, and research in mathematics and mathematics teaching and learning. Course includes an examination of how research in mathematics education is framed and enacted within different theoretical frameworks.

EDMT 8550  Trends and Issues of Teaching Mathematics:  
Students examine current problems, trends, and curriculum issues related to teaching mathematics in elementary, middle, secondary, and undergraduate settings (repeatable).

EDMT 8820  Ethnomathematics and the Historical Development of Mathematics:  
This course involves the observation of mathematical concepts as it emerged throughout and within cultural activities as creative expressions of human thought. The primary purpose of this course is to provide an alternative lens to view mathematical knowledge as it transpired across civilizations and within various non-western cultures.

EDCI 9660  Internship:  
Students complete a research and teaching internship with major academic advisor or other faculty members with notification and approval. Number of semester hours is based on students’ past research and teaching experiences (repeatable).

EDCI 9990  Dissertation:  
Independent dissertation research (repeatable)
Residency Plan

The purpose of the Residency Plan is to provide: (a) close and continuous involvement with faculty, professional colleagues, and other graduate students; (b) a supervised opportunity for development in the areas of research and scholarly activity, teaching, and service; and (c) a period of time for concentrated study and coursework, reading, reflecting, and research appropriate for the doctorate.

The objectives are met by completing a Residency Plan Form (see Appendix B) developed by the students with members of the Doctoral Advisory Committee and approved by the major academic advisor. The plan will include activities in the areas of research and scholarly activity, teaching, professional development, and service. After completion of the plan, a summary of residency activities and outcomes must be submitted to and approved by the Doctoral Advisory Committee; an approved and completed Residency Plan is a requirement for advancement to candidacy.

Suggested Activities for the Residency Plan
Research/Scholarship: submit manuscript to peer-reviewed journal; author or co-author publications in a refereed or non-refereed journal; plan, develop, write and submit research presentation proposals; present at national, state, and regional conferences; assist in grant writing and submission

Teaching: develop and facilitate one-to-three semester hour, graduate-level seminars; develop and facilitate professional workshops; assist in supervision of practicum; co-teach courses; mentor new doctoral students

Professional Development: attend national, state, and regional conferences; attend professional development courses; attend prospectus presentations and dissertation defenses; attend DSAME meetings; attend doctoral seminars and Professional Advisement Week (PAW)

Service: serve on professional organization committees; hold office in professional organizations/associations; review research/grant proposals for national conferences/organizations; review manuscripts for peer-reviewed journals; serve as student representative on department, college, and/or university committees
Comprehensive Examination

The Comprehensive Examination consists of two parts: written and oral. The purpose of the examination is for the student to demonstrate her or his ability to analyze, synthesize, and apply the knowledge and processes learned in the research, major, and cognate areas of her or his approved Program of Study. This demonstration is focused on analysis, synthesis, and evaluation of conceptual, theoretical, methodological, and empirical knowledge. Specifically, the examination provides the student an opportunity to demonstrate comprehensive knowledge of the philosophical and theoretical perspectives and methodological procedures to be used in her or his research as well as advanced knowledge of the available literature regarding her or his research topic. In short, the successful completion of both the written and oral components of the Comprehensive Examination demonstrates the student’s ability to conceptualize, write, and defend a Research Prospectus.

To be eligible to take the Comprehensive Examination, the student’s cumulative grade point average (GPA) in the Program of Study coursework (and all coursework attempted during the degree program) must be 3.5 or greater. The examination is taken when 9 semester hours or less of the Program of Study coursework remains. The student initiates the examination process by contacting her or his major academic advisor at the beginning of fall or spring semesters.

After the major academic advisor is contacted, the student meets with each member of her or his Doctoral Advisory Committee to discuss a specific examination question. Each member of the committee focuses her or his question on one of three areas: philosophy/theory, methodology, or literature review. After these individual meetings, the committee member sends a draft of an examination question to the major academic advisor, who, in turn, reviews each question and suggests any changes if necessary.

Written Evaluation

After approval of examination questions by the major academic advisor, the student is administered one question at a time. The student has exactly one (1) week to complete and return the written response to her or his major academic advisor, who, in turn, sends the response to the remaining committee members. These written responses are scholarly, academic essays; approximately 6,000–7,500 words in length (references not included); and strictly adhere to the current Publication Manual of the American Psychological Association citation and writing format criteria.

The student is administered subsequent questions in like manner. All three questions must be completed within a nine (9) week time interval (this time interval allows for two [2] weeks between each question, if the student so chooses). Once all three questions are answered (i.e., written examination), each committee member has at minimum of two (2) weeks to read and evaluate the written response to her or his question, and will rate the response either PASS or FAIL (each committee member sends her or his rating to the major academic advisor). The student advances to the oral part of the comprehensive examination only if all three written responses are rated PASS (i.e., the written part is a PASS only if all three written responses are rated PASS). The major academic advisor notifies student of each response rating.
Oral Evaluation

If the student advances to the oral evaluation she or he convenes a full committee meeting for a formal oral defense of each written response (i.e., oral examination). (Students are advised to schedule full committee meetings earlier rather than later.) All members of the Doctoral Advisory Committee attend the oral examination. The purpose of the oral examination is to provide the student an opportunity to expand on and clarify her or his written responses, and to allow each committee member to evaluate if the student has achieved an advanced understanding in each area. A closed meeting with the full committee convenes after the oral examination; a PASS or FAIL decision is reached regarding the two-part (written and oral) Comprehensive Examination during this meeting.

The student is provided two opportunities to PASS the two-part (written and oral) examination; students who do not PASS on the second attempt are removed from the degree program. (See Graduate Forms for Report of Comprehensive Examinations form which student brings to oral evaluation meeting.)

Requirements Following Completion of Comprehensive Examination

Enrollment for a minimum of 3 semester hours of credit is required during at least two out of any three consecutive terms (i.e., fall, spring, and summer semesters) following successful completion of the examination until the student has graduated. This enrollment must include a minimum of 15 semester hours of dissertation research (EDCI 9990) but may also include other coursework (e.g., EDCI 9660, EDCI 8950). Enrollment in EDCI 9990 is permitted only after successfully defending Research Prospectus.

Please see Continuous Enrollment Requirements for complete details of enrollment requirements throughout the degree program.
Reentry Applications

Students in the College of Education and Human Development who do not register at Georgia State University for regular courses during three consecutive terms are considered inactive for the purposes of registration (see Instructions of Reentry into a Graduate Program). If inactive students wish to register, they must file an Application for Graduate Reentry. The deadline is approximately four (4) weeks prior to the beginning of the registration phase in which the student wishes to register (fall semester - June 1, spring semester - November 1, summer semester - April 1). Students must reenter the same college, department, and major for the degree program in which they were last enrolled. Filing a reentry application necessitates a review of students’ academic standing in the doctoral program to determine eligibility. Approval of reentry into the degree program is NOT guaranteed or automatic.

Students should file their reentry applications as early as possible to allow adequate time for the admissions decision to be made. Reentering students are subject to the regulations of the GSU Graduate Catalog and the degree program current at the time of reentry. Reentry students who are accepted but do not attend the semester in which they were admitted must contact the Office of Academic Assistance and Graduate Admissions at educadmissions@gsu.edu to attend the succeeding semester; put the words “Reentry delay” in the subject line of the email.

Doctoral students who do not register for six consecutive terms are withdrawn from the doctoral degree program. A notation to that effect is added to students’ permanent record. Upon notification of withdrawal, students have a maximum of 30 days to petition for readmission. If the petition is approved, students must satisfy the degree requirements of the GSU Graduate Catalog in effect at the time of readmission.
Research Prospectus

Dissertation Advisory Committee
At the point of Research Prospectus, each student may change the membership of her or his advisory committee. At a minimum, one new member must be added to the Doctoral Advisory Committee, which at this point becomes the Dissertation Advisory Committee. At least one member of this committee must have experience and/or expertise in the research paradigm to be used in the dissertation.

The Research Prospectus must be approved by the major academic advisor prior to the student providing copies to other members of the Dissertation Advisory Committee. Several drafts of the prospectus may be required prior to approval by the major academic advisor; allow at least two (2) weeks for review of each draft.

Writing the Research Prospectus
The Research Prospectus is written following successful completion of the Comprehensive Examination. Prior to beginning the prospectus, the student is expected to have critically read the CEHD Guide for Preparation of Prospectuses and Dissertations (e-copies are available on the website of the CEHD Office of Academic Assistance and Graduate Admissions).

The Research Prospectus should include the following information (intended only as a guideline):

A. Statement of the Problem, Research Question(s), and Literature Review:
- Philosophical and professional contexts and experiences that motivate proposed study
- Problem Statement
- Proposed research question(s) and/or hypotheses
- Literature Review

B. Philosophy/Theory:
- Philosophical/theoretical foundation(s) for the proposed study
- Research paradigm(s) or framework(s) and rationale

C. Methodology:
- Philosophical/theoretical foundation(s) for the proposed methodology
- Research context
- Participants: selection, definition, sample size, rationale, etc.
- Instruments and/or materials needed and rationale
- Data collection and analysis
- Timeline for executing the proposed study

Presenting the Research Prospectus
The Research Prospectus is orally presented (defended) at a publicly announced, open meeting of the Dissertation Advisory Committee attended by a majority of the committee, with the concurrence and indirect participation of any absent member.
An announcement of the defense must be made 15 working days before the scheduled presentation; the announcement is made on the Announcement of Prospectus Presentation form. Final copies of the prospectus are provided to all members of the Dissertation Advisory Committee at this time. Presentations must be scheduled between the first day of class and the last day of examinations of fall or spring semesters only, with no fewer than four (4) members of the Dissertation Advisory Committee present. (It is recommended that another student attend your presentation and takes notes for you.)

Research Prospectus Approval
Approval and acceptance of the prospectus requires a majority vote for acceptance by the Dissertation Advisory Committee. The Dissertation Advisory Committee may require revisions prior to final acceptance.

All research that involves human subjects must be reviewed and approved in accordance with federal law and GSU policy. GSU Institutional Review Board (IRB) is charged with overseeing compliance with these federal regulations. The goal of these regulations is to ensure the safety, respect, and dignity of human subjects who volunteer to participate in scientific research, and to provide public accountability for the trust that the public places in institutions conducting such research.

IRB Training and Submission
All researchers, staff, students, and others who interact with human subjects in the performance of research and assisting in research must complete the Required Educational Program on the Protection of Human Research Subjects online training offered through the Collaborative Institutional Training Initiative (CITI), a comprehensive web-based program before submitting any proposal for IRB approval. https://about.citiprogram.org/en/homepage/

Electronic submission of IRB Application is made through iRSI. This system enables faculty, students, and staff to submit an application electronically. It also allows for online monitoring of protocols, submitting adverse events, renewals, and amendments.

Advancement to Doctoral Candidacy
The Recommendation to Doctoral Candidacy form must be completed by the major academic advisor and signed by each member of the Dissertation Advisory Committee and department chair for student advancement to doctoral candidacy. Students must meet each requirement:

- Program of Study and Change in Doctoral Program of Study form(s) (if applicable) submitted
- All academic coursework completed (GPA 3.5 or higher)
- Residency Plan approved and completed
- Comprehensive Examination completed and Report of Comprehensive Examinations form submitted
- Research Prospectus successfully defended and approved by the Dissertation Advisory Committee and the IRB Application for the Protection of Human Subjects submitted (if applicable)

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4 All forms are available at Graduate Forms.
Dissertation

The Dissertation and dissertation defense are the culminating activities in the doctoral degree program; both demonstrate advanced intellectual activity of the student. The Dissertation is an original scholarly contribution to the theoretical and practical knowledge base of mathematics teaching and learning. Conducting, writing, and defending the Dissertation are done in accordance with the highest professional standards.

Dissertation Enrollment Requirements

Students follow the requirements for enrollment in dissertation hours that are published in the GSU Graduate Catalog in effect at the time of their admission. Please see Continuous Enrollment Requirements for complete details of enrollment requirements throughout the degree program.

Dissertation Formats

The College of Education and Human Development recognizes two formats for the dissertation: (a) the traditional chapter format and (b) the review and research manuscript format. The student and her or his Dissertation Advisory Committee should determine the proper format for the dissertation.

Writing the Dissertation

There are no fixed conventions, rules, or practices for writing a dissertation. The student is restrained, however, by the formatting and writing guidelines in the CEHD Guide for Preparation of Prospectuses and Dissertations and the current Publication Manual of the American Psychological Association. When there is a conflict between those two sets of guidelines, the CEHD document applies.

Rules of Thumb

Rule 1. The Dissertation is a clear and detailed exposition of the proposed study, making assumptions about the knowledge of committee members or readers is a fatal practice. It is the student’s responsibility to produce all necessary information in a clear, logical, grammatical, and professional manner.

Rule 2. The student’s name is not the only name that appears on the Dissertation; the major academic advisor and Dissertation Advisory Committee members are held accountable for the quality of the finished document. Therefore, the student should expect to make major and/or minor revisions until each committee member is satisfied that the document is something which she or he is willing to put her or his name on as a contributing member. Dissertations are not taken lightly—committee members read them very, very carefully.

Rule 3. The Dissertation is both the collecting and the analyzing of data and the writing of a document that meets technical standards for writing and professional communication. A student can FAIL the oral defense not only on the basis of inability to defend the substance of the study but also on the basis of a poorly written document. The student should give special attention to the abstract, because it is the first, and often the only, contact people have with the study.
Rule 4. Do not rush the writing of the Dissertation. The student should allow enough time for committee members to read and respond to chapter drafts; a general rule of thumb is to allow at least two (2) weeks for faculty to read and provide feedback on drafts.

Defending the Dissertation

The Dissertation is orally defended at a publicly announced, open meeting of the Dissertation Advisory Committee attended by a majority of the committee, with the concurrence and indirect participation of any absent member. Guidelines for the announcement of the meeting are given with the Announcement of Dissertation Defense form.\(^5\)

A public announcement of the oral defense of the Dissertation is disseminated through the Office of Academic Assistance and Graduate Admissions to the CEHD faculty. The announcement must be submitted to that office at least 15 working days prior to the scheduled defense. Oral defenses must be scheduled between the first day of classes and the last day of examinations, and during fall and spring semesters only. No fewer than four (4) members of the Dissertation Advisory Committee must attend the defense.

At the same time the announcement of the oral defense is submitted, two printed copies of the completed Dissertation are made available for faculty review in the Office of Academic Assistance and Graduate Admissions. Final printed copies are also distributed to each member of the Dissertation Advisory Committee at this time.

Approval and acceptance of the Dissertation requires a favorable vote from a majority of the Dissertation Advisory Committee.

On Campus Resources

The Learning Resource Unit in the Counseling and Testing Center offers a variety of services, including writing and editorial services that can be useful to doctoral students; contact (404) 413-1640 for further information.

\(^5\) All forms are available at Graduate Forms.
# Growth Rubric

Based on Principles to Guide Doctoral Programs in Mathematics Education

<table>
<thead>
<tr>
<th>Area</th>
<th>Phase A</th>
<th>Phase B</th>
<th>Phase C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics Content</td>
<td>Student demonstrates working knowledge of pre-K–14 mathematics content at several school levels.</td>
<td>Student demonstrates broad knowledge of pre-K–14 mathematics curricula across all levels.</td>
<td>Candidate demonstrates broad and deep mathematical knowledge of pre-K–14 mathematics curricula, and key advanced mathematics topics.</td>
</tr>
<tr>
<td>Research</td>
<td>Student has an understanding of the importance of research in the teaching and learning of mathematics.</td>
<td>Student articulates an emerging research agenda that has the potential to advance mathematics teaching and learning and demonstrates an emerging understanding of appropriate research design as well as ability to analyze and synthesize mathematics education literature.</td>
<td>Candidate designs, conducts, and effectively communicates research that advances the understanding of mathematics teaching and learning, contributing to the mathematics education literature.</td>
</tr>
<tr>
<td>Philosophy</td>
<td>Student engages in philosophical inquiry in mathematics, mathematics teaching and learning, and research in mathematics education.</td>
<td>Student demonstrates growing understanding of various fundamental philosophical positions surrounding mathematics, mathematics teaching and learning, and research in mathematics education.</td>
<td>Candidate demonstrates in-depth understanding of various fundamental philosophical positions surrounding mathematics, mathematics teaching and learning, and research in mathematics education.</td>
</tr>
<tr>
<td>Educational Contexts</td>
<td>Student possesses significant understanding of local and/or national forces shaping school mathematics.</td>
<td>Student has solid understanding of the cultural, economical, historical, political, and social forces shaping mathematics education.</td>
<td>Candidate demonstrates an in-depth understanding of the cultural, economical, historical, political, and social forces shaping mathematics education.</td>
</tr>
<tr>
<td>Sociocultural and Sociohistorical Contexts</td>
<td>Student understands mathematics as a product of human activity.</td>
<td>Student understands mathematics as a product of human activity made and remade within sociocultural and sociohistorical discourses.</td>
<td>Candidate understands mathematics as a human product made and remade within socio-cultural and -historical discourses of inclusion and exclusion.</td>
</tr>
<tr>
<td>Learning</td>
<td>Student understands fundamental theories of learning mathematics.</td>
<td>Student understands fundamental theories of learning mathematics and the distinctions among them.</td>
<td>Candidate understands fundamental theories of learning mathematics and the distinctions among them concerning the kind of learning they are trying to explain and the theoretical constructs that have proven useful over time.</td>
</tr>
<tr>
<td>Teaching and Teacher Education</td>
<td>Student demonstrates understanding of the complexities involved in effective mathematics teaching.</td>
<td>Student demonstrates emerging effectiveness in teaching and designing mathematics content and methods courses and successfully develops professional development experiences for preservice and in-service mathematics teachers.</td>
<td>Candidate designs and demonstrates teaching effectiveness in teaching mathematics content and methods courses, and develops professional development experiences for preservice and in-service mathematics teachers.</td>
</tr>
<tr>
<td>Technology</td>
<td>Student effectively utilizes technology as a communication tool, and has cursory understanding of its role in pre-K–14 curricula.</td>
<td>Student effectively utilizes technology as a tool of inquiry into mathematics teaching and learning and has a solid understanding of its role as an agent of curriculum change.</td>
<td>Candidate demonstrates advanced proficiency utilizing technology as a tool of inquiry into mathematics teaching and learning and possesses in-depth understanding of its role as an agent of curriculum change.</td>
</tr>
<tr>
<td>Curriculum and Assessment</td>
<td>Student possesses working knowledge of aspects of pre-K–14 curricula and understanding of its design and effectiveness.</td>
<td>Student engages in analysis and evaluation of pre-K–14 mathematics curricula.</td>
<td>Candidate engages in-depth analysis, design, and evaluation of pre-K–14 mathematics curricula and offers innovative design of effective curriculum models with the potential to foster mathematics learning.</td>
</tr>
</tbody>
</table>
Appendix A

College of Education and Human Development (see Graduate Forms for “official” Program of Study form)  
Doctor of Philosophy in Teaching and Learning with a concentration in Mathematics Education  
Doctoral Program of Study and Advisory Committee Form

To complete this document, refer to the appropriate department/unit section of the GSU Graduate Catalog.

PROGRAM OF STUDY

Please see program descriptions in the Graduate Bulletin for number of hours required in each area—minimum hours required vary by major.

<table>
<thead>
<tr>
<th>RESEARCH &amp; DISSERTATION (min. of 33 semester hrs.)</th>
<th>MAJOR (min. of 18 semester hrs.)</th>
<th>COGNATE (min. of 18 semester hrs.)</th>
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<tr>
<td>Prefix &amp; Number</td>
<td>Hours</td>
<td>Term</td>
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<tr>
<td>EPRS 8500 or 8530</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EPSF or EPY 8000-Level</td>
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<td>3</td>
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<tr>
<td>EDCI 9990</td>
<td>15</td>
<td></td>
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</tbody>
</table>

NOTE: 1. No coursework that has been completed more than seven (7) years prior to admission to candidacy may be used to meet degree requirements. 2. All transfer credit listed on Program of Study (i.e., credits from other institutions, non-degree, Ed.S., Ph.D.) must be indicated with an asterisk. Please attach a copy of the transcript, excluding GSU, showing coursework taken. A minimum of 36 semester hours must be earned in the doctoral program at GSU; the 36-hour minimum may not include transfer credits from other institutions, another doctoral program, a specialist program, or the non-degree status. The use of non-degree credits is limited to a maximum of 9 semester hours and is included in the hours allowed in transfer. DEADLINE FOR ADMISSION TO CANDIDACY IS ____________________.(OAA use only)

DOCTORAL ADVISORY COMMITTEE

<table>
<thead>
<tr>
<th>Initial Advisory Committee</th>
<th>APPROVALS</th>
<th>Revised Advisory Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Signature</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Major Advisor/ Committee Chair</td>
<td>Dept.</td>
<td>Signature</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Dept.</td>
<td>Signature</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Dept.</td>
<td>Signature</td>
</tr>
<tr>
<td>Committee Member</td>
<td>Dept.</td>
<td>Signature</td>
</tr>
<tr>
<td>Department Chair</td>
<td>Dept.</td>
<td>Signature</td>
</tr>
</tbody>
</table>

AFTER all signatures are obtained, submit form to the Office of Academic Assistance & Graduate Admissions (OAA), Room 300 College of Education and Human Development.

Monitored by OAA: Date
Appendix B

Residency Plan Form

*Doctor of Philosophy in Teaching and Learning with a concentration in Mathematics Education*

Name: ___________________________  Advisor: ____________________

As requirements are completed, they should be approved and initialed by the major academic advisor. All requirements must be approved and/or completed prior to advancement to candidacy (* required by the College of Education and Human Development).

Area I

All items must be completed:

☐ Author or co-author of a scholarly essay (research or theoretical) submitted to a refereed journal*

☐ Assist faculty in teaching a course in the Department of Middle and Secondary Education (or College of Education and Human Development)*

☒ Assist faculty in data collection and/or analysis for a faculty or doctoral-level research project (dissertation does not count)*

☐ Attend Professional Advisement Week (PAW) each semester

☐ Attend DSAME events

Area II

At least 8 activities required (and at least one from each sub-area; none may be counted more than once, except where noted):

**Scholarship**

☐ Publication of article submitted from Area I

☐ Author or co-author publications in a refereed or non-refereed journal (repeatable once)

☐ Present at national, state, or regional conferences (repeatable once)*

☐ Assist in grant writing and submission*

**Teaching**

☐ Develop and facilitate one-to-three semester hour, graduate-level seminars

☐ Develop and facilitate professional workshops (at least two [2] days in length with participant evaluation)

☐ Assist in supervision of practicums (not to meet teaching internship requirement)

☐ Mentor doctoral students (with documentation)

**Professional Development**

☐ Attend national/regional conferences (with documentation of participation)
☐ Attend professional development courses (with documentation of participation)
☐ Attend prospectus presentations and dissertation defenses (with documentation of participation)
☐ Attend Doctoral Fellow meetings (with documentation of participation)
☐ Attend doctoral seminars and webinars (with documentation of participation)

Service*
☐ Serve on professional organization committees (with evidence of participation)
☐ Hold office in professional organizations/associations
☐ Review research/grant proposals for national conferences/organizations
☐ Review manuscripts for refereed journals
☐ Serve as student representative on department or college committees
Journal of Urban Mathematics Education

In the fall of 2007, mathematics (and science) education faculty members at Georgia State University embarked on a series of discussions aimed at “opening up a space” that would give serious attention to urban issues in mathematics education. On January 15, 2008, the Journal of Urban Mathematics Education (JUME) was launched as a peer-reviewed, open-access, academic journal, the only one of its kind devoted entirely to the scholarship of mathematics education within the urban domain.

The mission of JUME is to foster a transformative global academic space in mathematics that embraces critical research, emancipatory pedagogy, and scholarship of engagement in urban communities. Here, the view of the urban domain extends beyond the geographical context, into the lives of people within the multitude of cultural, social, and political spaces in which mathematics teaching and learning takes place.

During its 10-year history, JUME has published over 2,000 online pages of scholarly editorials, commentaries, public stories, research articles, and book reviews. Overall, the Editorial Team, contributing authors, reviewers, and registered readers—a group that represents over 1000 educators, from the novice to the accomplished—have opened up a different space in mathematics education. We encourage you to explore the current issue as well as the archives; we are confident that you will find something that sparks your interest.

For more information about JUME or to become a registered reader (FREE registration), reviewer, and/or author please visit http://education.gsu.edu/JUME.

Sincerely,

JUME Editorial Team
# Mathematics Education Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
<th>Department</th>
<th>Year</th>
<th>Research Interests</th>
<th>Email</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pier Junor Clarke, Ph.D.</strong></td>
<td><strong>Clinical Professor</strong></td>
<td>University of Toronto (OISE)</td>
<td>Mathematics Education</td>
<td>2003</td>
<td>Research interests include teaching and learning mathematics in urban schools and collaboration in professional learning communities.</td>
<td><a href="mailto:pjunor@gsu.edu">pjunor@gsu.edu</a></td>
<td></td>
</tr>
<tr>
<td><strong>David W. Stinson, Ph.D.</strong></td>
<td><strong>Professor</strong></td>
<td>University of Georgia</td>
<td>Mathematics Education</td>
<td>2004</td>
<td>Research interests include socio-cultural, historical, and political aspects of mathematics and mathematics education, critical postmodern theory and methods, and historical underserved students’ schoolings experiences and mathematical identities.</td>
<td><a href="mailto:dstinson@gsu.edu">dstinson@gsu.edu</a></td>
<td><a href="http://gsu.academia.edu/DavidStinson">http://gsu.academia.edu/DavidStinson</a></td>
</tr>
<tr>
<td><strong>Christine D. Thomas, Ph.D.</strong></td>
<td><strong>Professor</strong></td>
<td>Georgia State University</td>
<td>Mathematics Education</td>
<td>1993</td>
<td>Research interests include preparation and retention of high-quality mathematics teachers for urban learners.</td>
<td><a href="mailto:cthomas11@gsu.edu">cthomas11@gsu.edu</a></td>
<td></td>
</tr>
</tbody>
</table>
Timeline for Degree Completion*

*The diagram below provides only a sketch of the process; please meet with your major academic advisor often in regards to your individual progress toward degree completion.

**Stages of Degree Completion**

- **Program of Study**
  - Research & Dissertation Core
    - Research: EPRS 8500 or EPRS 8530
    - Two research courses
    - Two advanced research courses
    - One advanced EPSF or EPY course
  - Major Core
    - Courses (select 3)
      - EDMT 8290
      - EDMT 8420
      - EDMT 8430
      - EDMT 8550
      - EDMT 8820
  - Cognate Core
    - Courses
      - EDMT 9870
      - EDCI 9850
      - EDCI 9900

- **Residency Plan**
  - EDCI 8970
  - EDCI 9660
  - 4 Courses in any area (8000 level or above inside CEHD; 6000 level or above outside CEHD)

**Approve & Complete**

NOTE: Student works toward completion of the Residency Plan THROUGHOUT the degree program.