

NC STATE

College of Education

**Elementary Education in Mathematics and Science
(EEMS)
Graduate Student & Faculty Handbook**

**Department of Teacher Education & Learning Sciences (TELS)
College of Education
North Carolina State University**

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Table of Contents

I.	About the EEMS Program.....	3
II.	Program Area of Study (PAS).....	5
III.	Internships or Independent Study Courses.....	7
IV.	Coursework and Milestones	
	Year 1	7
	Years 2 & 3	8
	Years 3 & 4.....	9
V.	Timeline.....	10
VI.	Preliminary Examination: Written and Oral.....	11
VII.	Electronic Thesis and Dissertation	13
VIII.	Profiles of Graduate Faculty	16
IX.	Information for Newly Enrolled Students	
	Academic Integrity and Research Ethics.....	18
	Financial Aid	18
	Assistantship Application	20
	NC Residency	20
	Full or Halftime Students	21
	Graduate Student Support Plan (GSSP)	21
	Entering EEMS Without Master's Degree.....	21
	Taking Courses at Other Institutions	22
	International Students	22
X.	People, Places & Resources	22
XI.	Proposed Timeline.....	27

ABOUT THE EEMS PROGRAM

The doctoral program area of study (PAS) focused on the *Elementary Education in Mathematics and Science (EEMS)* aims to prepare scholars with expertise in elementary mathematics education OR elementary science education who are committed to improving opportunities to learn for elementary aged children. Students in the EEMS program engage in coursework, research studies, and practical experiences that deepen their knowledge and understanding of teaching and learning, specifically focusing on children's and teachers' learning in mathematics or science. Students benefit from collaborating with program faculty who are nationally recognized scholars actively engaged in research on children's and/or teachers' learning. Example areas of scholarship that appear in our research and coursework include:

- How should we conceptualize, enact, and measure “effective” and equitable science and mathematics instruction in elementary classrooms?
- How do different learning environments and pedagogies enable or constrain various constructs, such as motivation, creativity, memory, transfer, and identity in elementary teachers and students?
- How can we use what we know about how people learn to design professional development that fosters the knowledge and beliefs needed to be an effective elementary teacher of mathematics or science?

While students in the EEMS program primarily focus on one discipline (mathematics or science) throughout their doctoral studies, coursework and other opportunities are structured such that students explore and analyze the cross-disciplinary connections among all the core content areas. By nature, elementary schools are interdisciplinary, and teachers typically are responsible for teaching all subjects. The cross-disciplinary nature of the EEMS program allows faculty and students to leverage the natural setting of elementary schools. Additionally, research and experiences in the EEMS program are not limited to formal “brick-and-mortar” learning environments but also include informal learning environments (e.g., home, museums, outdoor education).

The PAS in EEMS builds on the successful work of NC State's undergraduate elementary teacher preparation program and the elementary education master's program. Together, the programs form a cohesive line of research, development, and instruction across all university-level degrees. The PAS in EEMS provides opportunities for highly qualified individuals interested in researching, designing, and improving elementary-level learning environments. Simultaneously, the Elementary Education in Mathematics and Science PAS strengthens faculty research in elementary mathematics education and elementary science education, feeding directly into the quality of the undergraduate and MEd programs.

Through the doctoral program in Elementary Education in Mathematics and Science (EEMS), students further develop their instructional expertise, extend their knowledge of learners, teaching, teacher education, professional development, technology, equity and policy. This in-depth knowledge of mathematics or science allows students to use, conduct and evaluate educational research at the highest level, and engage in professional leadership activities. In particular, they will develop:

1. A strong foundation in mathematics or science content.
2. A rich understanding of learning sciences; a “combination of individual and social aspects in learning” (Sawyer, 2012, p. 36).
3. A profound understanding of K-6 school mathematics or science.
4. A theoretical foundation in the learning of mathematics or science for diverse populations.
5. An ability to analyze, critique and conduct research related to the teaching and learning of mathematics and/or science in elementary school settings.
6. An ability to apply theoretical knowledge and research results in settings such as: mathematics or science instruction, mathematics or science teacher education, evaluation, supervision, curricula development, technology development and policy-making.

The curriculum display for the EEMS program, shown on page 5, is followed by a description of the PAS core courses. The rotation schedules inform advising and creating plans of work. Other Special Topics (ECI 792) courses may be offered as needed.

PhD Program Area of Study (PAS)
Elementary Education in Mathematics and Science (EEMS)
 Emphasis in Mathematics or Science
Department of Teacher Education and Learning Sciences (TELS)
 Minimum Total Hours: 78

Master Level Courses (Transfer or Complete as part of PhD) 18 hours

- Courses to transfer must be equivalent to the six courses required for the K-6 Mathematics or Science Specialist graduate level add-on courses.

1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 6. _____

Semester/year	CED Required Core Courses	6 hours
	ED 795 Scholar Leader 1: Diversity and Equity in Schools and Communities	3
	ED 795: Scholar Leader 2: Systemic Change in Education and Society	3
	CED Required Research Methods Courses	15 hours
	ED 710: Applied Quantitative Methods in Education, or its equivalent (e.g., ST 507)	3
	ED 711: Applied Quantitative Methods in Education II	3
	ED 730: Introduction to Qualitative Research in Education, or its equivalent	3
	Two or more advanced research methods courses taken from the following	
	ED 712: Survey Methods in Educational Research	3
	ED 731: Advanced Qualitative Research and Data Analysis in Education	3
	ED 750: Mixed Methods Research in Education	3
	ED 795: Special Topics in Education Research	3
	Course outside the College at the 500 level or above (e.g., EDP 560 Educational Tests and Measurement, ST 505 Applied Nonparametric Statistics; PSYC 880)	3
	TELS Required Seminars	6 hours
	ECI 709: Special Problems, Seminar in Teacher Education	3
	ECI 709: Special Problems, Seminar in Learning Sciences	3
	EEMS PAS - Required Core Courses Note - The 4 EEMS PAS Core Courses will be offered on a 2-year rotation basis.	12 hours
	ECI 709: Professional Learning in Elementary STEM Education (Fall – Even years)	3
	ECI 709: Elementary STEM Learning in Informal Settings (Spring – Odd years)	3
	ECI 709: Action and Cognition in Elementary STEM Teaching & Learning (Fall – Odd years)	3
	ECI 709: Examining Researchers and Teacher Educators as Learners (Spring – Even years)	3
	Student and Graduate Committee selected courses or experiences	12-24 hours
	Combination of courses (e.g., ECI, EMS, EAC, CSC, EDP, PSY) based on career goals	6-12
	1.	
	2.	
	3.	
	4.	
	ECI 830: Independent Study (e.g., prepare a paper for publication)	3-6
	ELM 654: Internship in Elementary Education (e.g., engage with external partners)	3-6
	Dissertation	9
	TOTAL	78-90 hours

EEMS Required Core Courses

Professional Learning in Elementary Education: This course focuses broadly on elementary teacher learning. Specifically, we examine research, development, and findings on the design and outcomes of professional learning experiences (PLEs), often called “professional development,” for practicing elementary teachers. The course is designed for graduate students to develop as critical readers, analytical writers, and participants in discussion of intellectual ideas centered around the following: (1) the theoretical and empirical foundations of the research literature related to elementary teacher learning; (2) various approaches to the study of elementary teachers’ professional learning; (3) different sets of recommendations for what makes PLEs “effective”; and (4) evaluation methods for the impact of PLEs. During class sessions, we discuss articles for the focus topic (e.g., teacher learning and new technologies; using cases and videos in PLEs), and we engage in various activities to develop knowledge of the focus topic (e.g., invited talks, examination of various research tools, collective data analysis).

Elementary STEM Learning in Informal Settings

This course will examine science and mathematics learning outside of formal in-school instruction, including after school programs, explore the history of informal education, and work with informal educators for an in-depth evaluation of methods and issues related to informal learning environments as they relate to elementary aged children and families. The course will further explore theoretical and practical explorations of relationships of mathematics and science connections with environmental education for elementary age students both in school and out. The Elementary STEM Learning in Informal Settings course examines science learning outside of formal in-school instruction and the bridge between informal and formal learning. We will visit informal sites, evaluate various types of informal learning, and review research designed to capitalize on opportunities for learning in multiple settings.

Action & Cognition in Elementary STEM Teaching & Learning: This course explores the theoretical roots of 'active' learning, examines evidence of its pedagogical power, and highlights the practical importance of 'action' in STEM teaching & learning. The course draws on theories and research from cognitive psychology, the learning sciences, science education and math education. This course takes an in-depth look at the relationships between “Action” & “Cognition” from an embodied cognition (EC) perspective as it pertains to elementary school teaching & learning. It will cover some of the theoretical foundations, empirical research, and practical implications of EC. The goal of the course is to uncover how young learners' come to understand STEM content through thought, language, experience, and the senses.

Examining Researchers and Teacher Educators as Learners: This course focuses on the learning of graduate students as future researchers and teacher educators. More specifically, we examine and practice some of the “behind the scenes” processes of the work of being a professor/teacher educator (e.g. research, manuscript and grant proposal writing, presenting research, course development & implementation, reviewing the work of others, etc.). The course is designed to provide graduate students with opportunities to a.) see, interact with, and provide feedback on the unfinished works of more senior PhD students as well as new and experienced professors/teacher educators; b.) approximate "academic practices" in the context of a lower stakes environment; and c.) share advice and learn from the experiences of more expert others. During class sessions, we discuss relevant readings; consume, discuss, and give feedback on works in progress presented by invited scholars (e.g. practice job talks, drafts of proposals/manuscripts/dissertations/posters, practice conference

presentations, etc.); and examine the work of teacher educators and the development of the expertise needed to design and facilitate learning opportunities and appropriate materials for pre-service and in-service teachers.

Course Selection for Internships or Independent Studies

If the student is completing a teacher education internship working with a professor on a methods course or other teacher education course FOR credit, then the student should enroll in:	ECI 885 -- Doctoral Supervised Teaching
If the student is completing a research project (e.g., small study, comprehensive literature review), then the student should enroll in:	ECI 830 -- Independent Study in Curriculum & Instruction
If the student is doing an internship with an external partner (e.g., Horizon Research, school district, NC Department of Public Instruction, Head Start center), then the student should enroll in: (**See examples for agreements between NC State, external partner, and student).	ELM 654 -- Internship in Elementary Education

In all cases, the expectation is that a faculty member is supervising and mentoring the student through the experience. Additionally, the student should discuss with the faculty mentor how many credit hours the experience is worth. **The university has guidelines that 1 credit is equivalent to 50 clock hours.**

COURSEWORK AND MILESTONES

The following guidelines are based on full time enrollment and adapted for part time students.

Year 1

Full-time students taking at least 9 credit hours per semester should complete the required departmental seminars (the Teacher Education and Learning Sciences sequence) and one research sequence (either the quantitative sequence ED 710 and 711, or the qualitative sequence ED 730 and 731) in Year 1. The remaining courses, to fulfill full-time requirements, should be determined in consultation with the departmental advisor and the Director of Graduate Programs (DGP)/ELM Graduate Program Coordinator per EEMS curriculum planner. Students will also begin taking their 12 hours of EEMS core courses.

Forming an Advisory Committee

After completion of 18 credit hours, full-time students in consultation with their advisor should form a preliminary doctoral graduate advisory committee (GAC) consisting of 4 faculty members (typically three from TELS and at least one member external to the department as required). Students who declare a formal minor must have one committee member from the minor department on their committee. A doctoral student's initial advisor is automatically considered the initial "chair" of that student's committee. A student is allowed to change advisors after admission/coursework, provided a new advisor is willing to chair his or her committee. Students typically invite committee members they know in some capacity (e.g., I took a course with Dr. X or my interests are consistent with Dr. Y's research), or that their advisor recommended.

Submitting an Advisory Committee and Plan of Work

After an initial meeting with your advisor and committee, you are expected to submit a formal Plan of Work online in MyPack Portal, which then gets submitted to the graduate school. The student enters their plan of work (courses taken and to be taken) in MyPack Portal along with their committee members. MyPack will send committee members an email to approve the plan of work and accept membership on the committee. All new doctoral students must submit a patent agreement online via MyPack Portal.

Graduate Student Online Academic Reporting System (GSOARS)

Annually, Ph.D. students are required to submit a Progress Toward Degree report in the Graduate Student Online Annual Report System ([GSOARS](#)). This report allows you and your advisor to track your progress in coursework, and the various realms of graduate education such as teaching experiences, publications, presentations, work on research projects, and any plans that should be made to work on deficient areas in the coming years. This is particularly relevant for students on the Graduate Student Support Plan (GSSP). The GSOARS report is filed in late Fall to report activities for a calendar year. Students are then able to use results from this report in discussions with their advisor and other faculty members on their experiences from the past year and any plans that should be made to work on deficient areas in the coming years.

Thus, for full-time students, the major milestones in Year 1 are as follows: 1) an advisory committee is formed, 2) an initial Graduate Plan of Work is approved by advisory committee and submitted to Graduate School. For additional information regarding these milestones, please refer to Steps 6-10 on the [Graduate School Summary of Doctoral Procedures](#).

Note the Continuous Enrollment Requirement: The Graduate School requires students to maintain continuous enrollment throughout their program, meaning you must take at least one 3-credit hour course every fall and spring semester. You do not have to enroll in summer courses to maintain continuous enrollment. If a student needs to take a break from their studies, he or she is allowed to take a one-time leave of absence for up to a year. The student must declare the leave in writing to the program's graduate secretary, Irene Armstrong, imarmstr@ncsu.edu, noting the semester they intend to start the leave, and the semester they intend to return from the leave. The student's advisor should also be consulted and notified prior to starting a leave.

Grades in Courses and Overall GPA

Students must maintain above a 3.0 GPA throughout their program, or face probation, suspension, or termination. **In addition, only courses in which a student earns a B- or better may count towards graduate credit as MAJOR courses listed in the Plan of Work.** This rule is in effect for all students who began their PhD program in Summer 2011 or later. If the program started before Summer 2011, courses in the Major category must have a C- or better.

Years 2 & 3

Full-time students taking at least 9 credit hours per semester who have completed the department seminars should plan to take the college level scholar leader course sequence in Year 2. Moreover, students who have completed their first research sequence (quantitative and/or qualitative) in Year 1, should plan to complete a second research sequence (quantitative or qualitative) in Year 2. We encourage students to complete their research sequences early in their program of study (Years 1-2), so that they will be prepared to start planning their dissertation research per the Graduate School guidelines.

In preparation for dissertation work, if a student plans to change their GAC membership to form their Dissertation Advisory Committee (DAC), the student should contact new members. When reaching out to prospective committee members to see if they will serve on his or her committee, it is helpful if the student prepares a short, one-page synopsis of his or her research interests to share with, and if possible meet with, prospective committee members so those faculty can determine if they have the expertise to serve on the committee. It is also important to contact the initial Advisory committee members that will change. Once finalized the membership must be documented on the Plan of Work.

Students will continue taking their 12 hours of EEMS core courses in Year 2. Between Years 2 and 3, students are expected to take 6 hours in learning theories and processes, 6-15 hours in one specialization area of their choosing, and 6 hours in applied research methods. These courses can generally be taken in any order, and there are no prerequisites.

Thus, for full-time students, the major milestones in Years 2 & 3 are as follows: 1) complete all college- and departmental-level required courses and 2) make progress to complete all PAS-specific courses per curriculum display recommendations as shown on p. 5.

Years 3 & 4

For full-time students, the major milestones in the end of Year 3 or beginning of Year 4 are as follows: Full-time students taking at least 9 credit hours per semester who have completed, at least, 51 hours of coursework 1) complete all PAS-specific courses per curriculum display recommendations, 2) schedule written examinations in the major (and, if applicable, minor) fields, 3) pass all written examinations, 4) pass preliminary oral examination, and 5) gain admission to candidacy. For additional information regarding these milestones, please refer to Step 11-13 on the [Graduate School Summary of Doctoral Procedures](#).

TIMELINE

Typical Timeline Full Time

Year 1			Year 2			Year 3			Year 4		
Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer
Course Work											
Form Advisory Committee			Plan of Work			Form Dissertation Comm.					
			Minor Exam			Major Exam			Oral Exam		
			General Dissertation Ideas			Piloting					
						Write Proposal			Defend Proposal		
						Develop Study Materials			Collect Data		
									Write up Results		
									Defend		

Typical Timeline Part Time

Year 1			Year 2			Year 3			Year 4			Year 5		
Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring	Summer
Course Work														
			Form Advisory Committee											
			Plan of Work						Minor Exam			Major Exam		
						Generate Dissertation Ideas			Piloting			Write Proposal		
									Defend Proposal			Develop Study Materials		
												Collect Data		
												Write up Results		
												Defend		

Notes:

1. Typical turnaround for dissertation drafts
Outline of chapters – one week
Propose drafts of chapters – two weeks
2. Your committee needs your proposal draft or full dissertation draft a minimum of two weeks before a scheduled defense
3. No data for dissertation can be collected until:
Committee approves your study design (Ch. 3 of your proposal)
You cannot submit your IRB until after your committee approves your study design
You have an IRB application approved, typically 6 weeks after submitting your application
4. Thus, the earliest you can plan on collecting data is 6 weeks after you've defended your proposal
5. Be aware of departmental and graduate school deadlines
6. Dept. admin needs a minimum of two weeks' notice for defenses
7. Final defense dates for graduation in any particular semester are close to 6 weeks before the end of the semester

Together with your major advisor and committee, develop a Proposed Doctoral Timeline for your written and oral exams and your dissertation proposal defense. See p. 27 for a table that contains the **key components** that need to be considered in your timeline.

PRELIMINARY EXAMINATION: WRITTEN AND ORAL

The purpose of the preliminary examinations for candidacy is to evaluate the extent to which a candidate appears well-qualified and ready to transition from the coursework phase of study to more independent work in their doctoral dissertation research. While doctoral students will have already demonstrated much of the necessary competencies in the program goals, through the combination of course work and internships, there are additional skills and proficiencies necessary to assess before undertaking their final doctoral study.

Among the skills to be assessed in the preliminary exam are:

- The ability to synthesize literature in a well-defined topic area that demonstrates **depth** of understanding about the critical issues in that topic and ability to bring together multiple perspectives.
- The ability to conduct a **critical analysis** and review of the work of others, as one does when writing journal reviews, reviewing grants, or evaluating the work of future students.

A student should take the preliminary exam during or shortly after the final semester of course work. *However, exceptions may be granted, with approval of the Graduate Committee, for those with 1-2 remaining courses that their schedule does not permit taking until a later semester.* The examining committee shall be made up of the Dissertation Advisory Committee (DAC) as noted on a student's filed and approved Graduate Plan of Work. The DAC must include at least 2 members of the EEMS graduate faculty, one of whom serves as Chair (or two serving as co-chairs), and one faculty member representing the minor area.

Steps in completing the preliminary exam:

1. The student and Chair(s) meet to discuss potential foci for the written exam questions. The Chair(s) constructs the Written Exam questions within the guidelines below with consultation from DAC members. The final questions must be approved by all members of the students' DAC. The written exam will consist of questions designed by the chair(s) and approved by the committee to assess the two skills listed above. The questions will be referred to as: (1) Depth of Knowledge; and (2) Critique of Research.
2. The student is given the Written Exam questions in electronic and hard copy. Once received, the student has up to 6 weeks to submit the written responses. **Thus, upon agreement between a student and their DAC, the exams may be completed in up to 4 weeks (full time) - 6 weeks (part time).** Please work with your committee if there are extenuating circumstances that require special dispensations regarding this timeline.
3. The student works independently to prepare the responses to the Written Exam questions and submits these responses in hard copy and electronic copy to the Chair(s) by the designated due date and time.
4. The DAC will grade the responses and prepare a Preliminary Exam Grade Report. The DAC members must come to consensus on the scores given on the Preliminary Exam Grade Report. **Exact grading timeline must be agreed upon by all members of the DAC.**

5. The student schedules an Oral Exam date and time that is agreeable to all members of DAC and the student. The Oral Exam **should occur within 6 weeks** of the submission date of the Written Exams, **and only occurs after the depth and critical analysis questions have earned a PASS**. DAC members must complete a Preliminary Exam Grade Report, and the student and chair(s) complete the [Request to Schedule Doctoral Oral Examination](#). Both documents must be submitted to Irene Armstrong and Director of Graduate Programs (DGP) **at least 15 business days** prior to the scheduled Oral Exam date.
6. All members of DAC and the student meet for the Oral Exam. Other faculty members are welcome to attend and engage in the examining process after questioning by the DAC. The oral examination will include a discussion of the student's written exam questions and may also include a discussion of the theoretical rationale and research design for the dissertation. During the Oral Exam, the student may be asked questions on any of the written responses or on any other issue related to mathematics, science, statistics, research methodology, or elementary mathematics/science learning sciences appropriate to the candidate's coursework and preparation.

At the completion of the Oral Exam with a score of PASS, the DAC will sign and submit the [Admission to Candidacy Report](#).

In the Event of a Fail on a Written Response

If a student earns a Fail on any of the two sections, they will have *one* retake opportunity per failed question. For each question failed, the student will be given one new question designed by the Chair(s) and approved by the DAC to meet the competencies in the area(s) failed. The student will have 2 weeks per new question to complete the written response. Thus, for one failed question, the student will have 2 weeks to respond to one new question. For two failed questions, the student will have 4 continuous weeks to respond to the two new questions.

The scheduling of the retake questions must be agreed upon between the student and Chair(s). This process must be completed within one calendar year of the submission date of the original exam questions. Failure to earn a PASS on all new questions within that calendar year will result in failure of the preliminary exam and termination of a students' Ph.D. program in Elementary Education in Mathematics and Science.

If a student earns a FAIL at the Oral Exam, they may have *one* retake opportunity, to be scheduled within 2 weeks of the prior date. If a student does not earn a PASS at the retake Oral Exam, they will have failed the Preliminary Examination, resulting in termination of a students' Ph.D. program in Elementary Education in Mathematics and Science.

1. Request to Schedule Oral Examination-*filed by Ph.D. student at least 12 working days before exam date.*
2. Oral Exam Reports-completed by *Ph.D. committee members at oral exam.*

Admission to Candidacy

A doctoral student is admitted to candidacy by the Graduate School upon passing the preliminary examinations without conditions or after fulfilling any conditions specified by the DAC. In accordance with Graduate School policy, students must attain candidacy within six years from the date of admission.

Dissertation

For full-time students, admission to candidacy signals the beginning of dissertation research. The DAC and chair approve the dissertation plan and format (traditional or publication-ready manuscript format), the student secures IRB approval to conduct the study, collect and analyze data, and writing of the dissertation.

Final Oral Examination and Defense of the Dissertation (typically 4-5 years but no later than Year 10): After the student's committee chair (s) acknowledges the dissertation is in good shape and is ready to share with the rest of the committee, the student schedules a final oral examination with their committee. The committee must have the completed dissertation **at least two weeks in advance of this final oral examination, providing them time to read and prepare comments.**

The Graduate School must be notified of the date of the oral examination at least two weeks in advance of the defense. The student must notify the department secretary, Irene Armstrong, to schedule the examination with the Graduate School. In accordance with Graduate School policy, students must complete the oral exam and all degree requirements within ten years from the date of admission.

After Defense

Students must submit their dissertation to the ETD office for review immediately (within 24 hours) after their defense. This is not the final error-free file that is due by a later specified deadline, this is just the draft that the committee reviewed prior to the defense. A student may receive an "unconditional pass" at their final defense with only minor edits required, and in such cases committee members will typically check "early dissertation approval" on defense paperwork meaning only the committee chair has to review the final draft of the dissertation to ensure minor edits were completed. A student may also receive a "conditional pass" at their final defense if more comprehensive problems were uncovered requiring substantial edits or further analytical work. Committee members may not check "early dissertation approval" on defense paperwork if conditions are significant and require another round of review.

Submitting Error-Free Dissertation File, and Final Approvals

After the committee chair and any committee members who did not check "dissertation early approval" have approved of the final draft of the dissertation, it is submitted to the ETD office for a final review. Once the ETD Editor has determined the file meets formatting requirements, the committee chair receives one final electronic notification to review the final draft for any errors or omissions. Once the chair has approved the final draft, it is complete and becomes a part of the university's ETD library. Thus, for full-time students, the major milestones in Year 4 are as follows: 1) complete any remaining courses, 2) pass all written and oral examinations related to the dissertation, 3) apply for graduation, and 4) satisfy all requirements as listed on the [Electronic Thesis and Dissertation \(ETD\)](#) website.

For additional information regarding these milestones, please refer to Steps 14-22 on the [Summary of Requirements](#)

ELECTRONIC THESIS AND DISSERTATION (ETD)

At NC State, all dissertations and theses are submitted and published electronically. The software used by the University allows all theses and dissertations to be saved as a PDF, submitted to the graduate school electronically for approval and then sent electronically to the library for cataloging and uploaded to the University server. The Graduate School has a comprehensive website concerning ETDs at NC State at [Electronic Theses and Dissertations \(EDT\)](#).

One of the most important documents at this website, the [ETD Guide](#), walks graduate students through the exact process and formatting requirements for a thesis or dissertation.

For this process to be completed accurately and efficiently, all students are encouraged to attend an ETD workshop early in their candidacy. A schedule of workshops offered is posted each semester on the graduate school's website. Registration can be completed online.

As doctoral students near the end of the dissertation process, there are a number of forms that must be completed and filed with the graduate school in order for your dissertation to be published and for you to be awarded your final degree. A list of all forms including links to each form is provided in this handbook. Be sure to review the requirements for each form in detail to ensure that all paperwork is completed and submitted on time. Please visit the [Graduate School Forms](#) website for a list of each of the required forms. It is important to note that doctoral students are required to initiate the filing of many of these forms. Although regular meetings and discussions with your advisor are critical as you reach this stage of the dissertation process, keep in mind that it is the responsibility of the student to keep track of all paperwork that needs to be filed, acquire necessary signatures in a timely manner, and submit paperwork to The Graduate School.

There are helpful [Templates](#) for MS Word documents or LaTeX documents for creating your thesis or dissertation in the proper format.

Be Aware of ETD Deadlines

Students should note that the ETD office has very strict deadlines for when the first draft of the dissertation is due after the final defense (usually mid-semester, around week 9, not the end of the semester at week 15). Students who do not meet submission deadlines cannot graduate in a given semester. For more information, please visit [ETD Deadlines](#).

Every Doctoral student has **3 ETD deadlines** to meet:

1. ETD **Review** Deadline (*A choice of 2 review deadlines to pick from; 1. No Registration Required or*
2. *Registration Required*)
3. **Final** Error Free ETD Deadline (*For both Required and Non-required Registration*)
4. **Final** Committee Approval Deadline (*For both Required and Non-required Registration*)

In addition to the standard requirements for ETD submission, doctoral students have a few additional requirements that need to be fulfilled to complete the process. Prior to the awarding of

the doctoral degree, the *Survey of Earned Doctorate* (SED) survey must be completed and turned in to the ETD editor. This form is completed on line and can only be printed at the time of completion. Doctoral students are also required to complete and submit a [Doctoral Dissertation Agreement Form](#) (DAF). This two-part form is available on line and also must be submitted to the ETD editor.

Support for Dissertation Research

State Farm Companies Foundation Doctoral Dissertation Awards

This award is designed to stimulate research and development of new knowledge in the fields of insurance, business, and education, and to increase the number of qualified teachers of insurance, business, and education at U.S. colleges and universities. Each winner receives a \$10,000 research grant. The deadline to submit an application is typically in March.

Eligibility for Doctoral candidates: Have completed a major portion of their coursework and have an approved proposal. Have started writing, but have not completed a dissertation.

Are enrolled in a graduate-degree program and are a U.S. citizen. For more information and to apply for this award, please visit <https://www.statefarm.com/about-us/community-involvement/community-grants>

National Academy of Education/ Spencer Foundation Dissertation Fellowships

These are competitive Dissertation Fellowships for Ph.D. students. The program seeks to encourage a new generation of scholars from a wide range of disciplines and professional fields to undertake research relevant to the improvement of education. These \$25,000 fellowships support individuals whose dissertations show potential for bringing fresh and constructive perspectives to the history, theory, or practice of formal or informal education anywhere in the world. Applications are generally due in early October for work that can begin as early as the next June. Please see https://www.naeducation.org/NAED_080200.html

Ford Foundation Dissertation Fellowships

Annual awards of approximately 20-30 dissertation fellowships worth \$21,000. The dissertation fellowships provide one year of support for individuals working to complete a dissertation leading to a Doctor of Philosophy (Ph.D.) or Doctor of Science (Sc.D.) degree. Dissertation fellowships will be awarded in a national competition administered by the National Research Council (NRC) on behalf of the Ford Foundation. The awards will be made to individuals who, in the judgment of the review panels, have demonstrated superior academic achievement, are committed to a career in teaching and research at the college or university level, show promise of future achievement as scholars and teachers, and are well prepared to use diversity as a resource for enriching the education of all students. Application deadline is typically mid-November. See the website for details at http://sites.nationalacademies.org/PGA/FordFellowships/PGA_047959

AERA Minority Dissertation Fellowship in Education Research

The Council of the American Educational Research Association (AERA) established the AERA Minority Dissertation Fellowship in Education Research to provide support for doctoral dissertation research. The purposes of the program are to advance education research by outstanding minority graduate students and to improve the quality and diversity of university faculties. This program offers doctoral fellowships to enhance the competitiveness of outstanding minority scholars for academic appointments at major research universities. It supports fellows conducting education research and provides mentoring and guidance toward the completion of

their doctoral studies. For more information go to: <https://www.aera.net/Professional-Opportunities-Funding/FundingOpportunities/AERAMinorityFellows>

Graduate Students and Advisors should check the official summary in the Graduate School Administrative Handbook for complete and up-to-date requirements.
<https://grad.ncsu.edu/students/rules-and-regulations/handbook/3-1-graduate-school-minimum-requirements/>

PROFILES OF GRADUATE FACULTY

Sarah Carrier, Ph.D. (University of Florida)

Poe 317-F

919-513-2808

sicarrie@ncsu.edu

Sarah Carrier is an Associate Professor of Elementary Science Education in the Department of TELS at North Carolina State University. She has seventeen years of experience teaching in public elementary schools in Florida. She earned her Master's and Ph.D. in science education with specializations in elementary science education and environmental science from the University of Florida. Since 2005, she has developed and taught elementary science methods courses at the undergraduate and graduate levels. Her research focuses on children learning in informal settings, specifically outdoor settings. She is a Co-Principal Investigator for NSF DR-K12 grant *Supporting Elementary Teacher Learning for Effective School-Based Citizen Science (TL4CS)* guiding teachers' support of outdoor data collection and interpretation. She served as a Co-PI for NSF DR-K12 grant *Project ATOMS: Accomplished Elementary Teachers of Mathematics and Science*, a longitudinal study of elementary teacher development, examining teachers' developing identities as teachers of science.

Valerie Faulkner, Ph.D. (North Carolina State University)

Poe 317-B

919-515-0371

valerie_faulkner@ncsu.edu

Valerie Faulkner is a Teaching Associate Professor in the Teacher Education and Learning Sciences department. She earned a B.A. in Anthropology from Duke University, an M.Ed. in Special Education, and a Ph.D. in Curriculum and Instruction with a concentration in mathematics from NC State. She has 17 years of experience in local public schools prior to joining NC State in her current position in 2010. While her background in mathematics instruction is K-12, her focus at NC State is on K-2 mathematics instruction. Dr. Faulkner has worked extensively to prioritize cooperation and collaborative efforts between teachers, schools, districts, NCDPI and institutes of higher education. She is currently PI of an NC Quest grant, in collaboration with Durham Public Schools, designed to target the mathematical understanding of mathematics teacher leaders and school principals within the district. Her 2012 TEDx NCSU lecture "Teaching Math to the Analog Brain in the Digital World" was chosen as a TEDx lecture of the month by the TED Organization.

Jessica Hunt, Ph.D. (University of Central Florida)

Poe 528-G

jhunt5@ncsu.edu

Jessica Hunt is an Associate Professor in the department of Teacher Education and Learning Sciences who works at the intersection of mathematics and special education. She researches learner complexity in inclusive small group and one-on-one settings both inside and outside the context of schools. Her work examines issues of access and inequality in relation to how children exhibit their thinking, the factors that may influence learning, and how teachers can navigate the uniqueness of students' implicit and explicit thought processes. Dr. Hunt received a CAREER award from the National Science Foundation for her work in 2014 in which she researches the complex understanding students who are neurodiverse have of fractions. From this work, Hunt is re-conceptualizing intensive intervention as children's knowing and learning in "Small Environments". This approach suggests a redirect of research and instructional practice in mathematics for an underserved population of students.

James Minogue, Ph.D. (North Carolina State University)

Poe 317-E

919-513-3317

james_minogue@ncsu.edu

James Minogue is an Associate Professor of Elementary Science Education in the Department TELS at North Carolina State University. He has eight years of experience teaching public school science. Since 2005, he has developed and taught elementary science methods courses. His research centers on systematically exploring the use of haptics (simulated touch) in the teaching of school science concepts. Dr. Minogue currently leads a DRK-12 Exploratory project that is studying the impact of haptics-enhanced science simulations on upper elementary students' learning about buoyancy, phase change, and magnetism. He has served as the curriculum leader for large-scale NSF DRK-12 projects that introduce game-based science learning into the elementary school classroom. He is also interested in the role of "drawing to learn" in elementary science instruction. Much of his work involves the iterative design and testing of innovative but theory-guided educational interventions; mixed-methods approaches are favored.

Paola Sztajn, Ph.D. (Indiana University)

Dean's Office

paola_sztajn@ncsu.edu

Dr. Sztajn is Associate Dean for Research and Innovation in the College of Education and Professor of Mathematics Education. Her research program focuses on practicing elementary teachers' mathematics knowledge and professional development. The overarching question that guides Dr. Sztajn's research agenda is: In which ways do practicing elementary mathematics teachers acquire and continue to develop the knowledge needed to teach all students high quality mathematics? She is interested in collaborative studies that allow multi-faceted, in-depth investigations of this complex question.

Temple Walkowiak, Ph. D. (University of Virginia)
Poe 317-D
919-513-0918
tawalkow@ncsu.edu

Temple Walkowiak is an Associate Professor of Mathematics Education in the Department of TELS. Prior to her appointment at NC State, she worked as a teacher and mathematics specialist for nine years in Virginia public schools and completed her Ph.D. at the University of Virginia. Dr. Walkowiak teaches undergraduate, master's, and doctoral courses focused on the teaching and learning of mathematics. Her research focuses on the measurement of mathematics instructional quality in elementary classrooms and the impact of teacher education and professional development on teachers' knowledge, beliefs, and practice. Dr. Walkowiak is currently the Principal Investigator of an NSF-funded grant project entitled *Project ATOMS: Accomplished Elementary Teachers of Mathematics and Science*, a longitudinal study of elementary teacher development. She is also engaged in work as Co-Principal Investigator on NSF-funded *Assessing the Structure of Knowledge in Teaching Mathematics*, a study focused on novice and experienced teachers' knowledge and practices during fraction and decimal instruction.

Jonee Wilson, Ph.D. (Vanderbilt University)
Poe 317-K
919-515-7868
jwilson9@ncsu.edu

Jonee Wilson is an Assistant Professor in the department of TELS. Wilson teaches mathematics education courses for both pre-service and in-service teachers enrolled in the master's programs offered through the College of Education. Her research focuses on examining and outlining classroom instructional practices that support historically marginalized and underserved students' participation in rigorous, inquiry-oriented mathematics activities. She is also interested in investigating and designing supports (such as high-quality professional development) to help teachers in learning, developing, and implementing such ambitious and equitable instructional practices. Dr. Wilson's work is motivated by her experiences as a Baltimore public high school mathematics teacher as well as her research in other large U.S. urban public school districts.

INFORMATION FOR NEWLY ENROLLED STUDENTS

Academic Integrity and Research Ethics

All students are expected to follow University rules and procedures in regards to academic integrity and research ethics. Because these rules and policies may not be covered explicitly in your coursework, please carefully read Section 7 of the code of student conduct (<https://policies.ncsu.edu/policy/pol-11-35-01>).

Seemingly minor errors such as forgetting to cite a source or claiming another scholar's research conclusions as your own can lead to major disciplinary action such as probation, a reduction in a course grade, or expulsion from the University.

It is important that students involved on a research project or engaging in their dissertation research be familiar with responsible conduct of research, especially as it relates to human subjects. The [Responsible Conduct of Research](#) Program maintains a website and offers courses and training.

Students working with human subjects need to file appropriate paperwork with the Institutional Review Board for the Protection of Human Subjects in Research (IRB) at <https://www.ncsu.edu/sparcs/IRB/index.html>.

If data will be collected through a local school districts (with teachers or students), then one must follow the review protocols for that school district before collecting any data. For example, see policies for Wake County Public School System [Request for Conducting Research](#).

Financial Aid

The following opportunities are by no means exhaustive. Graduate students are encouraged to discuss opportunities with their advisor and to seek a variety of outlets for financial aid.

Internal

Teaching and Research Assistantships

Many assistantships (20 hrs per week) are available in the College of Education through a variety of venues. Some students are hired as Teaching Assistants (TAs) in the department.

TAs are typically full-time Ph.D. students. Some students are also hired as Research Assistants to work on particular research projects with faculty. Most RA positions are funded through grant sources that are only available for the duration of a particular grant. Other RA positions are supported by departmental funds. Some assistantships are 9-month contracts while others are for 12 months. Thus, the salary range for positions varies and depends on the funding source. Typical salaries are \$18,000-\$20,000 for 9 months. All TAs and RAs who are eligible for the Graduate Student Support Program (GSSP) will receive in-state tuition and health insurance. Those coming from out-of-state are typically eligible for 1 year of support of out-of-state tuition until they meet residency requirements.

Interested students can complete an [Assistantship Application](#) and e-mail it to the program coordinator, Sarah J. Carrier, sjcarrie@ncsu.edu. AFTER they receive word of admission. TA and RA positions may or may not be advertised through a central source. Thus, *it is very important for students seeking assistantships to talk directly with faculty about their interests and possibilities for funding.*

Part-time Opportunities

Hourly RA appointment

University professors may have hourly RA appointments available for short durations. These are generally sent out via email. Students are encouraged to ask faculty directly about such opportunities for becoming involved with research projects on a limited basis.

Spring Semester	Opens: September 14	Closes: 10 th day of class, Spring Semester
Summer Session I	Opens: March 1	Closes: 3 rd day of class, Summer Session I
Summer Session II	Opens: March 1	Closes: 3 rd day of class, Summer Session II
Fall Semester	Opens: March 1	Closes: 10 th day of class, Fall Semester

Study the Curriculum

Upon admission, students should study the curriculum display for EEMS (p. 5) and draft an unofficial plan of work to guide their registration for specific courses. If students have any questions, they should consult with their assigned advisor regarding which courses to take in years 1, 2, etc.

North Carolina Residency

Graduate students entering the program who are not residents of North Carolina are highly encouraged to establish legal residency in North Carolina for tuition purposes. Out-of-state students funded as TAs or RAs are typically only eligible for 1 year of out-of-state tuition support until they meet residency. Detailed information about this process is provided at <https://www.ncsu.edu/grad/tuition-residency> and all students applying for residency should thoroughly read this website. Applications are accepted for the below listed semesters or summer session beginning with the stated date:

Although the last day of any semester or term that the complete residency applications will be received is the last day of exams for that semester or term, **students are encouraged to submit their application as soon as possible and before tuition bills are mailed** in case problems occur and an application is returned for further clarification and to avoid being billed for out-of-state tuition.

Full or Half Time Students

To be full-time, students must be enrolled in at least 9 hours per semester. If they have accumulated or will accumulate sufficient hours to meet the degree requirements a minimum of 72 for doctoral degrees, they will be considered full-time until they complete their thesis or dissertation provided they enroll **for a minimum of 3 credit hours per semester**.

To be half-time, students must enroll in a minimum of 4.5 but not more than 8.5 hours a semester unless they have fulfilled the hours required for program.

The Graduate Student Support Plan (GSSP)

The Graduate Student Support Plan is a financial package that the university offers to attract and retain excellent graduate students. Under this plan, any eligible students whose research assistantship (RA) or teaching assistantship (TA) pays at least an annualized salary of \$8,000 qualifies to receive health insurance and tuition coverage. Students must also meet minimum registration requirements for the semesters in which they are eligible. Detailed information about the GSSP timeline is at <https://grad.ncsu.edu/wp-content/uploads/2015/11/gssp-pocket-chart.pdf>. Please note that GSSP funding is only available for 4-10 semesters depending on your degree program and that the **timeline begins on the date of your initial enrollment** (full or part time). Although students are no longer eligible for tuition beyond the specified number of semesters, they can receive health benefits if they meet minimum registration requirements.

Degree Sought	Full Tuition and Health GSSP Coverage
Ph.D. (Student has previously earned a Masters in related field)	8 semesters
Ph.D. (Student does NOT already have a Masters in related field)**	10 semesters

**If a student starts in a Master's program and continues straight through to a PhD program, they are eligible for a total of 10 semesters starting with the date of enrollment in the Master's program.

To find more information about the GSSP, please see the annual GSSP handbook published by the graduate school. An electronic version can be found at: <https://grad.ncsu.edu/wp-content/uploads/2016/01/gsspdbk.pdf>. All information about GSSP benefits, eligibility requirements, enrollment requirements and any other information can be found in this document.

Entering EEMS PhD Program Without Master's Degree

When a student enters the EEMS PhD program without a master's degree, the student is expected to complete a research project by the end of the second year of full-time studies. The student should register for ECI 830 (Independent Study in Curriculum & Instruction) in both semesters of the second year for a total of 3 credit hours. The student should consult with the advisor about how to distribute the 3 credit hours across the two semesters, but it is likely that the student will register for 1 credit in the first semester (fall) of the experience and 2 credits in the second semester (spring).

The student will conduct a research study that has been granted IRB approval over the course of the year, from idea generation, literature review, data collection and analysis, to dissemination of findings. The dissemination of findings will occur in two ways: (1) The student will write a paper on the study, following the guidelines for a targeted journal, with the goal to have a paper that is somewhat close to "ready for submission" by the end of the spring semester; and (2) The student will present their findings on the study to their chosen committee of three faculty members in the EEMS program.

This is an example of a timeline for the research project where primary data collection occurs in late fall and early winter. However, the timeline should be adjusted based upon your specific project and when you need to collect data.

- April-May of Year 1: Meet with advisor/faculty member to establish an approximate timeline and to identify potential research project.

Year 2:

- August-September: Identify a topic or potential broad question (question is not fine tuned at this point), and begin to review the literature.
- October: Continue literature review, fine tune question, and submit IRB.
- November/December/January: Collect and analyze data.
- February/March: Data analysis and writing.

- By April 1: Submit paper to committee.
- Between April 15-25: Present to committee.
- After April 25: Make revisions and finalize paper with advisor.

Taking Courses for Credit at Local Institutions

NC State participates in an Interinstitutional Registration program with the University of North Carolina at Chapel Hill, the University of North Carolina at Greensboro, University of North Carolina at Charlotte, North Carolina Central University, and Duke University. Under this agreement, NC State graduate students are permitted to register for classes on one of these other campuses, *upon recommendation and approval of their advisory committees*. Please see: <https://grad.ncsu.edu/students/rules-and-regulations/catalog/registration/interinstitutional-registration-program/>

Even though taking a course on another campus, the student is exclusively under the administrative direction of the NC State Graduate School. Enrollment for courses on other campuses will take place on this campus, following procedures at the website listed above. Such courses are considered by the Graduate School to be a part of a student's normal load and the student will be billed for courses through NC State University Cashier's Office. During the summer, the procedure is somewhat different in that a student must be enrolled in a least one course on the NC State campus during the same session as the requested interinstitutional registration.

When the grading system of the other institutions varies from that of NC State, grades received under Interinstitutional Registration will be converted to the NC State system. "H," "P," "L," and "F" grades earned at the University of North Carolina at Chapel Hill and "E," "G," "S" and "F" grades earned at Duke University will be converted to "A," "B," "C" and "F" grades, respectively.

International Students

The University and the Graduate School have many web pages devoted to information for international students. The Office of International Services (<https://internationalservices.ncsu.edu/>) has important information on immigration regulations and University policies. The Office of International Affairs (<https://www.ncsu.edu/oia/>) sponsors many activities for international students. Finally, the University maintains a listing of international student programs at <https://internationalservices.ncsu.edu/ois-programs>.

PEOPLE, PLACES & RESOURCES

Department of Teacher Education & Learning Sciences (TELS)

Poe Hall Suites 317, 402, 528, and 602

Main Telephone: 919-515-1772

919 is area code for all campus numbers

<https://ced.ncsu.edu/tels/>

Department Head, TELS

Dr. Jessica DeCuir-Gunby

jtdecuir@ncsu.edu

Poe Hall 602

Phone: 919-513-0126

Fax: 919-513-1687

Dr. Lee is the Department Head of Teacher Education and Learning Sciences that includes programs: Elementary Education in Mathematics and Science; Educational Psychology; Learning, Design, and Technology; Literacy and English Language Arts Education; Social Studies Education.

Meghan Manfra

Director of Graduate Programs (DGP) for Ph.D. in TELS

Phone: 919-513-2590

Fax: 919-513-1687

mmmanfra@ncsu.edu

Dr. Meghan Manfra is the department's liaison to the College of Education and the University Graduate School and helps coordinate flow of information among faculty, students, and administration. She oversees the application and admittance process. Dr. Manfra has to approve and sign all official paperwork related to a student's education (e.g., Plan of Work, Request for Preliminary or Final Examination, Termination of a Student's Program).

Sarah Carrier

Graduate Program Coordinator, Elementary Education

Poe 317-F

Phone: 919-513-2808

Fax: 919-513-0919

sjcarrie@ncsu.edu

Dr. Carrier is responsible for the organizational leadership of graduate programs in Elementary Education. She works with faculty and students in the Elementary Education in Mathematics and Science Program Area of Study (PAS) to ensure all understand the policies and program guidelines so that every student has a positive educational experience. Dr. Carrier oversees the review of applications and works with the DGP and Graduate Services Coordinator to process all applications. She is the program liaison to the College of Education.

Irene Armstrong

Graduate Services Coordinator, TELS

Poe 602

Phone: 919-515-1772

Fax: 919-513-1687

imarmstr@ncsu.edu

Ms. Armstrong handles all aspects of graduate education including: admission applications, initial forms for new students, scheduling students in courses based on permission of instructor, all paperwork for graduate education (e.g., Request for Preliminary or Final Examinations), and completion of forms for graduation.

Barbara Copeland

Student Services Assistant, TELS

Poe 317

Phone: 919-513-4631

Fax: 919-513-0919

bpcopela@ncsu.edu

Ms. Copeland handles all aspects of undergraduate education including: scheduling students in courses based on permission of instructor, all paperwork for undergraduate education, completion of forms for graduation and suite 317 organization.

Cashier's Office & Student Accounts

Hours 8am-5pm M-F Student Accounts:

919-515-2986

Fax: (919) 515-1164

<http://www.fis.ncsu.edu/cashier/>

D. H. Hill Library

North campus

Phone: 919-515-3364

See <https://www.lib.ncsu.edu/> for hours and services

College of Education Media and Educational Technology Resource Center

Poe 400

Phone: 919-515-3191

See <https://ced.ncsu.edu/metrc> for hours and services

Office of International Services (OIS)

320 Daniels Hall Phone

919-515-2961

Fax: (919) 515-1402

<https://internationalservices.ncsu.edu/>

Life as a New Graduate Student

Transitioning to life as a graduate student can be a difficult process. Acclimating back to academic life, meeting new colleagues, making new friends, and adjusting to life in a new city are just some of the challenges. The graduate school has an excellent *New Student Survival Guide* that can be accessed at <https://www.ncsu.edu/grad/current-students/survival-guide.html>. This web page covers a range of important topics for entering graduate students including how to obtain an AllCampus Card, health insurance, housing, parking, registration, and useful information about moving to Raleigh including utilities, transportation, restaurants, and shopping.

Graduate Student Communities

A large part of the graduate student experience is becoming a member in an academic community. Students should take full advantage of North Carolina State's academic community by joining formal student and professional communities, as well as attending informal and social gatherings with faculty and other graduate students. Having a strong support group of colleagues can make the graduate experience more enjoyable and less stressful.

There are many opportunities at NCSU to join organizations for graduate students. These can provide both academic and social experiences. The following are a links to some common centers and organizations:

Woodward Student Involvement Center

4210 Talley Student Union

2610 Cates Avenue

Campus Box 7295

Raleigh, NC 27695-7295

919.515.2797

studentinvolvement@ncsu.edu

Teacher Education & Learning Sciences Graduate Student Association (TELS GSA)

<https://getinvolved.ncsu.edu/organization/telsgsa>

Association for the Concerns of African American Graduate Students

<https://clubs.ncsu.edu/acaags/>

Counseling Center

2nd Floor, Student Health Center
2815 Cates Avenue at Dan Allen Drive
Raleigh, NC 27695-7312
919.515.2423

<https://counseling.dasa.ncsu.edu/>

Proposed Doctoral Timeline

Preparation for Written and Oral Exams, Proposal Defense

Task	Proposed Dates
Preparation for exam (e.g., ED 730, lit rev.) (<i>who?</i>)	
Receipt of Written comprehensive questions	
Committee approves Comprehensive/written exam Q's (<i>committee</i>)	
Written exam start (<i>student name</i>)	
Written exam complete	
Committee reviews written exam - submit decision to chair (pass/not) (<i>Committee names</i>)	(~2 weeks for review)
Request to Grad School for Preliminary Oral Exam	Allow 10 business days
Oral Exam	
Preliminary Exam Grade Report complete (<i>committee</i>)	
Upon successful completion, Admission to Candidacy documented in Grad School	
Dissertation Proposal (Chapters 1-3) draft to committee	
Proposal defense	
IRB submission	
Start of Data Collection for Dissertation	
Dissertation Data Analysis and Writing	
Dissertation Defense	