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This document is intended to provide an overview of the intended purpose, formal requirements, and most important informal expectations of our doctoral programs, in most specifics representing a clear and explicit consensus of the Science Education faculty, and in some the informed perspective of the Graduate Coordinator. It also includes a number of highly specific details to help students and their advisors navigate the bureaucratic aspects of the Science Education doctoral programs.

Overview of Doctoral Programs

Doctoral programs in Science Education are highly individualized, since our doctoral students have a great variety of academic and professional backgrounds and career goals. Students in our doctoral programs are a unique and stimulating mixture of full-time students from across the United States (usually with extensive secondary science teaching and/or scientific research experience), local science teachers (most often studying part-time), and international students from several different countries. In consultation with a Major Professor and the three or four other faculty who form a doctoral committee, students select courses and plan a program of other experiences in light of their specific background and goals. Students regularly share the results of their work at state, regional, national and international conferences focusing on science teaching, science teacher education, and science education research. The program culminates in a doctoral dissertation study that is of unique interest and relevance to each student’s intellectual and professional context and may employ any of a wide variety of research methods.

Common Career Goals of Graduates

Doctoral study in Science Education at UGA is intended to assist educators in gaining highly advanced, theory- and research-based knowledge and skills in the teaching of science, in science teacher education, and in conducting research in science education. Most of our students have one of four general kinds of career goals, in roughly this decreasing order of frequency:

- College or university faculty positions in education, primarily teaching education courses and conducting educational research
- Teaching science in K-12 schools with the highest possible level of expertise and compensation
- Faculty positions in science content fields at non-research-oriented colleges and universities
- Positions with responsibility for supervision, coordination, and/or policymaking in science teaching, teacher education, or educational research programs at the school, district, state, or national levels, or in contexts such as informal education centers or other organizations

Degree Options

Science Education doctoral degrees include the Doctor of Philosophy (PhD) and Doctor of Education (EdD). The PhD is considered a more purely research-oriented degree, with graduates most often seeking positions in higher education, teaching education courses and sometimes introductory science courses, and usually maintaining an ongoing program of research in science education. This degree is well suited to preparation for positions at research universities or doctoral degree granting institutions (see [http://carnegieclassifications.iu.edu/descriptions/basic.php](http://carnegieclassifications.iu.edu/descriptions/basic.php)). The EdD is considered a more practitioner-oriented degree, with most graduates working in school or district leadership or state-level policy or supervisory positions, teaching science at non-research-oriented colleges, or continuing as classroom science teachers at the secondary (or occasionally elementary) level.

In our program, formal course and other degree requirements and guidelines for the two degrees in Science Education differ only in slight detail. A major consideration, however, is that the UGA Graduate School’s Residency Requirement is considerably more stringent for the PhD, requiring at least one full-time year of study, and therefore students who wish to complete an entire doctoral degree on a part-time basis, while maintaining a full-time teaching job, are often limited to the EdD.
Relationship to Teacher Certification Status
Our doctoral programs have no necessary relationship to teacher certification status in Georgia or other U.S. states, nor is teacher certification in any country required for admission or graduation. However, teachers already holding Georgia T-4 (initial, undergraduate-level) or T-5 (master’s-level) teacher certification in a secondary science field (Biology, Chemistry, Physics, Earth/Space Science, or “Broad Field” Secondary Science, grades 6-12) can earn an upgrade to T-6 certification (the same earned for completing a Specialist in Education degree) by passing the Written and Oral Comprehensive Examination in a doctoral program and an upgrade to T-7 certification upon graduation. Such certification upgrades will also be honored by most other U.S. states, and may also apply to those holding certification at the Middle Grades (4-8) level with a specialization in Science or in Early Childhood (K-6) with a Science endorsement.

Time Commitment
PhD study in Science Education is ideally pursued on a full-time basis. Nearly all doctoral students who are full-time for multiple years apply for financial support in the form of a Graduate Assistantship position, which includes both a cash stipend and a tuition waiver, and assistantship duties nearly always require working on campus or in local schools, during daytime hours, during the academic year.

Completing either doctoral program through part-time study while maintaining a full-time K-12 or college teaching position or other career is possible, although more difficult logistically. All required courses and most other courses commonly elected by doctoral students in Science Education meet during evening hours during the academic year, and some are available during the Summer Semester or, occasionally, online. Part-time doctoral students should pay special attention to the UGA Graduate School's Continuous Enrollment Policy, which requires all graduate degree students to register (for at least 3 semester hours of credit) for at least 2 of the 3 semesters of each year (defined as Fall-Spring-Summer) until graduation.

The Graduate School presumes that doctoral study will extend at least 3 full-time-equivalent years. Full-time doctoral students in Science Education most often complete the program in 3 to 4 years, with part-time or largely part-time students nearly always taking very significantly longer (most typically 5-7 years, and varying much more widely). The same Graduate School time limits apply to PhD and EdD and to full- and part-time students, and are:

- a maximum of 6 years from enrollment in the first courses included in the Program of Study to admission to candidacy (“all but dissertation” status)
- a maximum of 5 years from admission to candidacy to successful defense of the dissertation and graduation.

Students, if supported by their Major Professor and the Graduate Coordinator, may petition the Graduate School for extension of either of these limits in the event of extraordinary personal hardship.

Tuition, Fees, and Financial Support
All UGA students, including those whose tuition is waived (see below), are responsible for paying miscellaneous fees. At the time of this writing those total $1129 per semester enrolled ($904 for part-time students enrolled for 5 or fewer hours) at the Athens campus.

Part-time students must pay tuition, on a per-credit-hour basis. As at most state universities in the United States, tuition rates for UGA students whose primary residence is in the state of Georgia are much lower than for out-of-state (or international) students (at the time of this writing, at the graduate level, $354 vs. $1004 per credit hour). A limited number of students may be nominated each year by the Graduate Coordinator for a Regents Out-of-State Tuition Waiver award, which allows non-residents to pay the lower, in-state rate. These awards are made on a one-year, potentially renewable basis and the call for nominations for awards for the following academic year is usually issued in late February.
Nearly all full-time PhD students in Science Education at UGA hold a Graduate Assistantship appointment, requiring anywhere from 13 to 20 hours of work per week (commonly known as 1/3-time to 1/2-time, respectively). This may be a teaching assistantship (working with a faculty instructor in a course, occasionally teaching a course, or field supervision of student teachers or practicum students) or a research assistantship (participating in data collection, data analysis and/or writing/presentation of results). Graduate Assistantships carry two important benefits: a waiver of tuition costs (some fees must still be paid), and a cash stipend whose amount varies according to both the proportion of time worked and the source of funding. Graduate Assistantship appointments are not available to part-time students.

Assistantship appointments typically begin in the Fall Semester and extend over the academic year (Fall and Spring Semesters). Although most assistantships do not require work or offer a stipend during Summer Semester, students holding an assistantship appointment in the preceding Spring and/or following Fall Semester qualify for the tuition waiver for Summer Semester as well.

While formal assistantship contracts are normally for one academic year, there is a strong tradition among our program faculty and administration of placing the highest priority on continuing to support full-time doctoral students in good academic standing for up to four years whenever possible. Students who have not yet graduated after four full-time years are rarely offered department-funded assistantships for a fifth year or more. Grant-funded assistantships may be extended for such students at the complete discretion of the grantee. All assistantships are subject to the availability of state and grant funds.

Special assistantships for new students funded directly by the Graduate School on a highly competitive basis are widely considered the most desirable, primarily because the stipend amount is higher and the commitment to multiple years of support is explicit. Prospective students must be fully admitted to the program and to the Graduate School to be eligible for nomination for these awards by the department’s Graduate Coordinator before the established deadlines, which typically fall as early as January. Therefore early application (before November 1st is now recommended, for starting the program in the following Summer or Fall Semester) and admission is very important to maximize the possibility of being eligible for nomination for these awards. These awards include Presidential Graduate Fellowships, for which the nomination deadline is typically in late January, and the Graduate School Assistantships (GSA) and Graduate Research Opportunity (GRO) Assistantships, for which the nomination deadline is typically in early February. The GRO program is a subset of the GSA program “designed to include any entering graduate student who is considered first generation, educationally or economically disadvantaged, or has some aspects of a uniquely diverse background that adds to their discipline of study.” Please see http://grad.uga.edu/index.php/current-students/financial-information/graduate-school-based-financial-assistance/funding-from-graduate-school/ for details and exact current deadlines.

Other common sources of funding for assistantships are projects funded by grants to members of the faculty (usually for research, but sometimes in connection with special inservice teacher education courses or workshops), and assistantships funded at the department level, with funding from the College of Education (nearly always associated with teaching undergraduate courses). Upon admission, prospective students will be kept informed by the Graduate Coordinator of the possibility/probability of assistantship funding. For grant-funded assistantships, faculty may recruit and consider any existing or prospective students at any time, and the timing of the offer of an assistantship position is entirely in the hands of the grantee. For department-funded assistantships, formal offer letters are usually issued by the Department Head late in April or May for the following academic year. Another special Graduate School assistantship, the Dissertation Completion Award, is available on a competitive-application basis for students who can convincingly demonstrate that they are approximately one year from completion of their dissertation study and would greatly benefit from continued funding while being relieved of substantive assistantship duties during that period of time. The nomination deadline for this award is typically in early March.
The College of Education offers many competitive-application scholarships, in relatively small amounts in comparison to assistantship stipends, for which both full-time and part-time students may apply, although for many of them explicit preference is given to full-time students. Please see https://coe.uga.edu/experience/financial-aid/phd/science-education for details.

**Doctoral Advising**

A First-year Advisor is appointed for each matriculating student by the Graduate Coordinator from among the faculty, and consults with the student about initial coursework choices. Any preference expressed by new students for assignment of a First-year Advisor is one (but only one) consideration in making these assignments. Students will identify a Major Professor (who may or may not be the same as the First-year Advisor) from among the Science Education faculty, by mutual agreement, usually approximately at the end of the first year or beginning of the second year in the program, after becoming more familiar with the range of expertise, interests, and working styles of the various faculty. The establishment of this relationship should be reported to the Graduate Coordinator, who will in turn report it to the Graduate School. Formal appointment of Co-major Professors is allowed, but is usually discouraged because it is bureaucratically awkward in several ways.

A full faculty committee should ideally be identified soon afterward, and the membership of the committee must be reported to the Graduate School using the appropriate form available on their website (http://grad.uga.edu/wp-content/uploads/2014/11/body_advcomphd.pdf). The committee must include at least two members of the Science Education faculty, at least one “outside” (of Science Education) member, and may total either four or five members. At least three members must hold full UGA Graduate Faculty status. UGA faculty in other departments holding Adjunct Faculty status in Science Education may be counted as “inside” or “outside,” but may not serve as Major Professor. The “outside” member is most often drawn from the faculty in another field within the College of Education (often a specialist in a particular research methodology), but quite often is a scientist in the student’s major content field, with an appointment in another UGA College or School (e.g., Arts and Sciences, Ecology, Agriculture, Forestry) instead. Faculty from other universities whose special expertise is identified by the student and Major Professor as uniquely valuable to the student's planned dissertation study may also be included as members. Such appointments must be specially approved by the Graduate School, requiring documentation of the qualifications of the proposed member and usually an argument that the required special expertise is not readily available among UGA faculty. Not more than one such member is allowed. It is understood that such committee members, and occasionally others, may well have to “attend” meetings via electronic communication technology (e.g., telephone, Skype, Google Hangouts), but currently arrangements must still be made for them to personally sign all official Graduate School forms (see below) related to the student’s progress. In the event that Co-major Professors are appointed, those two people count as only a one faculty member for purposes of all of the quantitative committee composition rules specified above.

The members of the doctoral committee are expected to become a group of mentors and resources for the student at all stages of the program, determining coursework requirements, planning relevant experiences aside from coursework, planning and carrying out a dissertation research study, and making future career decisions. One or more members of the committee very commonly advise the student about becoming involved in various professional organizations relevant to science education, nearly always including making co-presentations on the subject of their research and/or teaching efforts at the annual meetings of those organizations, and ideally also leading to publication in professional journals.

**Program Requirements and Planning**

A broadly based core of knowledge and proficiencies is gained through the Science Education program’s graduate courses, as well as courses in other departments and programs in the College of Education (e.g., Educational Research, Qualitative Research Methods, Educational Psychology, Social
Foundations of Education, or sometimes others) and the various science departments. A more specific background in the candidate's particular areas of interest is primarily gained through formal internships (in both research and university teaching; courses ESCI 9600 and 9700), other supervised, special-focus projects (courses ESCI 6000 and/or 9000), occasional special-focus courses (e.g., special sections of the ESCI 8990 seminars), and, often, paid assistantship duties. These may be supervised or guided by any of the faculty, and may be initiated based on the unique interests and/or initiative of the student or carried out in conjunction with existing research or instructional activities of program faculty.

A typical program for the doctorate in Science Education will require the equivalent of 2 to 3 years of full-time coursework beyond that typically included in a master's and/or specialist degree. Dissertation research normally takes another full-time-equivalent year or more.

Part-time students, typically with a full-time “day job” as a science teacher, normally spread coursework out over a considerably longer period, varying widely according to how intensively they are willing and able to study, although some particularly ambitious and industrious teachers have completed coursework, or even the entire degree program, at a rate more typical of full-time students. As one practical example, a part-time student willing/able to travel to Athens for evening course meetings only one day per week, or for only one month per summer, is likely to take two to three times as long, or more, to reach candidacy status as a student (whether full- or part-time) who takes multiple full (3-credit-hour) courses during a semester.

The doctoral committee is responsible for approving a coursework plan for the student, and this is ideally formalized in an Initial Program of Study document very soon after the committee is formed. The Graduate School provides a form for this purpose (http://grad.uga.edu/wp-content/uploads/2014/11/body_prepfrgp.pdf), but the signed document is not forwarded to the Graduate School office but rather maintained in the program’s internal records. See the section on Course Requirements and Recommendations below for details, but in general:

- Courses should be listed in the chronological order in which they were taken or are expected to be taken (not grouped by substantive categories as in the section below). This format rule also applies to the eventual Final Program of Study document that will be forwarded to the Graduate School. If the number of courses to be listed in any section exceeds the fields available on a single page, a second page (using the same template form) should be added, and duplicate signatures are required on that page.

- The uppermost section is for listing any courses taken by the student as part of previous graduate degrees (whether at UGA or at other institutions) that the committee wishes explicitly to recognize as having been taken into account in determining the numbers or types of courses that the student should be required to take as part of UGA doctoral studies. Especially important to list here would be any courses that are considered so closely equivalent to those that would normally be required that they will be counted as substitutes for some of the UGA courses customary taken by most ESCI doctoral students. Courses listed here are not technically subject to the 6-year time limitation imposed by the Graduate School, but in some cases faculty on the committee may have substantive reason to judge that some courses taken long ago may be considered obsolete and therefore irrelevant.

- The lower, main section is for listing all graduate-level courses taken or to be taken while a doctoral student at UGA. Grades and semesters should be listed for courses already taken, while grades or possibly semesters are necessarily left blank for some (probably most, in the case of the preliminary document) of the courses. Courses with grades below C may not be included on the Program of Study. Any courses taken during enrollment at UGA for which credit is to be formally transferred from another institution (although this is almost never necessary or even desirable in practice, for several reasons) should also be listed here. Formally transferred courses (this is not the same thing as possible course substitutions described above) may not have been part of the requirements for earlier degrees, and grades
below B may not be transferred. Graduate School rules general to all graduate degree programs limit formal transfer of credit to a maximum of 9 hours, and also allow a maximum of 9 hours of UGA coursework initially taken on a non-degree basis, before admission to a degree program, to be included on the Program of Study.

- Absolutely required course credits for which no substitutions may be made under any circumstances, and which must be included on an acceptable document (for numbers of hours, see below), include ESCI 8990, 9300, 9600, and 9700. Substitution for other ESCI 8000- or 9000-level courses should be granted only when evidence for the equivalence of the prior course is considered by the committee to be clear. Courses in other categories for which such substitution is quite common include the required Measurement/Assessment/Evaluation course, the first ERSH course (basic statistics), and science content courses (especially, and perhaps obviously, if the student holds a previous master’s degree in a science content field rather than in an education field).
- The absolute minimum number of total course hours that must be included on a doctoral Program of Study is 30, at least 16 of which must be open only to graduate students. Neither of these rules ever substantively comes into practice with Science Education students.

Course Requirements and Recommendations

Although each student's dissertation research eventually becomes the centerpiece of their doctoral experience, an integral component of our PhD and EdD programs is coursework. Doctoral program requirements include courses in the five areas (Science Content, Science Education, Research Methodology, Educational Psychology, and Social Foundations of Education) described below. Further requirements that carry course credit but that do not meet as conventional courses include the Research Internship(s), Teaching Internship, and Dissertation Research.

Science Content Courses:

Evidence of in-depth knowledge of the core science teaching field (Biology, Chemistry, Physics, Earth/Space Sciences) most relevant to the student's interest is expected. Normally all coursework in this area will be taken at the graduate level, although undergraduate courses may sometimes be deemed appropriate by a student’s committee (although any such courses should not be included on the formal Program of Study). While it is normally expected that these courses will build advanced-level knowledge and skills within one science field, students are also encouraged to include more basic coursework to increase their familiarity with science fields in which their background is relatively weak. The ideal is to complete coursework equivalent to that included in a typical master's degree program (minus a thesis) in a single science field. As a practical matter, the faculty are aware that it is extremely difficult at UGA for part-time students to schedule substantively graduate-level coursework in many science fields, due to the dearth of such courses offered in Summer Semester or in evening time slots or online during the academic year, and Major Professors and committees are urged to take this unfortunately practical constraint into consideration.

Science Education:

Courses leading to a broad theoretical understanding of issues in curriculum and instruction in science education are a major component of the doctoral program. All full (3-hour) courses offered by our faculty and intended primarily for doctoral students (8000-9000-level) are offered once every two years, on a regular rotating schedule (see below for details), almost exclusively during the academic year (Fall and Spring Semesters). Master’s-level (6000-7000-level) courses in Science Education may also be judged to be required or strongly recommended for some students, and are almost exclusively offered in Summer Semester, with most also on a 2-year rotation. Courses in other pedagogical disciplines (e.g.,
Mathematics Education, Language and Literacy Education, Social Studies Education, Middle Grades Education, Early Childhood Education, Instructional Technology) may be appropriate for some students.

Evidence of the capability of teaching science at the elementary, secondary, or higher education levels, in keeping with the student's professional goals, is required, and those with little or no science classroom teaching experience may be required to gain such practical experience at some point during their doctoral studies. In some cases this may be stipulated as a condition of admission and therefore of eventual graduation.

Each doctoral student must complete at least 22 semester hours of Science Education (ESCI) coursework at UGA, including:

- at least 4 hours of ESCI 8990, Research Seminar in Science Education, normally as separate 1-hour enrollments (Note: It is strongly suggested that these enrollments be during the first four academic-year semesters of the student’s program. This is because, beyond the importance of the substantive topics covered in these seminars, another purpose is to bring together all first- and second-year doctoral students, full-time and part-time, as a loose cohort.)
- at least 6 (18 hours total) of the 8000-9000-level ESCI courses listed below

Graduate courses focusing on curriculum and instruction in Science Education, open only to graduate students and currently included in the UGA Bulletin, are:

- ESCI 8100* International Science Education
- ESCI 8200 Science Supervision, Mentoring, and Induction
- ESCI/EFND 8210. Multicultural Education Research
- ESCI/EFND 8310* Inquiry of Eco-Justice Issues
- ESCI 8400* Innovative Technology in Mathematics and Science Education
- ESCI 9020 History and Theory of Science Education
- ESCI 9080 Science Curriculum Theory and Practice
- ESCI/EMAT 9600 [temporary course number] Teaching and Learning in Mathematics and Science
- ESCI 9630 Critique of Educational Literature in Science Education
- ESCI 9730 Science Teacher Education - Theory and Practice
- ESCI 9740. Science Studies and Science Education

*Indicates courses that, as of this writing, have been offered in the recent past but are not currently included in the planned regular course rotation for the near future (see below).

Graduate courses in Science Education intended primarily for master’s and specialist degree students, but which may be judged appropriate for some doctoral students (especially those with no previous degrees in education) are:

- ESCI 6200. Science, Technology, and Society [repeatable for credit; specific focus varies]
- ESCI 6220. Marine Environmental Education
- ESCI 6230. Environmental Science Education
- ESCI 6420. Science for PreK-8th Grade
- ESCI 7040. Teaching Strategies for Middle and Secondary School Science Teachers
- ESCI 7080. Curriculum Planning in Science Education
The current plan for the scheduling of these course offerings in the foreseeable future is listed below.

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<thead>
<tr>
<th>Fall (odd-numbered years)</th>
<th>Spring (even-numbered years)</th>
<th>Summer (even-numbered years)</th>
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<tbody>
<tr>
<td>9740 Science Studies</td>
<td>8210 Multicultural Education</td>
<td>6220-6230 Georgia Shore Program</td>
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<tr>
<td>9080 Curriculum</td>
<td>9630 Critical Review of Lit</td>
<td>7040 Teaching Strategies</td>
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<td>6200 (Socioscientific Issues)</td>
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<td>6420 PreK-8</td>
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<tr>
<td>Fall (even-numbered years)</td>
<td>Spring (odd-numbered years)</td>
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<tr>
<td>9600 Learning and Knowing</td>
<td>ESCI 9020 History and Theory</td>
<td>6220-6230 Georgia Shore Program</td>
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<tr>
<td>8100 Supervision</td>
<td>ESCI 9730 Science Teacher</td>
<td>7080 Curriculum</td>
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<tr>
<td></td>
<td>Education</td>
<td>6200 (STEM Integration)</td>
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<td></td>
<td></td>
<td>6420 PreK-8</td>
</tr>
</tbody>
</table>

Research and Evaluation:
Evidence of competence in educational research skills is a critical component of the doctoral program. Courses in educational research design, qualitative and quantitative research methodology, educational measurement/assessment, and program evaluation may be taken to meet this requirement. The required subcategories and the courses that are generally used to satisfy this requirement are listed below.

Measurement/Assessment/Evaluation:
All students must take a minimum of one course of 3 semester hours from among:
ERSH 6600. Applied Educational Assessment
ERSH 7250. Education Program and Project Evaluation
ERSH 7600. Construction of Educational Measurement Instruments
ERSH/EADU 7610 Questionnaire-based Research in Education

Research methodology:
All students must take at least a three-course sequence (or its equivalent) in one major research methodological area (quantitative, qualitative) and develop expertise in the design of research in that methodology. At least one course in the other major methodological area is also required. The two introductory sequences of courses are:
ERSH 6300. Applied Statistical Methods in Education
ERSH 8310. Applied Analysis of Variance Methods in Education (or STAT 6210)
ERSH 8320. Applied Correlation and Regression Methods in Education (or STAT 6220)
QUAL 8400. Qualitative Research Traditions
QUAL 8410. Designing Qualitative Research
QUAL 8420. Analyzing Qualitative Data
For instance, students may choose to take either three ERSH courses and one QUAL, or three QUAL and one ERSH. Depending on details of the specific methodology considered most likely to be used in the dissertation study, most students will take one or more additional, more advanced courses, beyond the required three, in their primary area. Many students in our program earn the Certificate in Interdisciplinary Qualitative Studies, which requires five courses. Details may be found at https://coe.uga.edu/academics/non-degree/certificates/qualitative-research.

Doctoral students who have had no previous exposure to educational research and its methods in a previous graduate degree program may be advised to take ESCI 6990, Introduction to Research in Science Education, or ERSH 6200, Methods of Research in Education, before beginning either of the above sequences.
Educational Psychology:

Doctoral students should develop knowledge of relevant research on the psychological foundations of education. At least two courses from the many and varied offerings at the graduate level in Educational Psychology (EPSY) are required.

Social Foundations of Education:

Doctoral students should develop knowledge of the history, philosophy, sociology, and/or anthropology of education, and of research on sociocultural aspects of education. At least two courses at the graduate level in the Social Foundations of Education (EFND), or ESCI courses whose focus intersects substantially with social foundations issues (e.g., ESCI 8210, 8310, 9020, 9740), are required. Besides the graduate courses offered in this area within the College of Education, selected courses in History, Philosophy, Sociology, Anthropology, Psychology, Women’s Studies, African American Studies, and potentially other areas may be highly relevant to the interests of some students and may be approved by their committees for inclusion on the Program of Study in this category.

Research Internship:

All PhD students must enroll for 6 hours (normally two three-hour enrollments) of ESCI 9600, Research in Science Education. EdD students must take 3 semester hours (normally a single enrollment). These research internships are most often under the supervision of the student’s Major Professor but may also be completed under the supervision of other faculty, in addition or instead. Topics may arise primarily from the student’s own specific interests or may grow out of the ongoing research program of the supervising member of the faculty. Frequently the product of these enrollments will be a conference presentation proposal or manuscript that may be submitted for publication, and is quite often used to satisfy the Publishable Paper requirement for admission to candidacy (see below).

Important note: The ESCI 9600 experience is expected to be separate from, or in addition to, any duties specifically assigned as part of paid Research Assistantship hours. To do otherwise is considered inappropriate “double dipping.”

Teaching Internship:

All doctoral students must enroll for at least 3 hours of ESCI 9700, Internship in Science Education. The purpose of this requirement is to ensure that all doctoral students gain some experience in teaching undergraduate/master’s level courses, under the guidance and supervision of a faculty member. For full-time students this is usually in the context of one of the ESCI courses required for one of the initial teacher certification programs in the College of Education: Early Childhood (ESCI 4420/6420), Middle School (ESCI 4410/6410, 4430, 4440) or Secondary Science (ESCI 3450, 4450/6450, 4460/6460, 4480/6480, 5460/7460, 5470/7470). For part-time students it is most often fulfilled in the context of one of the master’s-level courses taught in the Summer Semester (ESCI 7040, 7080, 6200, 6420, or other, special-purpose courses offered more irregularly). For students whose career goal is college-level science teaching, it may be in a science content course (e.g., BIOL, CHEM, PHYS) under the supervision of a scientist who is an adjunct member of the Science Education faculty.

Often, faculty who regularly serve as instructors for one of the preservice “Methods” courses listed above will regularly structure a 9700 experience as the initial stage of an “apprenticeship” sequence that may subsequently lead to assignment as a formal TA for the course and, sometimes, when it mutually suits the needs and priorities of both the student and the program, as Instructor of Record for undergraduate students in the course.

Note: The ESCI 9700 experience is expected to be separate from, or in addition to, any duties specifically assigned as part of paid Teaching Assistantship hours. To do otherwise is considered inappropriate “double dipping.”
Doctoral Dissertation:

Every doctoral candidate must enroll for a minimum of 3 semester hours of ESCI 9300, Doctoral Dissertation. Because the Graduate School requires a minimum of 10 total hours of enrollment after achieving candidacy, in practice nearly all doctoral students enroll for at least 10 hours, and usually quite a bit more, of this credit. For this reason, normally the Program of Study will list 10 hours of ESCI 9300, with the semester left open.

Note that enrollment in ESCI 9300 should not normally occur before admission to candidacy (see below for details) has been achieved. Credit for supervised research work related to a planned dissertation that is undertaken before candidacy should be the context either of ESCI 9600 (see above) or an ESCI 9000 (Doctoral Research) enrollment, rather than 9300. Common examples are preparing all of the dissertation prospectus, or planning or completing a “pilot study” using the tentatively planned procedures for dissertation data gathering and analysis on a smaller scale or in a different context. These two processes may well be simultaneous and/or interrelated.

Conference Presentations and Publishing

Doctoral students in Science Education regularly share the results of their work, in the form of paper presentations, poster or roundtable sessions, symposia, or workshops, at state, regional, national and international conferences, often initially as co-authors/presenters with faculty members or more experienced doctoral students, and usually as sole or first author/presenter by the time of their graduation. The national/international professional organizations specific to science education whose conferences are the most frequent venues for such presentations include the National Association for Research in Science Teaching (NARST; typically held in March-April), Association for Science Teacher Education (ASTE; January), National Science Teachers Association (NSTA; regionals in fall, national in spring), and the divisions and special interest groups most relevant to science education of the American Educational Research Association (AERA; March-April). NARST is frequently scheduled at or near the same location and time as either AERA or NSTA, so it is often time- and cost-efficient to attend two of those conferences back-to-back. Proposal deadlines for these conferences are often 8 or more months in advance of the conference, so foresight and planning are of great importance.

Students who are sole or first authors of accepted presentations may apply for financial support for travel to such conferences from a variety of sources at the University, College, and (just recently) Department level, typically with four deadlines spread across each year corresponding to travel in each of four different three-month periods (e.g., to cite the most commonly applicable example, with an application deadline of early December for travel in March, April, or May). The amount of money awarded typically will not fully cover all expenses, but is expected to be of significant help in making travel to present at conferences more affordable. The Graduate Coordinator will notify students of these opportunities when the call for applications is announced.

Especially for those students whose career goal is university faculty positions in science education or a closely related field, conference presentation experience is a routinely expected qualification for entry-level positions, and an increasingly important additional qualification for the most competitive positions is publishing in major peer-reviewed journals in the field, at least as a co-author. Most often, manuscripts submitted for publication grow out of projects that first result in national or international conference presentations, which in turn often overlap significantly with assigned assistantship duties, ESCI 9600 projects, or dissertation-related research.

Acceptance, based on peer review, of a sole- or first-authored conference presentation proposal or manuscript for publication is one of the requirements, along with passing the Comprehensive Examinations and preparing a dissertation prospectus acceptable to the committee, for admission to candidacy (see details below).
Doctoral Comprehensive Examination (Written and Oral)

At or near the end of each student’s planned coursework, a committee meeting is held at which a Final Program of Study (http://grad.uga.edu/wp-content/uploads/2014/11/finalphdprg.pdf) is normally approved (see Program Requirements and Planning above for a detailed description of the protocol for preparing this document). Normally at this meeting a preliminary discussion of the student’s envisioned dissertation research topic is also held, and the nature and scheduling of the Doctoral Comprehensive Examination (also sometimes referred to as a Preliminary Examination or “Prelim”) will be determined, with the general range of topic areas covered by a set of exam questions agreed upon by the committee, often but not always in consultation with the student.

It is not necessary that all coursework (other than dissertation hours) be completed before this process begins – the Final Program of Study often includes a small number of courses that the student and committee agree will be taken in the near future, with the most common category of these being specialized or advanced research methodology courses, many of which are not offered every semester. The planned semester for these courses may be indicated on the form, or that field may be left open.

Although the number and format of Written Comprehensive Examination questions can vary according to the preferences of the Major Professor and/or other members of the committee, normally each of the faculty members prepares a question to which the student will write a response. While faculty have wide latitude in fashioning questions, they commonly fall into one or more of several categories, including but not limited to: broad knowledge of the canonical concepts and literature of some major aspect of the field of science education (e.g., curriculum, teaching and learning, assessment, teacher education, history, philosophy); understanding and/or application of a specific research methodology; critical analysis of one or more selected research reports in a field of special interest to the student; literature review of one or more issues or theoretical perspectives expected to be essential to the student’s dissertation prospectus. Time limits, if any, for student’s work on each question are typically at the discretion of the member of the committee who primarily prepared the question. Customarily, questions are collected from the other committee members by the Major Professor, who formally assigns them to the student, one at a time. One or more committee members may require that the student make revisions to the answer to a particular question before accepting it as satisfactory.

If and when all members of the committee report to the Major Professor that the written responses are satisfactory, it is customary in the Science Education program for copies of all questions and responses to be distributed to all members of the committee before an Oral Comprehensive Examination meeting is scheduled. According to Graduate School rules, this meeting must be scheduled a minimum of 14 days in advance, and the meeting is technically open to all faculty in the university. The Appointment of Advisory Committee (see above under Doctoral Advising) and Final Program of Study forms must have been received by the Graduate School (ideally previously, but simultaneously is acceptable) for this meeting to be scheduled. The current bureaucratic status of the process of scheduling the “Oral Prelim” meeting is a curious mixture of high and low technology: The scheduling must be done online, via the Graduate School web site, by the Graduate Coordinator, and the paper Approval forms are then generated and printed, in color-coded duplicate, by the Graduate School office and forwarded via campus mail to the Major Professor, typically only slightly earlier than the scheduled meeting, as an attempt to enforce the rules about scheduling.

At this meeting, after an initial “executive session” discussion of the written responses among the committee members only, the student is asked to respond orally to any follow-up questions, requests for clarification, or invitations to informed speculation that any member of the committee may have. At the end of this process, the student is asked to leave the room again, and each member of the committee then formally votes as to whether or not the student passed both the written and oral aspects of the exam, and those results are reported to the student and to the Graduate School. A student may pass the exam with a maximum of one dissenting (failure) vote from a member of the committee, although in such a rare
circumstance significant doubt will have been raised about the suitability of the student to continue in the program, at least with that dissenting member of the faculty remaining on the committee.

Doctoral Dissertation Prospectus

The doctoral dissertation is an original research study, identifiably within the field of science education, which may focus on a topic/question initially identified by the student, based on his or her special interests and initiative, or may grow out of the established research program or teaching efforts of one or more of the faculty. The decision on a dissertation topic is of crucial importance and normally is arrived at through extended consultation between the student, the Major Professor, and the other members of the committee.

With the guidance of the committee, the student prepares a prospectus for the dissertation study, which customarily includes sections addressing the general rationale and specific purpose of the planned research, a review of relevant literature, and a description of planned data gathering and analysis procedures. The length and level of detail required for each of these aspects of the dissertation prospectus is left to the discretion of the Major Professor and committee, and varies widely in practice, often partly due to the nature of the study and/or the theoretical background underlying its methodology. Some committees may require much greater length and detail, essentially requiring a plausible first draft of what (in the most traditional format of a complete dissertation) would commonly be referred to as Chapters 1 through 3 (Introduction, Literature Review, Method/Procedures). Others may find a much more succinct document appropriate and acceptable.

Most often the approval of a prospectus occurs at a separate “prospectus defense” committee meeting, held at a later time than the Oral Comprehensive Examination, but this need not necessarily be the case – development and approval of a prospectus may precede or may be combined with the Oral Comp, and a formal committee meeting is not a strictly required format for communication between the student and the members of the committee about the prospectus.

Publishable Paper Requirement

Doctoral students in Science Education are required to complete a publishable paper. The intended purpose of this additional requirement for achieving candidacy in our doctoral programs (both PhD and EdD) is for the student to gain experience both in producing new knowledge in the field of Science Education and in disseminating it through a process in which external reviewers provide evaluative feedback. Here are the details:

- There are three ways in which to fulfill this requirement:
  - Have a proposal accepted for presentation at a major conference.
  - Have a manuscript accepted for publication as a journal article.
  - Have a manuscript accepted for publication as a chapter in an edited book.
- The paper must be sole- or first-authored by the student.
- The topic of the paper should be recognizably within the field of science education, although the conference, journal, or book need not be specific to science education.
- For PhD students the paper must be an educational research study (appropriate for an intended audience of science education researchers), although it may be either an empirical study or a theoretical/conceptual one. For EdD students it may alternatively be a practitioner-oriented exposition (appropriate for an intended audience of science teachers).
- The forum in which it is published/presented must be meaningfully peer-reviewed, as determined by the student’s committee.
- Conferences, journals, or publishers should be national or international in scope, rather than local, state, or regional.
• No list of examples or counterexamples of acceptable conferences or journals is specified here, because no such list can be exhaustive, but the student’s committee will judge the appropriateness of the forum in which the work is to be shared.
• Some edited books (varying according to publisher and/or the identity or policies of the editor/s) qualify as bona fide peer-reviewed publications, while others do not. Again, such judgments will be made by the committee as necessary.

Admission to Candidacy

A doctoral student must be admitted to candidacy at least one full semester before graduation. The Application for Admission to Candidacy form must be filed with the Graduate School, and may be found at http://grad.uga.edu/wp-content/uploads/2014/11/body_candphd.pdf. In order to earn admission to candidacy (“all but dissertation” status) for a doctoral degree in Science Education, the following requirements must be satisfied:
• Gain approval of a final Program of Study, which must be signed by all committee members, the Graduate Coordinator and the Dean of the Graduate School.
• Meet the Research Skills Requirement. In Science Education this is formally achieved by listing in the Program of Study the final required course in the chosen initial primary research methodology sequence (e.g., ERSH 8320 or QUAL 8420).
• Maintain an overall 3.0 Grade Point Average for all graduate courses
• Pass the doctoral Written and Oral Comprehensive Examinations.
• Gain committee approval of the Doctoral Dissertation Prospectus.
• Complete a Publishable Paper.
• The Prospectus and Publishable Paper should be listed on the Final Program of Study form in the field labeled Departmental Requirements.
• Satisfy the Graduate School’s Residency Requirement, as described below:
  o PhD Residency: At least two consecutive academic-year semesters (Fall or Spring) of full-time work, forming part of a minimum of 30 semester hours of consecutive coursework included on the Program of Study, must be spent in resident study on the UGA campus. Full-time status is operationally defined as enrollment for 12 hours or more if holding a Graduate Assistantship appointment, or 9 hours or more if not.
  o EdD Residency: At least two consecutive semesters of work, forming part of a minimum of 20 semester hours of consecutive course work included on the Program of Study, must be spent in resident study on the UGA campus. One semester may be during the Summer.
• In general, meet all requirements for PhD or EdD candidacy as specified in the University of Georgia Graduate School Bulletin (http://grad.uga.edu/index.php/current-students/policies-procedures/graduate-bulletin/graduate-bulletin-a-c/), which is the definitive word on this issue and from which much of the list above has been copied or paraphrased.

Dissertation, Oral Defense, and Final Approval

Once admitted to candidacy, students will concentrate their efforts on completing a dissertation research study, although as noted earlier there may be a few courses other then ESCI 9300 that may still need to be completed. Normally work on the dissertation takes at least two semesters for full-time students and frequently more for part-time students.

A majority of dissertation research studies in Science Education involve gathering data from students, teachers, or other people, and therefore pre-approval of the research plan is required to ensure that the plans are consistent with customary ethical and legal standards. Details may be found at the web site of the UGA Human Subjects Office (HSO), which carries out the policies of the Institutional
Review Board (IRB), at http://research.uga.edu/hso/. In outline, students should be aware of the following major principles and realities in planning to comply with these requirements:

- Formally, at UGA, the Major Professor must be listed as the Principal Investigator on the IRB application, and the student as an additional investigator. Details of how the student and Major Professor work together to gain IRB approval vary in practice.
- Students, as well as faculty on a periodic basis, must pass a formal online training course (“CITI”) before any study will be approved.
- All research participants must usually complete a Consent Form, and those who are minors must usually also have such a form completed by a parent or legal guardian.
- Video recording as a form of data gathering in educational research is often highly valuable, but is also often particularly problematic from an ethical and legal standpoint.
- The UGA HSO advises allowing a minimum of one month for approval of an application once it is completed.
- HSO staff are charged with enforcing very important and often complicated ethical and legal principles, but in general are extremely helpful. In the experience of most of our students and faculty, their responses to initial applications and to the customary round of revisions to them are extremely rapid – for carefully prepared applications for common types of studies, the time required for approval is typically much less than the stated one month.
- In most cases, separate approval must also be gained for the study from administrators in the school district(s) involved, or at least from the Principal(s) of the school(s) involved. Often this process takes much more time than the UGA process, so allowances should be made accordingly.

Details about the role of the Major Professor and of the other members of the committee in working with the student during dissertation research are left to the discretion of the Major Professor and committee, and vary somewhat in practice. Normally, however, the Major Professor will first approve a complete written draft of the dissertation before distributing that document to the other members of the committee for their critique and tentative approval. Any member of the committee may suggest or require changes to the written dissertation before an Oral Defense meeting is scheduled.

The student and the Major Professor must formally advise the other members of the student's advisory committee, and the Graduate Coordinator must notify the Graduate School, about the scheduling of the Final Oral Defense of the Doctoral Dissertation at least 14 days in advance of the meeting. At our state university, defenses are formally a public event, and customarily other faculty and students in the program and department are encouraged to attend.

Like the Oral Preliminary Exam, this meeting customarily begins with an initial “executive session” discussion among the faculty only. The student is then typically expected to make an initial overview presentation of the dissertation study, normally of about 15 minutes in length, and is then asked to respond to any follow-up questions, requests for clarification, or invitations to informed speculation that any member of the committee may have based on the written document and/or initial presentation. Customarily these discussions are moderated by the Major Professor and initiated primarily by the members of the committee, but the opportunity may also be offered for any others attending the defense (most often other faculty or doctoral students, but sometimes also relatives or friends of the student) to contribute further questions or comments.

For the dissertation to be approved, at least four members of the committee must certify by their signature on the appropriate form (http://grad.uga.edu/wp-content/uploads/2014/11/body_appphddis.pdf) their approval of the written dissertation and that the student passed the oral defense. It is expected that most students will need to perform at least some revisions to the written dissertation after the defense – in most cases, most members of the committee will indicate a result of “approved with suggested changes” on the signature form.
After a successful final oral defense of the dissertation and when the successful completion of any suggested changes has been verified by the Major Professor and/or other members of the committee, the student must electronically submit the dissertation to the Graduate School for final approval, usually by the deadline for the current semester (typically 1-2 weeks before the end of classes), but not later than the last day of classes of the following semester. The Electronic Thesis and Dissertation Submission and Approval Form may be found at http://grad.uga.edu/wp-content/uploads/2014/09/etd_approval.pdf.

In order to graduate in the same semester as the defense is held (which most often is a student’s intent), there are several earlier Graduate School deadlines that must be met in the preceding months. Please consult http://grad.uga.edu/index.php/current-students/important-dates-deadlines/ for details.

Requirements for Graduation

- Have met all of the deadlines specified immediately above.
- Maintain an overall 3.0 Grade Point Average for all graduate courses.
- After admission to candidacy, a student must register for at least one additional semester and a minimum of 10 semester hours of appropriate credit. (At least three hours of ESCI 9300 must be part of this credit.)
- A student must register for a minimum of three semester hours of credit when using University facilities and/or staff time and must enroll for at least three hours during the semester in which graduation requirements are completed.
- Complete the Dissertation and Final Oral Defense.
- Meet the following time limits on all work for the doctoral degree (PhD or EdD).
  - All requirements for the doctoral degree, except the dissertation and final Oral Comprehensive Examination, must be completed within a period of six years. This time requirement dates from the first registration for graduate courses on a student's program of study.
  - A candidate who fails to complete all degree requirements within five years after passing the Comprehensive Examination and being admitted to candidacy will be required to take the Comprehensive Examinations again and be admitted to candidacy a second time.
- In general, meet all requirements for Ph.D. or Ed.D. graduation as specified in the University of Georgia Graduate School Bulletin (http://grad.uga.edu/index.php/current-students/policies-procedures/graduate-bulletin/graduate-bulletin-a-c/), which is the definitive word on this issue and from which the list above has been copied.

Sources of Ongoing Support

While students’ First-year Advisors or Major Professors are understood to be their primary source of advice and support, there are several other people in the program, department, and college offices who can be of great help if a doctoral student knows who to ask, and about what kinds of information or problems:

- Dr. David Jackson, Associate Professor, Graduate Coordinator for Science Education Programs, 212 Aderhold: Overall overseer of substantive aspects of all of the graduate degree programs in Science Education other than MAT, including doctoral programs, and the primary author of this document. He should be able to answer any general or specific questions about requirements, procedures, customs, culture, etc. of the Science Education doctoral programs. As Chair of the Graduate Programs Committee, Dr. Jackson also moderates and often initiates discussions among the faculty about any perceived issues and problems with graduate courses and programs and their possible solutions, both short- and long-term.
- Dr. Julie Kittleson, Associate Professor, Program Coordinator for Science Education, 212 Aderhold: Aside from general oversight of all Science Education program matters, Dr. Kittleson is specifically in charge of scheduling ESCI courses, assigning the faculty and/or Teaching
Assistants for them, and coordinating the assignment of other assistantship duties. Dr. Kittleson also assigns office space for students with assistantship appointments.

- **Dr. Andrew Izsák, Professor, Graduate Coordinator for the Department of Mathematics and Science Education, 105 Aderhold:** Although Dr. Izsák substantively oversees only the Mathematics Education graduate programs, the UGA Graduate School officially recognizes only one official Graduate Coordinator per department, so when a form needs to be officially signed by the Graduate Coordinator, he needs to do it. Normally, however, such forms should be routed initially to Dr. Jackson for substantive approval and will then be passed on to Dr. Izsák. Likewise it is he who must officially sign such documents as letters of nomination for Graduate School Assistantships.

- **Ms. Helen Rogers, Student Affairs Professional I, Assistant to the Graduate Coordinator, 105 Aderhold:** Ms. Rogers keeps official lists and records of all current and prospective graduate students in the department, including all application and admissions matters and processing of Graduate School paperwork such as Advisory Committee Forms, Programs of Study, scheduling of Comprehensive Exams and Dissertation Defenses, etc. More importantly, Ms. Rogers is the person who can communicate most effectively, directly, and quickly with the Graduate School office, and in most cases has a more detailed, reliable, and current knowledge of details of their rules, procedures, and personnel than do either of the Graduate Coordinators. In an emergency, she also has the authority to sign forms on behalf of Dr. Izsák, after approval by Dr. Jackson.

- **Dr. Barbara Crawford, Professor and Department Head of Mathematics and Science Education, 105 Aderhold:** Although a member of the Science Education faculty, Dr. Crawford’s office is downstairs with the Mathematics Education faculty for administrative reasons. Anything that involves requests for financial support from the department for particular activities, issues or problems among students and/or faculty that may be personally or legally sensitive, or requires official communication with other departments or with the College of Education Dean’s Office or higher UGA administration will most likely be referred to Dr. Crawford by Dr. Jackson or Dr. Kittleson.

- **Dr. Georgia Hodges, Assistant Research Scientist, Master of Arts in Teaching (MAT) Program Coordinator, 212 Aderhold:** For doctoral students assigned as a TA, or enrolled for ESCI 9700 credit, in connection with any aspect of the Secondary Science teacher certification program (“Block 1” and “Block 2” undergraduate courses, whose cross-listed graduate counterparts are taken by MAT degree students, including both Methods courses and Practicum and Student Teaching experiences), Dr. Hodges is likely to be able to answer any questions about duties and available resources in connection with those. As current Chair of the Secondary Program Committee, she also moderates and often initiates discussions among the faculty about any perceived issues and problems with the Secondary Science Teacher Education program and their possible solutions, both short- and long-term.

- **Ms. Valerie Kilpatrick, Administrative Associate II, Office Manager, 212 Aderhold:** In addition to serving as the “first responder” for phone calls to the program’s general number (706-542-1763) and visitors to the Science Education faculty office area, Ms. Kilpatrick is in charge of maintaining, updating, and looking up all things having to do with our program within the university’s electronic database system and scheduling use of our classrooms and meeting rooms.

- **Ms. Marilyn Rodriguez, Business Manager I, 105 Aderhold:** Ms. Rodriguez is the person to see about arranging to get paid for assistantship work or reimbursed for authorized travel or other expenses incurred for department purposes.

- **Ms. Rita Tiller, Administrative Associate I, 105 Aderhold:** Ms. Tiller is Valerie’s counterpart downstairs in terms of “meeting and greeting,” and can often serve as an effective “backup” source of information or problem-solving help if Ms. Kilpatrick is unavailable. Ms. Tiller is also
the person who handles the paperwork required to authorize the off-campus use of department-owned equipment, such as laptop computers.

- Office of Information Technology, 232 Aderhold: The people to see for borrowing any electronic equipment for teaching or research purposes, or technical questions about how to use it or why it doesn’t seem to be working correctly (notably including classroom computers and projectors in rooms 215, 220, and 206).

**UGA Graduate School Web Site Links**

In all cases, specific rules, regulations and requirements established by the Graduate School and published on its web site supersede any information given here that is specific to the Science Education program, whose policies and procedures supplement but may not contradict those of the Graduate School. When in doubt, it is always a good idea to consult the latest version of the Graduate School’s “letter of the law” about any issue. Here are links to some of the most commonly consulted pages:

- PhD program requirements (nearly all also applicable to EdD):
    - Admission
    - Residence
    - Time Limit
    - Research Skills Requirements
    - Advisory Committee
    - Programs of Study
    - Acceptance of Credit by Transfer
    - Grade Average
    - Comprehensive Examination
    - Admission to Candidacy
    - Dissertation Planning
    - Dissertation Approval and Defense
    - Submitting the Dissertation
    - Application for Graduation


- Deadlines for each semester: [http://grad.uga.edu/index.php/current-students/important-dates-deadlines/](http://grad.uga.edu/index.php/current-students/important-dates-deadlines/)


- Application: [https://www.applyweb.com/ugagrad/](https://www.applyweb.com/ugagrad/)
<table>
<thead>
<tr>
<th>Approximate Time (often later for part-time students)</th>
<th>What is To Be Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 1</td>
<td>Deadline to complete an application (see “Application Process Checklist” below) for prospective full-time students wishing to start in Summer or Fall and maximize the probability of being offered a Graduate Assistantship appointment, or any student wishing to start in Spring Semester.</td>
</tr>
<tr>
<td>&lt;=3 weeks after application</td>
<td>Admissions decision, assignment of prospective First-year Advisor</td>
</tr>
<tr>
<td>January-February</td>
<td>Typical deadlines for nominations for competitive-application assistantships funded by the Graduate School (Presidential Fellowships, Graduate School Assistantships, Graduate Research Opportunity Assistantships) and Regents’ Out-of-state Tuition Waivers</td>
</tr>
<tr>
<td>Spring Semester, most typically</td>
<td>Formal offers of grant-funded assistantships</td>
</tr>
<tr>
<td>April-May</td>
<td>Formal offers of Department-funded assistantships</td>
</tr>
<tr>
<td>April 1</td>
<td>Deadline to complete an application (see “Application Process Checklist” below) for starting Summer or Fall Semester, for prospective part-time students or prospective full-time students willing to accept a lower probability of being offered a Graduate Assistantship appointment</td>
</tr>
<tr>
<td>As soon as possible after admission</td>
<td>Meet with First-year Advisor for initial advising</td>
</tr>
<tr>
<td>Fall Semester, most typically</td>
<td>Begin taking courses, strongly advised to include ESCI 8990</td>
</tr>
<tr>
<td>Late 1st or early 2nd year</td>
<td>Reach agreement with one of the Science Education faculty to establish relationship as Major Professor</td>
</tr>
<tr>
<td>ASAP after appointment of Major Professor</td>
<td>Form a full Doctoral Advisory Committee:</td>
</tr>
<tr>
<td></td>
<td>• at least 4 faculty</td>
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<tr>
<td></td>
<td>• at least 3 holding Graduate Faculty status</td>
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<td></td>
<td>• at least 2 from Science Education (1 may be adjunct)</td>
</tr>
<tr>
<td></td>
<td>• at least 1 from outside Science Education (may be adjunct)</td>
</tr>
<tr>
<td></td>
<td>• no more than 1 from outside UGA</td>
</tr>
<tr>
<td>ASAP after appointment of committee</td>
<td>Hold initial committee meeting:</td>
</tr>
<tr>
<td></td>
<td>• Agree on Preliminary Program of Study</td>
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<tr>
<td></td>
<td>• Discuss very preliminary dissertation research interests/plans</td>
</tr>
<tr>
<td>Not later than 2nd year</td>
<td>Begin to plan possible topics and approaches for 9600 Research Internship experiences, aiming for a presentation- or publication-worthy product</td>
</tr>
<tr>
<td>2nd-3rd year</td>
<td>Complete coursework (usually much later for part-time students)</td>
</tr>
<tr>
<td>Late 2nd or early 3rd year</td>
<td>Schedule committee meeting to discuss:</td>
</tr>
<tr>
<td></td>
<td>• Final Program of Study</td>
</tr>
<tr>
<td></td>
<td>• Dissertation plans, plans for initial development of Prospectus</td>
</tr>
<tr>
<td></td>
<td>• Question topics and scheduling of Written Comprehensive Exam</td>
</tr>
<tr>
<td>&gt;=2 wks. after completion of Written Exam</td>
<td>Hold Oral Comprehensive Exam meeting; (often) further develop dissertation plans and discuss initial progress of Prospectus at same meeting</td>
</tr>
<tr>
<td>Usually within several months after Oral Comp</td>
<td>Complete Prospectus acceptable to Major Professor, schedule committee meeting to discuss and hopefully approve. If Publishable Paper requirement has also been met, possibly Apply for Admission to Candidacy.</td>
</tr>
<tr>
<td>No later than during 4th year (full-time) or end of 6th year (part-time)</td>
<td>Achieve admission to Candidacy, begin work on Dissertation study.</td>
</tr>
<tr>
<td>Before end of 4th year (full-time); No later than 5 years after Candidacy</td>
<td>Complete dissertation draft acceptable to Major Professor.</td>
</tr>
<tr>
<td>&gt;= 2 weeks in advance</td>
<td>Schedule Oral Defense of Dissertation – see deadlines for this and other checkpoints (Application for Graduation, Format Check, Electronic Submission, etc.) for the semester in question.</td>
</tr>
<tr>
<td>No later than one semester after Oral Defense</td>
<td>Complete any required changes to dissertation, graduate(!)</td>
</tr>
</tbody>
</table>
Appendix: Application and Admission Procedures and Criteria

Doctoral students must meet the general requirements for admission to the University of Georgia Graduate School and also be recommended for admission to our program by the Science Education faculty.

For admission for Summer or Fall semester, a complete application (see details below) must be received by April 1; for admission for Spring Semester, by November 1.

Important note: For applicants intending to start the program full-time, with a Graduate Assistantship appointment, beginning in Summer or Fall Semester, the highly recommended application deadline is also November 1. Because many kinds of competitive-application assistantship positions first become available in January, prospective students admitted before the end of the calendar year are significantly more likely to be offered Assistantship positions, nearly all of which begin in Fall Semester. Early application is much less important, but still encouraged, for those wishing to start the program part-time or who do not wish to apply for a Graduate Assistantship appointment for some other reason.

Beyond the minimum quantitative standards established by the Science Education faculty or the Graduate School (see details below), admissions decisions at the doctoral level are based on a painstaking and holistic evaluation of applicants' qualifications by the entire Science Education faculty. Admission requires both a positive vote from a majority of the faculty and the expressed willingness of at least two of the faculty to serve as the applicant's First-year Advisor and therefore potentially as Major Professor. Review of completed doctoral admissions applications takes place on a “rolling” basis, at faculty meetings held roughly every three weeks throughout the academic year. Admission is not official until an applicant is formally notified via postal mail by the Graduate School, but the recommendations of the Science Education faculty are nearly always confirmed, and the Graduate Coordinator will notify applicants of the substantive admissions decision immediately via e-mail or telephone.

Minimum quantitative admissions standards are the same for the Ed.D. and Ph.D. programs in Science Education, and include:

- Grade Point Average (GPA, on a 4-point scale):
  - undergraduate GPA of 3.0
  - graduate GPA of 3.5
- Graduate Record Examination (GRE) General Test
  - Minimum total (sum of Verbal and Quantitative scores) of 300 (1050 on the older scale)
  - Minimum 146 (400 on the older scale) on the Verbal portion
  - Minimum 146 (550 on the older scale) on the Quantitative portion
- Test of English as a Foreign Language (TOEFL) (applicable when English is not an applicant's first language):
  - minimum total score (sum of all 4 sections) of 80
  - minimum score of 20 on the Speaking and Writing sections
- Science Teaching Experience: At least 3 full-time years of science teaching experience, or its equivalent in a setting consistent with the candidate's career goals (e.g., very extensive college Teaching Assistantship experience in science), is highly recommended.

Note: The minimum GPA, GRE, and teaching experience standards above are guidelines established by the Science Education faculty, and are potentially flexible in cases in which an applicant's other qualifications are judged by the faculty to be exceptionally strong. The TOEFL standard is a completely inflexible Graduate School requirement.
Application Process Checklist

Please submit the following, as indicated:

- To the UGA Graduate School:
  - (online) application
  - GRE (General test; Verbal and Quantitative) score report: Self-reports or unofficial copies of GRE score reports are acceptable for preliminary substantive consideration by the faculty. Official, original documents, sent directly to the Graduate School office by the Educational Testing Service or forwarded directly from institutions previously receiving them, are eventually required for admission to become official.
  - Transcripts from each undergraduate or graduate institution attended in the past: Self-reports of majors and GPAs and/or unofficial copies of transcripts are acceptable for a preliminary substantive consideration by the faculty. Official transcripts, sent directly to the Graduate School office from previously attended institutions, are eventually required for admission to become official.
  - An original, official TOEFL score report (if applicable)

- At least 3 letters of recommendation, preferably specifically addressing in detail the applicant’s potential for doctoral-level study in science education: These may be completed either online via email links generated by the Graduate School’s application website, or sent directly to the Graduate Coordinator for Science Education Programs via email attachment, postal mail, or fax. Writers of recommendations should be aware that the minimal “checkoff” form provided by the Graduate School’s online database is generally not considered sufficient for doctoral-level applications in Science Education, and that detailed prose comments are of crucial importance.

- To the Graduate Coordinator for Science Education Programs, preferably via email attachment:
  - A Statement of Purpose summarizing the applicant’s current professional standing, envisioned future career goals, and possible research interests
  - An academic writing sample representing the applicant’s ability cogently to communicate in English about topics in science or science education (recommended length at least 5 pages; often a major course paper or conference presentation, could be an entire master's thesis or published research paper or report)

- Request for interview with faculty committee:
  - Because of the highly individualized and personal nature of doctoral programs and the substantial time commitment required, a more personal sense of the "fit" between a prospective student and the program and its faculty facilitates more informed decision-making about both admissions and enrollment. An interview (either in person, by telephone, or via internet audio/videoconference technology such as Skype or Google Hangouts) with at least two current members of the Science Education doctoral admissions screening committee is required. An interview is normally scheduled after all or most of the required application materials are complete, and is normally scheduled through the Graduate Coordinator or another member of the committee.

- Request for interview or other communication with other faculty (optional, but advisable):
  - Because a doctoral program is ultimately centered on specific research interests and projects, applicants are strongly advised to familiarize themselves with the specific areas of expertise and research interests of the program faculty, and to contact members of the faculty with whom they believe they might work best in the context of research. Such initial contact can often be important in considerations by faculty members regarding willingness to serve as First-year Advisor and therefore potentially as Major Professor.