



College of Education and Human Ecology

School of Teaching and Learning
333 Arps Hall
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Phone (614) 292-1257
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December 30, 2011

Dear Graduate School Curriculum Committee:

I write in regard to the proposals for the PhD, EdS and MEd degrees in the School of Teaching and Learning. The Committee's response to our recent submissions and the work that has been done to help us move these programs forward has been much appreciated. I will respond to the Committee's most recent queries below.

Revision and Approval of the T&L EdS and PhD

I understand that the GSCC provisionally approved the PhD in T&L and the EdS in T&L, with the expectation that the specializations in these degree programs would be aligned. The EHE curriculum committee approved these changes contingent upon a T&L faculty vote. On December 8th, the T&L faculty met and voted unanimously to align the specializations in the PhD and EdS degree programs. There will be nine specializations in each degree program, and all program materials have been revised to reflect these changes. The specializations are:

- Adolescent, Post-Secondary and Community Literacies
- Foreign and Second Language Education
- Literature for Children and Young Adults
- Language, Education and Society
- Multicultural and Equity Studies in Education
- Reading and Literacy in Early and Middle Childhood
- Rethinking Early Childhood and Elementary Education
- Social Studies and Global Education
- Science, Technology, Engineering and Mathematics Education

For both the EdS and PhD proposals from T&L, we have read through the proposals again and checked that the use of the word "specialization" is consistent and not used interchangeably with the term "concentration."

Revision and Approval of the T&L MEd

- The advising sheets and the rationale documents have been revised so that both are consistent in showing that the Diversity, Classroom Management, Reading, Child/Adolescent Development, and Inclusion requirements all have 0-3 credit hours. The hours for the field experience, student teaching, and capstone requirements are also consistent across the advising sheet and the

rationale document.

- Regarding the requirements of 0-3 credit hours in the areas mentioned above (Diversity, Classroom Management, Reading, Child/Adolescent Development, and Inclusion), GSCC asked for clarification of whether undergraduate courses from other colleges and universities can be applied to meet these requirements, and if so how the transfer of credits is handled? Students will not be not transferring credits towards the M.Ed.. Advisors use faculty approved course listings to check off that students have achieved certain competencies for licensure PRIOR to admission to the M.Ed.. We allow some flexibility in courses, especially for non-traditional students or students from other institutions who may need to complete some of the courses. So, a student who receives a Bachelor's degree at OSU and goes straight to the M.Ed. will likely have 0 credit requirements for those courses, while a non-traditional or student from another institution may need the 3 hours.
- Regarding the capstone, GSCC asked what the project consists of and the details of what needs to be completed. All MEd students must complete a capstone project, which fulfills their master's examination requirement. Capstone projects include the compilation of a portfolio and a classroom-based action research project based on a close examination of and reflection upon the students practice during their field and/or student teaching placement. All capstone projects include an oral defense.
- GSCC asked for an explanation of the reduction in required credit hours. The reduction in credit hours is due to a major restructuring of coursework on the part of the faculty as part of the semester conversion process. Many courses were combined to be more streamlined and reduce overlap of content.
- The GSCC expressed confusion over the Middle Childhood specializations (page 5 of the advising sheet, 17 of the PDF at the above link), citing a note indicating that students should choose from 2 of 4 content areas. The committee was confused by this and thought that students would complete courses from the areas on subsequent pages 6 and 7. As was explained to the GSCC by Andy Zircher, EHE Curriculum Coordinator, Middle Childhood specialization students complete the first 5 courses in the MC course list and only two of the courses with asterisks from the Middle Childhood courses depending on their content areas. These courses with asterisks are the methods courses that correlate to the specific focal content areas. The subsequent pages of the document are other MEd specializations (AYA Social Studies, Math, Science, etc.).
- GSCC asked that T&L describe the differences between the two field experiences. Students will complete 2 field experiences – for example, FSLED completes an elementary and secondary placement; ECE does pre-school/K then 1-3; MCE does a placement in each content area and across grade levels; English, social studies, and STEM complete urban/suburban placements. Field experiences are evaluated by mentor teachers and university field supervisors through the completion of evaluation forms; by students, through the completion of self-evaluation forms; and through face-to-face discussions and debriefings among the three (MT, field supervisor, and student) of the students' work.

- GSCC asked for a clarification regarding the “Licensure Area Requirements,” noting a sentence, which reads, “Course work required for licensure is determined by each licensure faculty group”. GSCC thought that what is meant is that the Department of Education determines what is required for licensure, but T&L faculty determine which EDU TL courses will meet those requirements. GSCC is correct in this interpretation.
- Dr. Slotnick noted that in quarters, the degree is Master of Education and the program name is Education. T&L wishes to have the degree be Master of Education and the program name be Teaching & Learning, so the proposal will be submitted with the semester conversion designation of “New” rather than “Converted”.
- The Technology Education program is being deactivated. No new students have been admitted and all current students should complete the program in this academic year. The Orientation and Mobility program is not an M.Ed. licensure area. It was included on the list by mistake.

I believe this clarifies and answers all of the questions raised by the GSCC. Thank you, again, for your very thoughtful feedback, which continues to strengthen our curricular materials and overall programs.

Sincerely,



Caroline T. Clark, Ph.D.
Interim Director, School of Teaching and Learning
Professor, Adolescent Literacies and English Education
College of Education and Human Ecology
The Ohio State University

Status: PENDING

PROGRAM REQUEST
Education:Teaching & Learning

Last Updated: Zircher,Andrew Paul
11/09/2011

Fiscal Unit/Academic Org School of Teaching & Learning - D1275
Administering College/Academic Group Education & Human Ecology
Co-administering College/Academic Group
Semester Conversion Designation New Program/Plan
Proposed Program/Plan Name Education:Teaching & Learning
Type of Program/Plan Graduate degree program
Program/Plan Code Abbreviation
Proposed Degree Title Doctor of Philosophy in Teaching and Learning

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				56	
Required credit hours offered by the unit	Minimum			47	
	Maximum			56	
Required credit hours offered outside of the unit	Minimum			0	
	Maximum			9	
Required prerequisite credit hours not included above	Minimum			30	
	Maximum				

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals •

Assessment

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? No

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Does this Program have a Pre-Major? No

Attachments

- osu edu pdf EDUTL PhD.pdf: Program Proposal and Letters
(Program Proposal. Owner: Zircher,Andrew Paul)

Status: PENDING

PROGRAM REQUEST
Education:Teaching & Learning

Last Updated: Zircher,Andrew Paul
11/09/2011

Comments

- Delete all old files, please.

Overall program learning goals? Not required now, but required by 2012

specialization goals- not required now, but required by 2012

Assessment- this is a degree program proposal

Semester courses list should include all possible courses

Please see program template to revise director letter

Add rationale statement

Add transition policy

Need much more complete info on courses in each specialization as well as all other courses (and options). *(by Zircher,Andrew Paul on 11/08/2011 08:49 AM)*

- Revision Requested per Andrew Zircher. *(by Soave,Melissa A on 10/20/2011 09:29 AM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Mercerhill,Jessica Leigh	09/21/2010 01:39 PM	Submitted for Approval
Revision Requested	Kantor-Martin,Rebecca Maud	09/22/2010 11:01 AM	Unit Approval
Submitted	Kantor-Martin,Rebecca Maud	09/22/2010 11:01 AM	Submitted for Approval
Approved	Kantor-Martin,Rebecca Maud	09/22/2010 11:02 AM	Unit Approval
Revision Requested	Zircher,Andrew Paul	09/22/2010 01:14 PM	College Approval
Submitted	Kantor-Martin,Rebecca Maud	09/22/2010 04:13 PM	Submitted for Approval
Revision Requested	Zircher,Andrew Paul	10/27/2010 08:52 AM	Unit Approval
Submitted	Mercerhill,Jessica Leigh	11/23/2010 10:46 AM	Submitted for Approval
Approved	Clark,Caroline Taylor	11/23/2010 11:07 AM	Unit Approval
Approved	Zircher,Andrew Paul	01/22/2011 12:55 PM	College Approval
Approved	Myers,Dena Elizabeth	01/24/2011 10:20 AM	GradSchool Approval
Revision Requested	Soave,Melissa A	10/20/2011 09:29 AM	CAA Approval
Submitted	Mercerhill,Jessica Leigh	10/20/2011 10:03 AM	Submitted for Approval
Approved	Clark,Caroline Taylor	10/20/2011 07:47 PM	Unit Approval
Revision Requested	Zircher,Andrew Paul	11/08/2011 08:49 AM	College Approval
Submitted	Mercerhill,Jessica Leigh	11/09/2011 09:45 PM	Submitted for Approval
Revision Requested	Zircher,Andrew Paul	11/09/2011 09:54 PM	Unit Approval
Submitted	Zircher,Andrew Paul	11/09/2011 10:28 PM	Submitted for Approval
Pending Approval	Kantor-Martin,Rebecca Maud Zircher,Andrew Paul Clark,Caroline Taylor	11/09/2011 10:28 PM	Unit Approval

Status: PENDING

PROGRAM REQUEST
Education:Teaching & Learning

Last Updated: Zircher,Andrew Paul
11/09/2011



Office of Academic Affairs
172 Arps Hall, 1945 N. High Street
614 688-4571

Date: November 7, 2011

To: Randy Smith, Vice Provost for Academic Programs
Elliot Slotnick, Associate Dean, Graduate School

From: Jackie Blount, Associate Dean, EHE Academic Affairs

RE: Revised Semester Conversion Package for School of Teaching & Learning

I am pleased to present the package of semester conversion materials for the School of Teaching & Learning. In response to feedback from the Graduate School Curriculum Committee, the faculty in the School of Teaching & Learning have revised their Ph.D., Ed.S., and M.Ed. semester program proposals. In what follows, I will outline unique college and school contexts that have shaped this package. I will include tables summarizing constituent programs/courses and describe any other pertinent considerations. Finally, you will find Dean's level approval.

College Contexts

The College of Education and Human Ecology was formed in 2006 by merging two colleges (Human Ecology and Education). Curriculum across the new college, however, has remained relatively unchanged. Given this situation, we view the semester conversion process as a fresh opportunity to deepen the merger by building curricular collaborations among our units. We also wish to rethink our pre-existing programs and find ways to make them stronger, more coherent, and streamlined.

To these ends, we have asked faculty in our units to purge their curricula of little-used or less-than-relevant courses. We have challenged faculty to reach across unit lines to forge curricular collaborations by creating new degrees, interdisciplinary specializations, or co-taught courses. We are re-instituting a number of undergraduate teacher preparation programs (B.S.Ed.), each of which draws from courses in units around our college as well as across the university. We have encouraged five of our six units to address findings of the [2008 OSU Doctoral Program Assessment and Plan](#) by strengthening their Ph.D. programs and making them more coherent. They have responded by: 1) defining their Ph.D. programs in alignment with their units -- rather than with their pre-merger college (i.e., Ph.D. in Consumer Science rather than Ph.D. in Human Ecology); and 2) creating true cores for their Ph.D. programs if they did not previously exist. Additionally, an Ed.D. degree in Educational Leadership is being proposed to address the need of school administrators to pursue advanced degrees geared for practitioners. With approval of the Ed.D. and also with recent B.O.R. approval of our other practitioner-oriented programs, an Ed.S. (Education Specialist) program in School Psychology and another in Teaching and Learning, fewer graduate students in the college will pursue Ph.D.s by default than in the past.

Requests for revision to the semester program proposals came at a time in which the College faculty were in the midst of implementing a realignment of its six academic units into three departments. As a result, the revised proposals reflect some of the impending changes in administrative structure.

The College Curriculum Committee and College Council have approved the proposals, and approved a standard practice for level of transcript designation across Education and Human Ecology graduate degrees. All Ph.D., Ed.D., Ed.S., M.A., and M.Ed. programs have been approved for transcript designation at the specialization level.

We believe that, taken together, these changes will greatly strengthen our programs and clarify our new college identity.

School Notes

Teaching & Learning (T&L) is one of five units in the college to change its Ph.D. program to align with school boundaries rather than those of its previous college. T&L faculty have proposed that the degree name change from “Ph.D. in Education” to “Ph.D. in Teaching & Learning.” The “Education” designation no longer makes sense because the college of that name has ceased to exist. Also, Ph.D. degrees from other units with the “Education” designation have very little in common with each other as there is no common core. However, with the proposed Ph.D. in Teaching & Learning, a two-course common core, and nine credit hours of research from a select course list provides cohesiveness to the degree program that spans nine separate specializations.

Like the Ph.D., the Ed.S. is proposed as a program in Teaching & Learning. Students will complete 17 hours of common coursework in the core and research methods areas, as well as coursework for one of nine specializations.

The M.Ed. in Teaching and Learning utilizes short course lists for foundational requirements in diversity, classroom management, and reading common, and students select from one of 10 specialization/licensure areas.

T&L also has been quite busy preparing to re-introduce a series of teacher preparation degree programs (B.S.Ed.). Though T&L offered B.S.Ed. degrees long ago, they essentially were suspended during the Holmes Model years when the school’s teacher preparation was a graduate-only undertaking. With recent changes in state legislation (HB1), T&L has responded by bringing its undergraduate teacher preparation programs back, but in updated forms. It is important to note that all of T&L’s proposed teacher education degrees and endorsement areas align with the standards of our national and state accrediting bodies, most notably the National Council for the Accreditation of Teacher Education (NCATE). Note: Endorsement areas are additional content areas that may be added to teaching licenses.

Summary Tables

Program	Extent of Change	Notes	Approval by EHE Curr. Committee	Approval by EHE College Council
Ph.D. in Teaching and Learning	New	Name changed to align with unit name. Includes a two-course common core.	Oct. 28, '11	Nov. 4, '11
Ed.S in Teaching and Learning	Converted	Specializations aligned with Ph.D. specializations, according to request by Graduate School	Oct. 28, '11	Nov. 4, '11
M.A. Teaching and Learning	Converted	Straight conversion.	Nov. 30, '10	Dec. 3, '10
M.Ed. Teaching and Learning	New	Name changed to align with unit name.	Oct. 28, '11	Nov. 4, '11
Graduate Interdisciplinary Specialization in Applied Developmental Science in Education	New	Graduate School Curriculum Committee tabled proposal until unit degree programs have been approved.	Nov. 30, '10	Dec. 3, '10
B.S.Ed. in Foreign Language Education	New	Part of larger commitment to re-instituting undergraduate teacher education programs across fields (undertaken in part in response to HB1).	Nov. 30, '10	Dec. 3, '10
B.S.Ed. in Integrated Language Arts/English Education	New	Part of larger commitment to re-instituting undergraduate teacher education programs across fields (undertaken in part in response to HB1).	Nov. 30, '10	Dec. 3, '10
B.S.Ed. Middle Childhood Education	New	Part of larger commitment to re-instituting undergraduate teacher education programs across fields (undertaken in part in response to HB1).	Dec. 9, '10	Jan. 7, '11
Technology Education	Deactivated	Program no longer deemed viable as configured.		
Endorsement and ESL Programs (non-	Converted	Package of endorsements programs that educators might add to their		

degree)		licenses. Endorsements meet state licensure requirements.		
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Courses	Number	Extent of Change	Approval by EHE Curr. Committee	Approval by EHE College Council
New graduate courses	32	New	Nov. 19, '10	Dec. 3, '10
New undergraduate courses	6	New	Nov. 19, '10	Dec. 3, '10
Total new Courses	38			
Re-envisioned graduate courses	133	Re-envisioned	Nov. 19, '10	Dec. 3, '10
Re-envisioned undergraduate courses	79	Re-envisioned	Nov. 19, '10	Dec. 3, '10
Total re-envisioned courses	212			
Graduate courses	26	Converted	Nov. 19, '10	Dec. 3, '10
Undergraduate courses	27	Converted	Nov. 19, '10	Dec. 3, '10
Total converted courses	53			
Total number of all courses	303			

Unique Considerations

The Technology Education program in T&L is being deactivated. This is, in part, a response to the 2008 OSU Doctoral Program Assessment and Plan.

The Graduate School Curriculum Committee tabled the new Graduate Interdisciplinary Specializations until the revised degree program proposals have been approved.

College Approval

I have carefully reviewed all semester conversion materials for the School of Teaching & Learning, having done so conjointly with the EHE Curriculum Committee. I also have discussed these materials with Dean Achterberg. This memo signifies Dean's level approval of the entire semester conversion package for the School of Teaching & Learning.



College of Education and Human Ecology

School of Teaching and Learning
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October 21, 2011

Dear Curriculum Committee Members:

I am writing to explain the revision processes in the School of Teaching and learning for our Ph.D., Ed.S., and M.Ed. programs, in response to feedback from the Graduate School Curriculum Committee and Associate Dean Elliot Slotnick. Formal feedback was received from these groups on Wednesday, September 28th. Our attached materials reflect our responses to this feedback.

In response to the feedback from the Graduate School, the following have occurred:

1. Single Ph.D., Ed.S, and M.Ed. advising sheets were created to provide a clearer representation of these 3 degrees.
2. Each degree, Ph.D., Ed.S., and M.Ed., now has a clear visible, core set of experiences as distinct from specific areas of study, specialization, or licensure requirements.
3. The single Ph.D. and Ed. S. degrees now have 9 clearly laid out Specializations.
4. The M.Ed. degree now has 10 clearly laid out Specializations/ licensure areas.
5. All programs now reflect more explicit oversight of the three degrees, Ph.D., Ed.S., and M.Ed., by the T&L Graduate Studies Committee, spelled out within the advising sheets.

T&L faculty met on September 30th, 2011 to discuss the feedback from the Graduate School. Based on faculty feedback, I redesigned the advising sheets for each of the key areas, sharing these back with small groups of faculty and vetting all of the materials to the T&L Executive Committee on October 14th, 2011. This group included the T&L Graduate Studies Chair, Pat Enciso, and faculty from across key areas of study – George Newell (Literacy); Mike Battista (STEM); Dean Cristol (ECE/MCE/Social Studies); Ian Wilkinson (Literacy). It was noted at this meeting that most of the changes made were around “packaging” of our degrees; that is, making sure that our core courses and experiences are clear; and making sure that GSC oversight is evident.

The Specializations that will be available for the Ph.D. and the Ed.S. are:

Adolescent, Post-Secondary and Community Literacies
Foreign, Second, and Multilingual Education
Literature for Children and Young Adults
Language, Education, and Society
Multicultural and Equity Studies in Education
Reading and Literacy in Early and Middle Childhood
Rethinking Early Childhood and Elementary Education
Social Studies and Global Education
Science, Technology, Engineering, and Mathematics Education

The Specializations/ Licensure Areas that will be available for the M.Ed. are:

Drama Education
Early Childhood
English/Integrated Language Arts
Foreign/World Languages
Hearing Impairments
Mathematics
Middle Childhood
Social Studies
Science
Vision Impairments

The Specialization/ licensure area in Technology Education is being deactivated. The two students currently in the specialization will be supported through their completion through close advising by the lead faculty member.

Our faculty and staff have worked expediently to make revisions that respond to the key concerns of the Graduate School Curriculum Committee. As Interim Director of the School of Teaching and Learning, I fully support these programs and ask that you approve them for implementation, pending T&L faculty approval.

Sincerely,



Caroline T. Clark, Professor and Interim Director
School of Teaching and Learning
College of Education and Human Ecology
The Ohio State University

PhD Conversion Rationale:

The School of Teaching and Learning (T&L) is submitting a Doctor of Philosophy (PhD) program for approval under the semester system. The PhD is a research-intensive degree and designed to prepare graduates to work in research-intensive settings. Approximately 3 years ago we underwent a major curricular change, creating a core set of courses and multiple areas of study. Because of the recent review and changes, the conversion for this program is straightforward. Our doctoral program has maintained strong and consistent enrollments for many years. Our students have received University fellowships, prestigious national awards, completed many peer-reviewed journal publications prior to graduation, and presented papers and posters at national and international conferences. We have specializations that are ranked in the top 10 (Secondary Teacher Education; Curriculum and Instruction) and top 20 (Elementary Teacher Education) by *U.S. News and World Report*. Our PhD continues in this tradition and is designed to help us to maintain these rankings.

The School of Teaching and Learning faculty are organized in 9 Areas of Study. Specializations in the PhD align with the Areas of Study. Students in the PhD program choose one Specialization.

The 9 Specialization are:

- Adolescent, Post-Secondary, and Community Literacies (APCL)
- Foreign, Second, and Multilingual Language Education (FSMLE)
- Literature for Children and Young Adults (LCYA)
- Language, Education, and Society (LES)
- Multicultural and Equity Studies in Education (MESE)
- Reading and Literacy in Early and Middle Childhood (RLEM)
- Rethinking Early Childhood and Elementary Education (RECEE)
- Social Studies and Global Education (SSGE)
- Science, Technology, Engineering, and Mathematics Education (STEM)

Master's Degree integration: T&L admits students to the PhD with a Masters degree (MA or MEd). The PhD requires at least 50 post-Masters semester hours with a minimum of 80 required graduate credit hours. Students who enter with a Masters degree may request a review to transfer 30 hours of Masters credits to count toward the PhD.

The PhD structure assumes that post-MA students have already taken many intermediate and advanced classes and will, therefore, have wide flexibility to select theory and methods courses to suit their particular research agenda, with the advice of a faculty member and the oversight of the Graduate Studies Committee. The Specializations allow for this depth and flexibility in courses of study.

Course Offering Information: The core courses will be offered every year. Elective courses will be offered at least every two or three years to ensure variety for students.

PhD Program Oversight – Graduate Studies Committee: Any variations in program, and all programs of study, must be approved by a graduate faculty advisor and the Graduate Studies Committee.

Program Transition Policy:

All Ph.D. students take the core courses in their first year of doctoral work, so no students should be competing these courses under both the quarter and the semester system. The research course options and sequences courses are, in most cases, two-semester versions of two or three quarter sequences, and students taking them in the quarter format will encounter essentially similar curriculum as students taking the courses during the semesters. Students will work closely with faculty advisors to determine if additional key content or course work needs to be completed under the semester system to meet the program requirements. If students and advisors feel that key content is missing from a students' program in the transition to semesters, specialized seminars (8890) or individual studies (7193) may be used to substitute for missing content. All substitutions must be approved by the student's advisor and by the *Graduate Studies Committee*.

Teaching and Learning PhD Advising Sheet SEMESTERS

Minimum of 80 Graduate Credit Hours (at least 50 completed Post-Masters)

Name:	Year Admitted:
Advisor:	Specialization:
1 st Semester Enrolled:	Expected Graduation:

Common Core Requirements (Required of all Teaching and Learning PhD Students)

A. Teaching and Learning Core Courses: All doctoral students must take the two school core courses:

Course #	Course Title	Units	Grade
T&L 8003	Theorizing and Researching Teaching and Learning	4	
T&L 8015	Diversity and Equity in Education	4	

B. Research: All doctoral students are required to take a minimum of 9 semester hours of research methods. Students may choose a qualitative focus, a quantitative focus, or a mixture of the two. Students are encouraged to take additional research courses beyond this minimum requirement. Recommended courses are listed below. Students may select courses from beyond this list with the approval of the advisor and the *Graduate Studies Committee*.

Qualitative			
Course #	Course Title	Units	Grade
T&L 7431	The Ethnography of Communication 1	3	
T&L 7432	The Ethnography of Communication 2	4	
T&L 8001	Discourse Analysis and Educational Research 1	4	
T&L 8002	Discourse Analysis and Educational Research 2	4	
P&L 8082	Qualitative Research in Education	3	
P&L 8090	Practicum in Educational Research and Data Collection	3	
Quantitative			
Course #	Course Title	Units	Grade
P&L 6625	Introduction to Inquiry: Principles, Strategies, and Techniques	3	
P&L 6641	Introduction to Educational Statistics	3	
P&L 7627	Sampling Designs and Survey Research Methods	3	
P&L 7648	Univariate Experimental Design	3	
P&L 8648	Multivariate Experimental Designs	3	

C. Research Apprenticeship: Each doctoral student must complete a minimum of 6 research apprenticeship hours. The purpose of the research apprenticeship is to provide the student with “hands on” experience in the research enterprise. The minimum number of hours of

research apprenticeship must be completed before the candidacy examination is taken. Students who hold graduate research assistantships may not use the hours worked as part of their graduate research assistantship to accomplish the research apprenticeship.

Course #	Course Title	Units	Grade
T&L 8998	Research Apprenticeship in Teaching and Learning)	2-8	
T&L 8998	Research Apprenticeship in Teaching and Learning	2-8	

D. Breadth requirement: All doctoral students must take at least one course outside of their specialization but within in Teaching and Learning. (Note: The Teaching and Learning Core Courses and research sequence do not count toward this breadth requirement.) Each area is responsible for providing graduate level courses in their course offerings that are accessible to doctoral students outside that specialization for purposes of meeting this breadth requirement. Advanced Seminars (T&L 8890) may count towards the breadth requirement, but students from outside a specialization must have advisor approval and instructor permission to enroll.

Course #	Course Title	Units	Grade
T&L	(Breadth Requirement)	3-4	

E. Candidacy Examinations: Students must be registered for at least 3 graduate credits during the semester in which the candidacy examination is completed. These need not be additional, Individual Study hours.

1. The Candidacy Examination Committee: The Graduate School Handbook provides rules regarding membership on the Candidacy Examination Committee. In the School of Teaching and Learning, students must have four faculty members on the Candidacy Examination Committee. The adviser must be Category P, as must the other faculty members on the doctoral committee (unless they hold Category M status and receive the approval of the Graduate Studies Committee to serve on the student's committee). Additionally, if the student's advisor holds a joint appointment with the primary source of support outside the School of Teaching and Learning, the student must request permission from the Graduate Studies Committee for this person to serve as advisor. A faculty member who holds Category M status may serve as the student's co-advisor with a faculty advisor who holds Category P status. The chair of the *Graduate Studies Committee* will review Graduate School status of candidacy committee members to ensure that they meet Graduate School requirements for faculty serving on candidacy committees, as well as meeting School of Teaching and Learning rules and Specialization rules regarding composition of such committees.
2. The student, in consultation with the Candidacy Examination Committee, will develop a program of study that reflects the student's research and career interests. The members of the student's Candidacy Examination Committee meet to approve a

coursework plan. During this meeting, the student presents a vita (professional experience) and discusses educational goals and career plans with the Committee. At this meeting, the “Specifications for the Ph.D. Program” form is completed by the student and signed by each of the Candidacy Examination Committee members. The finalized list of courses is attached to the form, submitted to the *Graduate Studies Committee* for review, and filed with the Office of Academic Services (227 Arps Hall), with copies to all the Committee members.

3. The Candidacy Examination marks the passage of a doctoral student to doctoral candidacy. There are two parts to the exam: a written portion and an oral portion. The format of the written examination is developed in conjunction with the student's Candidacy Examination Committee. This exam covers the areas of expertise the student has developed during the coursework, and it also can include the opportunity to begin development of the student's dissertation proposal. The candidacy examination must be completed by the student independently. It may not include co-authored work or work that has been previously reviewed by faculty or others. Rules for the conduct of the oral portion of the examination are found in the Graduate School Handbook. The examination must be rigorous and faculty are required to hold students to high quality with regard to content, conceptualization, and clarity of writing.

Course #	Course Title	Units	Grade
T&L 7193	Individual Studies in Preparation for Candidacy Exams	1-15	

Date of Candidacy Examination: _____

F. Dissertation Research: After passing the Candidacy Examination, a doctoral student is admitted to doctoral candidacy and has five years to complete the dissertation. At this point the student, in consultation with the faculty advisor, establishes a Dissertation Committee, which consists of at least three faculty members from the Columbus or regional campuses, all of whom should hold category P status. Faculty with Category M status may serve on the Committee with the approval of the *Graduate Studies Committee*. The members of this committee may or may not have served on the student's Advisory Committee. The chair of the dissertation committee must have “P” status. The chair of the *Graduate Studies Committee* will review Graduate School status of dissertation committee members to ensure that they meet Graduate School requirements for faculty serving on dissertation committees, as well as meeting School of Teaching and Learning rules regarding composition of dissertation committees. Rules for the conduct of dissertation examinations can be found in the Graduate School Handbook. In accordance with the Graduate School Handbook, students must complete a minimum of 6 graduate credit hours post-candidacy, and students may only take 3 graduate credit hours per semester. Doctoral candidates have up to five years to complete the dissertation.

Course #	Course Title	Units	Grade
8999	Research	1-15	

G. Residency Requirement: All doctoral students must complete (check as accomplished):

Date Completed	Requirement
	A minimum of 24 graduate credit hours at The Ohio State University
	A minimum of two consecutive pre-candidacy semesters or one semester and a summer at the Ohio State University
	A minimum of six graduate credit hours over a period of at least two semesters or one semester and summer completed after admission to candidacy.

Hours Ph.D. Course Work (minimum 50): _____
 Hours from MA (maximum 30): _____
 TOTAL (minimum 80): _____

Advisor's Signature: _____
 Date: _____

Graduate Studies Chair Signature: _____
 Date: _____

SPECIALIZATIONS
(Minimum of 24 Hours required)

Adolescent, Post-Secondary, and Community Literacies (APCL)

Required Courses			
Course #	Course Title	Units	Grade
T&L 8301	Research and Theory on Adolescent, Post-Secondary and Community Literacies	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 6101	Dramatic Inquiry Across the Curriculum	3	
T&L 7101	Drama, Literacy, and Learning	3	
T&L 7324	Literary Theory and Adolescent Literature	3	
T&L 7373	Popular Culture and the Teaching of English	3	
T&L 7370	The English Curriculum: Past, Present, and Future	3	
T&L 7302	Teaching Digital Multimodal Composing	3	
T&L 7467	Reading Gender	3	
T&L 8010	Critical Discourse Analysis	3	
T&L 8303	Literacies and Technologies	3	
T&L 8302	Changing Perspectives on Language, Literacy and Culture	3	
T&L 8306	African American Language and Literacies	3	
T&L 8313	Research and Theory in Written Composition	3	
T&L 8330	Literacy Research and Issues of Diversity	3	
T&L 8890	Advanced Seminar in Adolescent, Post-Secondary and Community Literacies	3	

Foreign and Second Language Education (FSLED)

Required Courses			
Course #	Course Title	Units	Grade
T&L 8610	Studies in Second Language Acquisition	3	
T&L 8617	Issues in Second Language Learning	3	
T&L 8625	First Year Doctoral Seminar in Foreign Language Education	3	
T&L 8630	The Dissertation Experience in Foreign Language Education	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7615	Seminar for Nonnative Speaker Professionals	3	
T&L 7620	English as an International Language: Theory & Practice	3	
T&L 8615	Classroom-Oriented Second Language Research	3	
T&L 8620	Foreign and Second Language Teacher Education	3	
T&L 8635	Research on Second Language Reading and Writing	3	
T&L 8545	Issues and Research in Foreign Language Testing and Assessment	3	

Literature for Children and Young Adults (LCYA)

Required Courses			
Course #	Course Title	Units	Grade
T&L 8307	History of Children's & Young adult literature	3	
T&L 7308	The Development of Literary Understanding	3	
T&L 7324	Literary Theory and Adolescent Literature	3	
T&L 8890	Advanced Seminar in Multicultural/ International Literature	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7322	Literature Across the Curriculum	3	
T&L 7341	Poetry for Children	3	
T&L 7343	Literature in Middle Childhood Education	3	
T&L 7356	Advanced Literature for Adolescents	3	
T&L 7360	Reading and Writing Poetry for Educators: Bridges to Literacy and Life	3	
T&L 7361	Literature in Early Childhood Education	3	
T&L 7362	Roots of Fantasy	3	
T&L 7364	Multicultural Literature for Children and Young Adults	3	

Language, Education, and Society (LES)

Required Courses			
Course #	Course Title	Units	Grade
T&L 7431	The Ethnography of Communication 1	3	
T&L 7432	The Ethnography of Communication 2	4	
T&L 8001	Discourse Analysis and Educational Research 1	4	
T&L 8002	Discourse Analysis and Educational Research 2	4	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7306	Language Socialization	3	
T&L 7550	Advanced Studies in Deafness	3	
T&L 8010	Critical Discourse Analysis	3	
T&L 8363	Sociolinguistics and Language Education	3	
T&L 8890	Advance Seminar in Language, Education, and Society	3	

Multicultural and Equity Studies in Education (MESE)

Required Courses			
Course #	Course Title	Units	Grade
T&L 7014	Epistemologies & Theories in Multicultural and Equity Studies	3	
T&L 7015	Curricular Approaches to Multicultural and Equity Studies	3	
T&L 7016	Analyzing Intersections of Power, Place, and Resistance	3	
Elective Courses			

Course #	Course Title	Units	Grade
T&L 6808	Multicultural and Global Perspectives on Teaching and Learning	3	
T&L 6810	Teaching About Africa and African Perspectives in P-12 Schools	3	
T&L 8890	Advanced Seminar in Teaching about Global/International Perspectives	3	
T&L 7025	Culturally Relevant Pedagogies	3	
T&L 7030	Multicultural Influences in Education	3	
T&L 7035	Teaching for Social Justice	3	

Reading and Literacy in Early and Middle Childhood (RLEM)

Required Courses			
Course #	Course Title	Units	Grade
T&L 7421	Guided Survey of Research in Reading	3	
7427	Reading Comprehension	3	
8425	Understanding The Reading Process	3	
8421	Diverse Epistemologies in Reading and Literacy in Early and Middle Childhood Education	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7316	Language Arts in the Early and Middle Childhood Program	3	
T&L 7340	Writing in Early and Middle Grade Classrooms	3	
T&L 7418	Synthesizing Research in Reading and Literacy	3	
T&L 7428	Trends and Issues in Teaching Reading	3	
T&L 8309	History of Theory & Practice in Literacy	3	
T&L 8311	Research in Emergent Literacy	3	
T&L 8312	Research in Writing Development and Instruction for Children	3	
T&L 8426	Advanced Study in Reading Difficulties of Young Children	3	
T&L 8890	Advanced Seminar in Reading	3	

Rethinking Early Childhood and Elementary Education (RECEE)

Required Courses			
Course #	Course Title	Units	Grade
T&L 7170	Rethinking Early Childhood & Elementary Education: The Politics of Childhood	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7005	Creative Experiences in the Elementary School Curriculum	3	
T&L 6325	Methods for Developing Language and Cognition	3	
T&L 5120	Arts-Based Integrated Learning	3	
T&L 7169	Children's Social Development and the Social World of the	3	

	Classroom		
T&L 7501	Inclusive Education Research	3	
T&L 7702	Science in Elementary and Middle School Education	3	
T&L 7701	Mathematics Teaching and Learning in Elementary and Middle Schools	3	
T&L 7706	Science and Early Childhood Education	3	
T&L 8701	Advanced Concepts in Elementary School Science Education	3	

Social Studies and Global Education (SSGE)

Required Courses			
Course #	Course Title	Units	Grade
T&L 7806	Teaching Local/Global Outcomes of Globalization	3	
T&L 7805	Citizenship Education in a Global Age	3	
T&L 8808	Research in Multicultural and Global Education	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7809	Infusing Global Perspectives in Education	3	
T&L 8810	Social Studies Education and Deweyan Perspectives	3	
T&L 8809	Social Studies Theory and Practice	3	
T&L 8811	Decolonization, Culture, and Global Pedagogy	3	
T&L 8812	Research in Social Studies Education	3	
T&L 7807	Teaching About the World with Technology	3	

Science, Technology, Engineering, and Mathematics Education (STEM)

Required Courses			
Course #	Course Title	Units	Grade
T&L 8711	Current Issues and Trends in STEM Education	3	
T&L 8721	Advanced Study of Thinking, Learning, & Assessment in STEM Education	3	
T&L 8731	First Year STEM Doctoral Seminar: Study of Teaching and Teacher Education in STEM Education	3	
T&L 8741	History of Curriculum in STEM Education	3	
T&L 8751	Survey of Research Methodologies and Critical Analysis in STEM Education	3	
Elective Courses			
Course #	Course Title	Units	Grade
T&L 7715	Course on Learning Progressions in Mathematics Education	3	
T&L 7716	Conceptual and Procedural Knowledge in Mathematics	3	
T&L 7723	Course on Learning Progressions in Science Education	3	
T&L 7725	The Nature of Science and Implications for Teaching	3	
T&L 7731	Multimedia Tools for STEM Education	3	
T&L 7741	Advanced Study of Learning and Cognition in STEM	3	

T&L 7742	Knowledge Representations in STEM	3	
T&L 7746	Integrating Teaching, Learning and the Brain: Processing Information	3	
T&L 747	Science, Mathematics, Technology and the Educated Mind	3	
T&L 7748	Using Community and Culture to Teach Science, Technology, Engineering, and Mathematics (STEM)	3	
T&L 7749	Concept Inventories in STEM Education	3	
T&L 8771	Special Topics in Mathematics Education	3	
T&L 8781	Special Topics in Science Education	3	
T&L 8791	Special Topics in Technology and Engineering Education	3	
T&L 8890	Advanced Seminar	1-4	
FABENG 7220	College Teaching in Engineering	2	

PhD, Teaching and Learning Course List

Dept	Sm #	Sm Title	Sm Hrs	Qtr #	Qtr title	Qtr hrs
PhD Core Courses						
EDU TL	8003	Theorizing and Researching Teaching and Learning	4	975, 976, 977	Theoretical Perspectives on Learning, Teaching and Social Contexts; Diversity and Equity Issues in Teaching and Learning; Theoretical Perspectives on Learning and Teaching as Change Processes	4, 4, 4
EDU TL	8015	Diversity and Equity in Education	4	976	Diversity and Equity Issues in Teaching and Learning	4
PhD Research Requirement Courses						
EDU TL	7431	The Ethnography of Communication 1	3	931		
EDU TL	7432	The Ethnography of Communication 2	4	932		
EDU TL	8001	Discourse Analysis and Educational Research I	4	933	Discourse Analysis in Educational Research I	4
EDU TL	8002	Discourse Analysis and Educational Research II	4	934	Discourse Analysis in Educational Research II	4
EDU PL	6625	Introduction to Educational Research	3	785	Introduction to Inquiry, Principles, Strategies, and Techniques	3
EDU PL	6641	Introduction to Educational Statistics	4	786	Introduction to Inquiry: Quantitative Methods	5
EDU PL	7627	Sampling Designs and Survey Research Methods	3	807	Educational Survey Research Methods	3
EDU PL	7648	Univariate Experimental Design	4	808, 809	Experimental Design in Education I; Experimental Design in Education II	5, 5
EDU PL	8280	Qualitative Research in Education: Paradigms, Theories, and Exemplars	3	800, 966, 967	Qualitative Research in Education; Practicum in Educational Research and Evaluation; Analyzing Qualitative Data in Educational Research	3, 3, 5
EDU PL	8290	Qualitative Research in Education: Methods and Analysis	3	800, 966, 967	Qualitative Research in Education; Practicum in Educational Research and Evaluation; Analyzing Qualitative Data in Educational Research	3, 3, 5
EDU PL	8648	Multivariate Experimental Designs	4	810	Experimental Design in Education III	5
PhD Apprenticeship Course						
EDU TL	8998	Research Apprenticeship in Teaching and Learning	2-8	989		3-10
PhD Candidacy Course						
EDU TL	7193	Individual Studies	1-15	893	Advanced Individual Studies	1-4
PhD Dissertation Course						
EDU TL	8999	Research	1-15	999		1-18
Courses Utilized in Multiple Specializations						
EDU TL	8890	Advanced Seminar	1-4	925		
EDU TL	7324	Literary Theory and Adolescent Literature	3	923		3
EDU TL	7025	Culturally Relevant Pedagogy	3			
EDU TL	7701	Mathematics Teaching and Learning in Elementary and Middle Schools	3	812	Mathematics in Elementary Schools	3
EDU TL	7702	Science in Elementary and Middle School Education	3	811	Science in Elementary Education	3
EDU TL	7706	Science and Early Childhood Education	3	852		3
EDU TL	8701	Advanced Concepts in Elementary School Science Education	3	920		3
EDU TL	8301	Research and Theory on Adolescent, Post-Secondary, and Community Literacies	3			
Adolescent, Post-Secondary and Community Literacies Required Course						
EDU TL	6101	Dramatic Inquiry Across the Curriculum	3	777, 888	Teaching and Learning Social Studies with Imagination; Advanced Studies in Teaching and Learning with Drama	3, 3
Adolescent, Post-Secondary and Community Literacies Elective Courses						
EDU TL	7101	Drama, Literacy, and Learning	3	888, 915	Advanced Studies in Teaching and Learning with Drama; Drama in Language, Literacy, and Culture	3, 3
EDU TL	7370	The English Curriculum: Past, Present, and Future	3	971	English Curriculum: Literature	3
EDU TL	7373	Popular Culture and the Teaching of English	3	873		3

EDU TL	7392	Teaching Digital Multimodal Composition	2	892	Teaching Multimodal Composition: Advanced Summer Institute	3
EDU TL	7467	Reading Gender	3	867	Reading Gender in Education	3
EDU TL	8010	Critical Discourse Analysis	3	935		
EDU TL	8302	Changing Perspectives on Language, Literacy and Culture	3	901		3
EDU TL	8303	Literacies and Technologies	3	902	Multiple Literacies, Technology, and Communities of Learning	5
EDU TL	8306	African American Language and Literacies	3	906	Language Learning across Cultures	3
EDU TL	8313	Research and Theory in Written Composition	3	913, 914	Writing and Learning Across the Curriculum	3, 3
EDU TL	8330	Literacy Research and Issues of Diversity	3	930	Literacy Research and Issues of Diversity in the Classroom	3
Foreign, Second, and Multilingual Language Education Required Courses						
EDU TL	8363	Sociolinguistics and Language Education	3	863		3
EDU TL	8610	Second Language Acquisition	3	703.09	Studies in TESOL and Bilingual Education: Ph D. Students Only	3
EDU TL	8615	Classroom-Oriented Second Language Research	3	916		3
EDU TL	8617	Issues in Second Language Learning	3	917	Issues in Communicative Language Learning	3
EDU TL	8620	Foreign and Second Language Teacher Education	3	924		3
EDU TL	8625	First Year Doctoral Seminar in Foreign Language Education	3	937.45	First Year Doctoral Seminar: Foreign and Second Language Education	1-5
EDU TL	8635	Research on Second Language Reading and Writing	3	960	Analysis of the Reading Process in a Second Language	5
Foreign, Second, and Multilingual Language Education Elective Courses						
EDU TL	8630	The Dissertation Experience in Foreign Language Education	3	938.45	Advanced Doctoral Seminar: Foreign and Second Language Education	1-5
EDU TL	8645	Issues and Research in Foreign Language Testing and Assessment	3	963.09	Foreign Language Testing: Ph.D. Students Only	4
EDU TL	8650	Current Perspectives on Second Language Development	3			
EDU TL	8655	Policy and Politics of English Language Learning	3			
EDU TL	8656	Research Practicum in the Policy and Politics of English Language Learning	3			
Literature for Children and Young Adults Required Courses						
EDU TL	7308	The Development of Literacy Understanding	3	908		3
EDU TL	8307	History of Children's and Young Adult Literature	3	907	History of Children's and Adolescent Literature	3
Literature for Children and Young Adults Elective Courses						
EDU TL	7356	Advanced Literature for Adolescents	3	856		3
EDU TL	7360	Reading and Writing Poetry for Educators: Bridges to Literacy and Life	3	760.02	Educators and the Arts: The Literary Arts	3
EDU TL	7361	Literature in Early Childhood Education	3	861		3
EDU TL	7362	Roots of Fantasy	3	862	Roots of Fantasy for Children	3
EDU TL	7364	Multicultural Literature for Children and Young Adults	3	864	Multicultural Literature for Children	3
Language, Education, and Society Required Courses						
EDU PL	7550	Women in Higher Education	3	839		3
EDU TL	7550	Advanced Studies in Deafness	3	832		3
Multicultural and Equity Studies in Education Required Courses						
EDU TL	7014	Epistemologies and Theories in Multicultural and Equity Studies in Education	3	940		3
EDU TL	7015	Curricular Approaches in Multicultural and Equity Studies in Education	3	941		
EDU TL	7016	Intersections of Power, Place, and Resistance in Multicultural and Equity Studies in Education	3	942	Analyzing Intersections of Power, Place, and Resistance in Education	3
Multicultural and Equity Studies in Education Elective Courses						
EDU TL	6808	Multicultural and Global Perspectives on Teaching and Learning	3-4	881		3
EDU TL	6810	Teaching About African and African Perspectives in P-12 Schools	3	807	Teaching About Africans and African Perspectives in K-12 Classrooms	3

EDU TL	7030	Multicultural Influences in Education	3	830	Early Childhood Education: Multi-Cultural Influences	3
Rethinking Early Childhood and Elementary Education Elective Courses						
EDU TL	5120	Arts-Based Integrated Learning	3	872	Approaches to Integrated Curriculum in Pre K-12 Classrooms	3
EDU TL	6325	Methods for Developing Language and Cognition	2	825	Methods of Developing Language and Cognition in Early Childhood	3
EDU TL	7005	Creative Expressions in Teaching and Learning	3	823	Creative Experiences in the Elementary School Curriculum	3
EDU TL	7169	Children's Social Development and the Social World of the Classroom	3	869		3
EDU TL	7170	Rethinking Early Childhood & Elementary Education: The Politics of Childhood	3			
EDU TL	7501	Inclusive Education Research	3	857		3
Reading and Literacy in Early and Middle Childhood Required Course						
EDU TL	7418	Synthesizing Research in Reading and Literacy	3	918		3
Reading and Literacy in Early and Middle Childhood Elective Courses						
EDU TL	7340	Writing in Early and Middle Grades Classrooms	3	840	Writing in Elementary School	3
EDU TL	7421	Guided Survey of Research in Reading	3	921	A Guided Survey of Research in Reading	3
EDU TL	8309	History of Theory and Practice in Literacy	2	909		3
EDU TL	8311	Research in Emergent Literacy	3	911		3
EDU TL	8312	Research in Writing Development and Instruction for Children	3	912		3
Social Sciences and Global Education Required Courses						
EDU TL	7805	Citizenship Education in a Global Age	3	904	Alternative Paradigms for Global Education	3
EDU TL	7806	Teaching Local/Global Outcomes of Globalization	3	805	Global Education: Social Economic Perspectives	3
EDU TL	8808	Research in Multicultural and Global Education	3	808	Research in Multicultural & Global Education	3
Social Sciences and Global Education Elective Courses						
EDU TL	6809	Infusing Global Perspectives in Education	3	878		3
EDU TL	7807	Methods for Teaching About the World with Technology	3	882	Materials and Methods in the Social Studies	3
EDU TL	8809	Social Studies Theory and Practice	3	985	Theories of Secondary Social Studies Education	3
EDU TL	8810	Social Studies Education and Deweyan Perspectives	3			
EDU TL	8811	Decolonization, Culture, and Global Pedagogy	3			
EDU TL	8812	Research in Social Studies Education	3			
Science, Technology, Engineering, and Mathematics Education Required Courses						
EDU TL	7741	Advanced Study of Learning and Cognition in STEM	3	721.0	Logic and Psychology in School Science	3
EDU TL	8711	Current Issues and Trends in STEM Education	3	937.2	First year Doctoral Seminar: Mathematics, Science, and Technology Education	1-5
				3,		
				964.2		
				3		
EDU TL	8721	Advanced Study of Thinking, Learning, and Assessment in Mathematics Education	3	965.2		
EDU TL	8722	Advanced Study of Thinking, Learning, and Assessment in Science Education	3	965.2		
				7		
EDU TL	8731	First Year STEM Doctoral Seminar: Study of Teaching and Teacher Education in STEM Education	3	966.2		
				3		
EDU TL	8741	History of Curriculum in Mathematics Education	3	967.2		
				6		
EDU TL	8742	History of Curriculum in Science Education	3	937.2	First Year Doctoral Seminar: Science Education	1-5
				7,		
				967.2		
				7		
EDU TL	8743	History of Curriculum in Technology/Engineering Education	3	967.2		
				1		
EDU TL	8751	Survey of Research Methodologies in STEM	3			
EDU TL	8761	Critical Analysis of Research in STEM Education	3	969.2		
				3		

Science, Technology, Engineering, and Mathematics Education Elective Courses

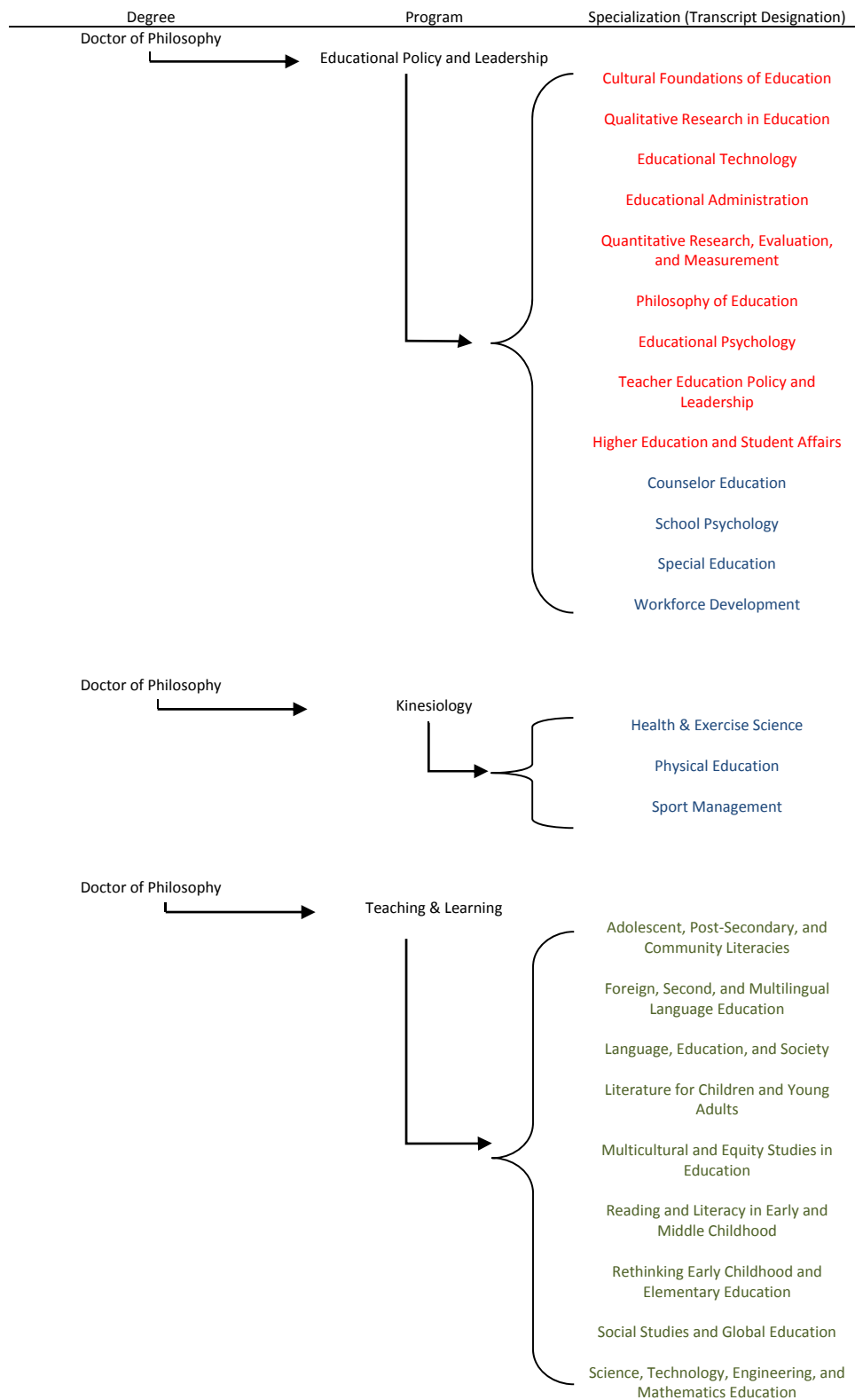
EDU TL	7715	Learning Progressions in Mathematics Education	3			
EDU TL	7716	Conceptual and Procedural Knowledge in Mathematics Education: Theory, Research, and Controversy	3			
EDU TL	7717	Teaching Mathematics	3	802.0 3	Processes of School Mathematics: Axiomatics	2-5
EDU TL	7718	Student Learning processes in Mathematics	3	802.0 5	Processes of School Mathematics: Experimentation	2-5
EDU TL	7721	Environmental and Sustainability Education Methods	3	613	Methods for Conservation Education	3
EDU TL	7722	Aquatic and Marine Science Education	3	611, 614	Great Lakes Education Workshop; Marine and Aquatic Education	1-4, 3
EDU TL	7723	Learning Progressions in Science Education	3	752	Science in the School Curriculum	4
EDU TL	7724	Teaching Evolution in Schools	3	875		3
EDU TL	7725	The Nature of Science and Implications for Science Teaching	3	877	The Nature of Science and the Implications for Teaching	3
EDU TL	7726	STEM Education in Informal Settings	3	880	A Proficiency Experience at the Zoo	3
EDU TL	7731	Multimedia Tools for STEM Education	3	735	Organization and Administration	3
EDU TL	7732	Robotics and Automation for STEM Educators	3	755		
EDU TL	7733	Research in Technology and Engineering Education	3	837	Research in Technology Education	3
EDU TL	7734	Technology and Engineering Education Curriculum Planning	3	859	Technology Education Curriculum Planning	3
EDU TL	7742	Knowledge Representations in STEM Learning	3	802.0 1	Processes of School Mathematics: Representations	2-5
EDU TL	7743	Curriculum Across Secondary and Post-Secondary STEM Education	3	802.0 2	Processes of School Mathematics: Examples and Nonexamples	2-5
EDU TL	7744	Problem Solving in STEM	3	802.0 4	Processes of School Mathematics: Problem Solving	2-5
EDU TL	7745	Classroom Discourse in STEM Learning	3	802.0 6	Processes of School Mathematics: Exposition	2-5
EDU TL	7746	Integrating Teaching, Learning and the Brain: Processing Information	3	838	Learning Styles	3
EDU TL	7747	Science, Mathematics, Technology and the Educated Mind	3	876		3
EDU TL	7748	Using Community and Culture to Teach Science, Technology, Engineering, and Mathematics (STEM)	3	846	Development of Technology Education Vocational Education Programs for Special Needs and Culturally D	3
EDU TL	7749	History, Future, and Practical Applications of Concept Inventories in STEM Education	3	610	History of Practical Arts and Vocational Education	3

Education Graduate Programs Schematic

Doctor of Philosophy- Quarters



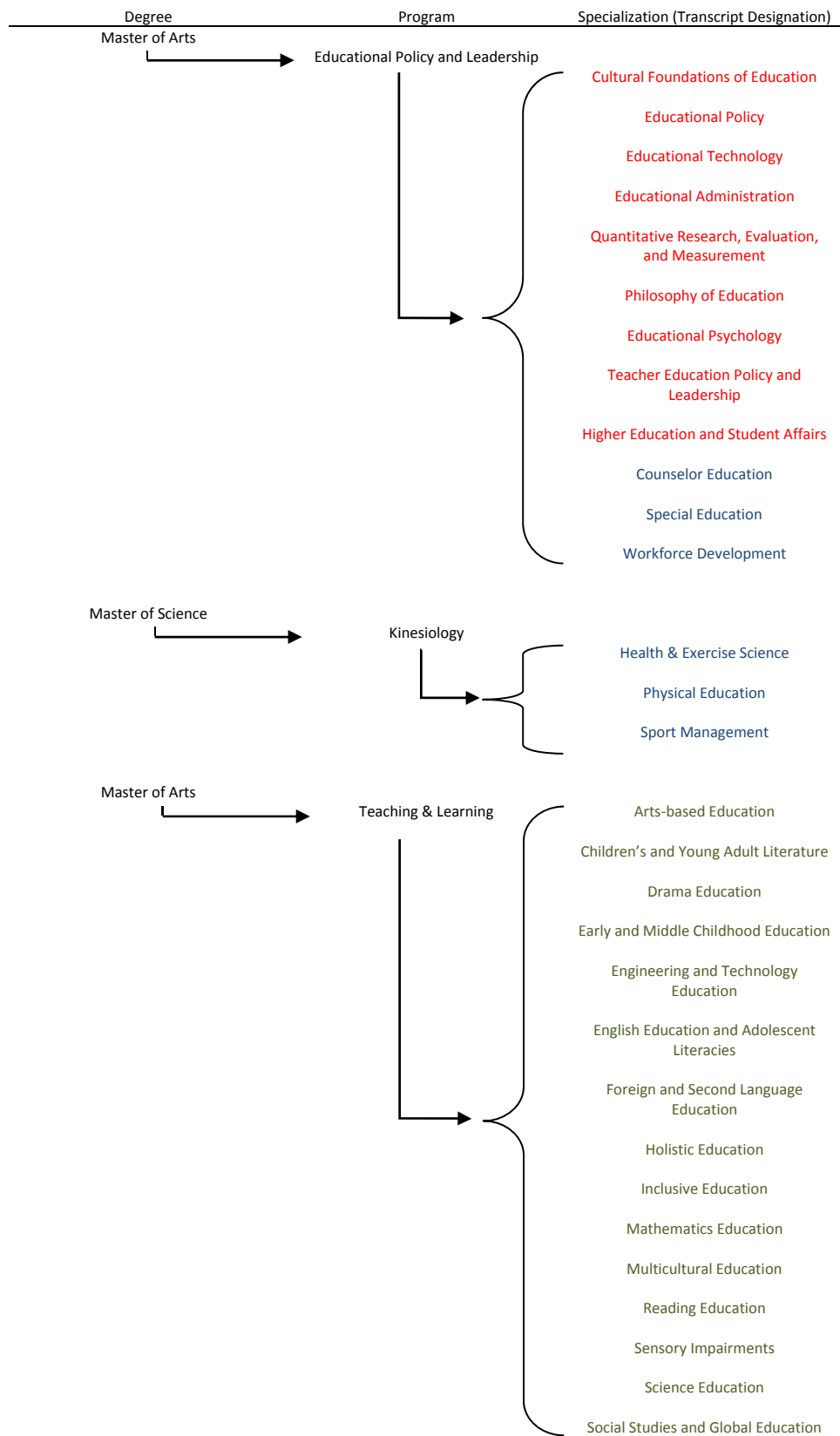
Doctor of Philosophy- Proposed for Semesters



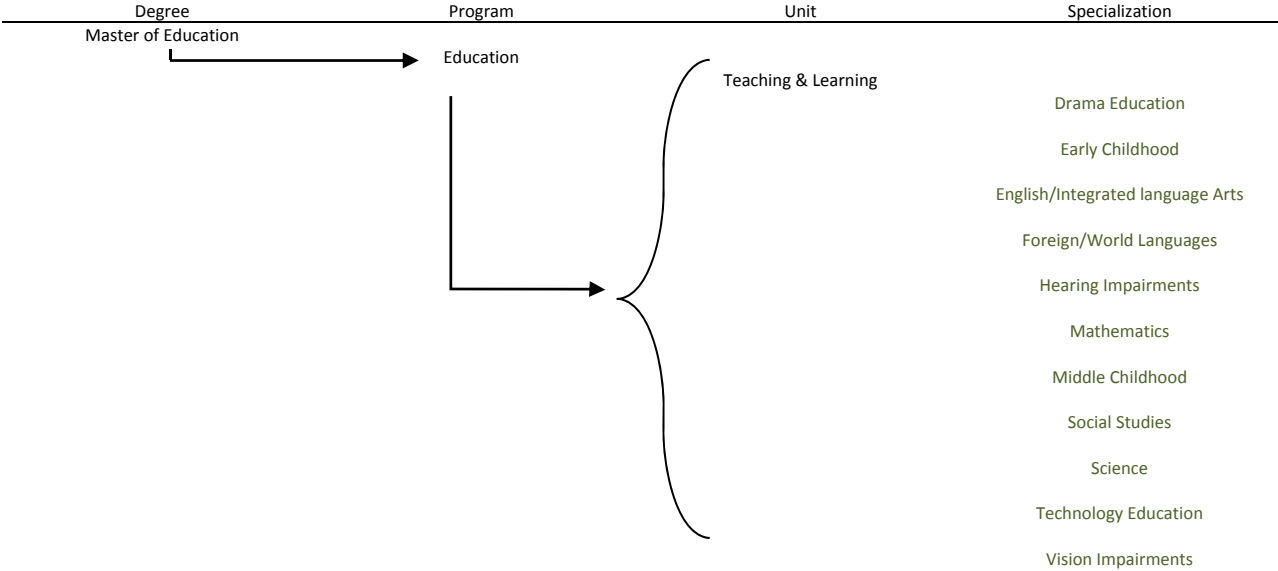
Master of Arts- Quarters



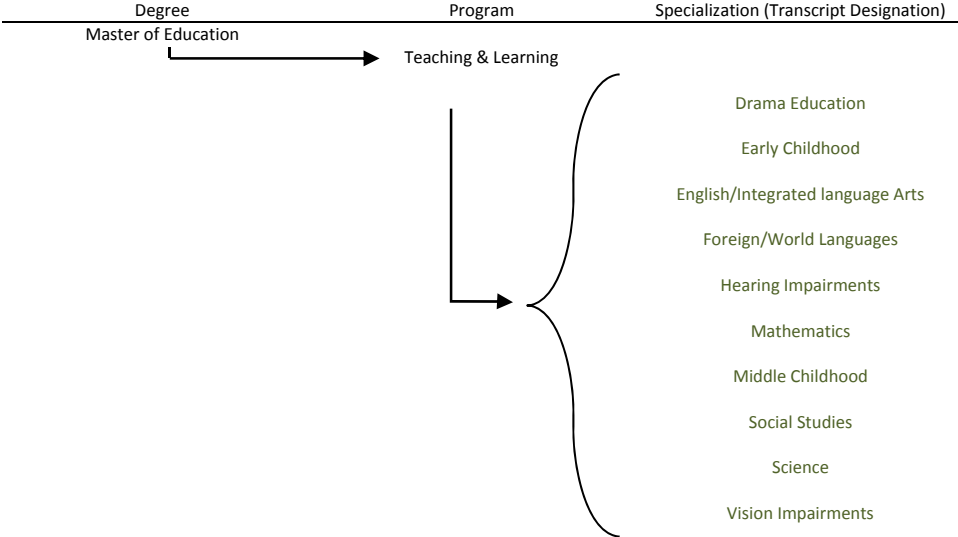
Master of Arts/Science- Proposed for Semesters



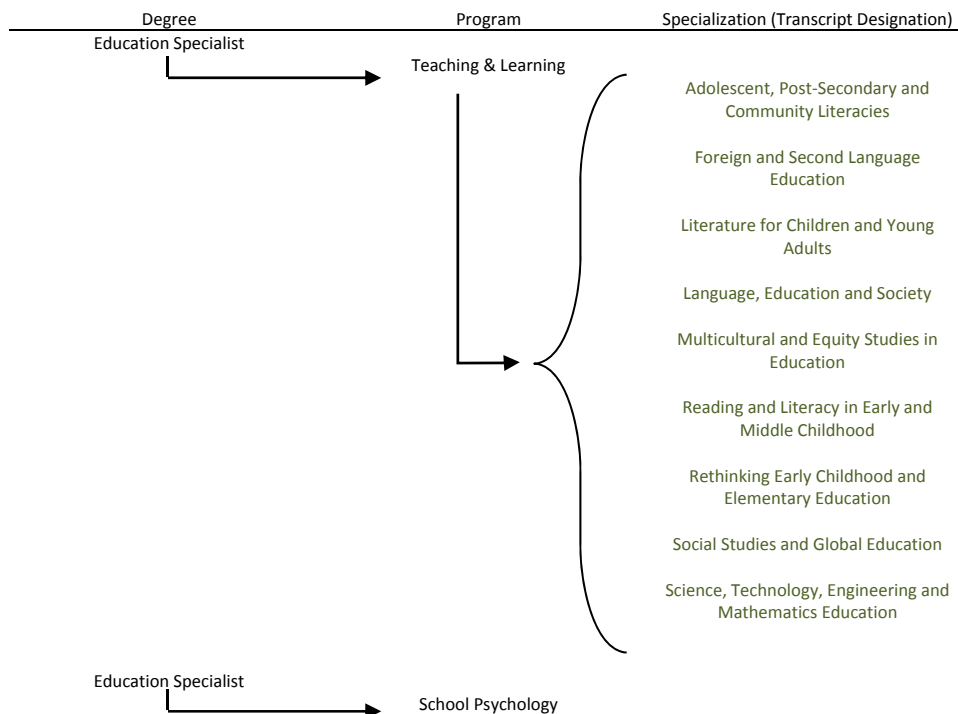
Master of Education- Quarters



Master of Education- Proposed for Semesters



Education Specialist- Proposed for Semesters



Doctor of Education- Proposed for Semesters (new)

