DOCTORAL DEGREE IN EDUCATION

Ed.D. Leadership in Schooling
Option: STEM Education

ADMITTED FOR SUMMER 2018 ONWARDS

42 credits  3 - 4 years

Leadership in Schooling Faculty
Michaela Colombo, Professor, Faculty Chair
James Nehring, Associate Professor
Stacy Szcesiul, Associate Professor
Phitsamay Uy, Associate Professor
David Troughton, Adjunct Faculty

STEM Education Faculty
Anita Greenwood, Professor
Michelle Scribner MacLean, Clinical Associate Professor
Sumudu Lewis, Clinical Assistant Professor
Eliza Bobek, Clinical Assistant Professor

Research Courses – Faculty
Judith Davidson, Associate Professor
Xiaoxia Newton, Associate Professor
John McKenna, Assistant Professor
Matthew Ford, Adjunct Faculty

September 2017
WHICH IS RIGHT FOR YOU?
Ph.D. OR Ed.D. DEGREE

Table 1, below, excerpted from *The Carnegie Project on the Education Doctorate*, with additions, provides a succinct description of the two terminal degrees in education. (from http://cpedinitiative.org/edd-phd-comparison-charts).

<table>
<thead>
<tr>
<th></th>
<th>Ed.D.</th>
<th>Ph.D.</th>
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</thead>
<tbody>
<tr>
<td><strong>Primary Career Intention</strong></td>
<td>Administrative leadership in educational institutions or related organizations. Higher education teaching focus.</td>
<td>Scholarly practice, research, and/or teaching at university, college, institute or educational agency</td>
</tr>
<tr>
<td><strong>Degree Objective</strong></td>
<td>Preparation of professional leaders competent in identifying and solving complex problems in education. Emphasis is on developing thoughtful and reflective practitioners</td>
<td>Preparation of professional researchers, scholars, or scholar practitioners. Develops competencies in educational scholarship and research that focuses on acquiring new knowledge.</td>
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<tr>
<td><strong>Knowledge Base</strong></td>
<td>Develops and applies knowledge for practice. Research-based content themes and theory are integrated with practice with emphasis on application of knowledge base.</td>
<td>Fosters theoretical and conceptual knowledge. Content is investigative in nature with an emphasis on understanding the relationships to leadership practice and policy.</td>
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<tr>
<td><strong>Research Methods</strong></td>
<td>Develops an overview and understanding of research including data collection skills for action research, program measurement, and program evaluation.</td>
<td>Courses develop an understanding of inquiry, and qualitative and quantitative research. Developing competencies in research design, analysis, synthesis, and writing</td>
</tr>
<tr>
<td><strong>Comprehensive Knowledge Assessment</strong></td>
<td>Knowledge and practice portfolios provide evidence of ability to improve practice.</td>
<td>Written and oral assessments are used to understand theoretical and conceptual knowledge in the field.</td>
</tr>
<tr>
<td><strong>Capstone</strong></td>
<td>Well-designed applied research dissertation of value for informing educational practice.</td>
<td>Original research illustrating a mastery of competing theories with the clear goal of informing disciplinary knowledge.</td>
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Ed.D. Leadership in Schooling

The Leadership in PK-12 Education doctorate (Ed.D.) is designed to meet needs of leaders of school systems (pre-kindergarten through high school graduation). The program offers academic rigor, focusing the curriculum on the learning needs of advanced practitioner-scholars whose professional goal is to remain in PK-12 education. The competitive, program is three years in length with online course work fall and spring of each year and a 1-2 week summer residency each year. The online coursework and summer residency address the working professional’s needs for convenience, the support of a cohort, and strong relationships with faculty.

Option: STEM Education

While developing leadership skills, students will focus on policies, practices and research in STEM education. The dissertation must be directed toward a question pertinent to STEM education.

High Academic Rigor Focused on Advanced Practice

Students in the Ed.D. program will complete

- 3 credits of foundational coursework
- 18 credit hours of core specialization courses
- 12 credit hours of applied research methods courses
- A sequence of 2 comprehensive exams (portfolio and qualifying paper)
- A dissertation which may be rooted in a locality, with recommendations focused on application to a locality.
- Residency each summer

Learning Outcomes (partial list)

- Demonstrates familiarity with seminal and current educational leadership literature and STEM education research.
- Demonstrates familiarity with seminal and current literature on equity in education.
- Demonstrates knowledge of STEM education reform.
- Plans and evaluates STEM curriculum, policy, instructional practice, and administrator/leader effectiveness in light of research and theory.
- Designs, develops, and conducts a research study based on an identified problem in STEM education, and reports study findings.
Leadership in Schooling, Ed.D.  
Option: STEM Education

Admissions Requirements:
Each applicant’s materials will be reviewed holistically, but must include:

- acceptable GRE scores- the following scores are intended as guidelines for applicants: 155 Verbal; 155 Quantitative; 4.5 Writing
- IELTS of 7.0 or TOEFL of 90 – for success in the Ed.D., candidates must demonstrate a high level of oral and written literacy. Candidates with scores below the recommended level will have the opportunity to demonstrate oral fluency during an interview and may also be required to submit a writing sample from previous graduate work.
- an undergraduate degree in a STEM or STEM Education field; this includes a degree in the natural sciences, mathematics, computer science or engineering. Additionally, the transcript of candidates who hold an undergraduate degree in science or mathematics education must include a minimum of 30 credits in science or mathematics beyond the introductory level.
- a master of education degree, an education specialist degree (Ed.S.) or a master’s degree in a STEM field e.g. natural science, mathematics, engineering or computer science.
- recent teaching and/or leadership experience in STEM education preferably at the PK-12 level, but higher education STEM experience may also be appropriate.

In addition to the above, applicants submit an online application and fee through the office of Graduate Admissions, official transcripts, three letters of recommendation and a two-page admission essay. The admission essay should describe the applicant’s work as a STEM educator to date, including any leadership roles beyond classroom teaching, and provide professional goals, research interests and reasons for entering a scholar-practitioner doctoral degree.

Degree Requirements: Complete a minimum of 42 credits of doctoral level (600 or 700) course work with a cumulative grade of B (3.0) or better. The doctoral candidate must pass (2) doctoral examinations, satisfactorily complete and defend a dissertation as approved by the candidate’s dissertation committee, and complete the program within the University prescribed time limit for doctoral programs. (The cohort program is designed for completion in three years. In the event of unexpected circumstances, this time may be extended for candidates who have a cumulative grade of B or better.

Transfer Credit Policy:
Beginning in Fall 2009, students may only transfer into their degree six credits of appropriate course work taken prior to admission to the Graduate School of Education at another accredited institution (six credits taken at UMass Lowell prior to admission are not considered transfer credits).
- Transfer courses are subject to the approval of the Admissions and Standards Committee
- Transfer courses may not have been used in a previous degree (including a CAGS).
- Courses for transfer into Ed.D. programs must have been earned at a doctoral granting institution.
- Only courses earned with a B or better are considered for transfer.
- Courses must have been completed within five years of the date of the transfer petition.
- Graduate credit earned in seminars and practica cannot be transferred into any degree.
- Graduate credit earned in conjunction with teacher workshops/in-service professional development is not considered for inclusion in GSE graduate programs.
- Courses may not be transferred into Graduate Certificate programs.
Ed.D. Leadership in Schooling  
Option: STEM Education  

Degree Pathway

<table>
<thead>
<tr>
<th>COURSE</th>
<th>CREDITS</th>
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<tbody>
<tr>
<td>Foundations of Education</td>
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<tr>
<td>EDUC 6440 Foundations for Practitioner Scholars</td>
<td>3</td>
</tr>
<tr>
<td>Research and Evaluation</td>
<td></td>
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<tr>
<td>EDUC 6911 Applied Research Design</td>
<td>3</td>
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<tr>
<td>EDUC 6921 Quantitative Data Analysis</td>
<td>3</td>
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<tr>
<td>EDUC 6931 Qualitative Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 6423 Program Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>Specialization</td>
<td></td>
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<tr>
<td>EDUC 6910 Developing Inclusive School Contexts</td>
<td>3</td>
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<tr>
<td>EDUC 6225 Education Reform in STEM Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 6930 Organizational Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 6226 Leadership &amp; Research in STEM Education</td>
<td>3</td>
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<tr>
<td>EDUC 6227 Foundations of Student Learning in STEM Fields</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 6960 Strategic Partnering with Families and Communities</td>
<td>3</td>
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<tr>
<td>Residency*</td>
<td>0</td>
</tr>
<tr>
<td>Required each summer</td>
<td></td>
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<tr>
<td>Dissertation Planning and Execution</td>
<td></td>
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<tr>
<td>EDUC 7530 Dissertation 1</td>
<td>3</td>
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<tr>
<td>EDUC 7530 Dissertation 2</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 7530 Dissertation 3</td>
<td>3</td>
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</tbody>
</table>

Total Credits 42 credits

*fee required
### Table 2. Ed.D. Leadership in Schooling: STEM Option Program Structure

<table>
<thead>
<tr>
<th>Semester</th>
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<tbody>
<tr>
<td><strong>Summer I</strong></td>
<td><strong>Fall I</strong></td>
<td><strong>Spring I</strong></td>
</tr>
<tr>
<td><strong>EDUC 6227 Foundations of Student Learning in STEM fields</strong> (3 credits) <strong>PORTFOLIO DEVELOPMENT</strong></td>
<td><strong>EDUC 6910 Developing Inclusive School Contexts</strong> (3 credits) <strong>PORTFOLIO DEVELOPMENT</strong></td>
<td><strong>EDUC 6960 Strategic Partnering</strong> (3 credits) <strong>PORTFOLIO DEVELOPMENT</strong></td>
</tr>
<tr>
<td>EDUC 6911 Applied Research Design (3 credits)</td>
<td>EDUC 6930 Organizational Learning (3 credits)</td>
<td>EDUC 6931 Qualitative Data Analysis for Practitioner Leaders (3 credits)</td>
</tr>
<tr>
<td>EDUC 6003 RESIDENCY I*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summer II</strong></td>
<td><strong>Fall II</strong></td>
<td><strong>Spring II</strong></td>
</tr>
<tr>
<td><strong>EDUC 6921 Quantitative Data Analysis for Practitioner Leader</strong> (3 credits)</td>
<td><strong>EDUC 6940 Systems Leadership I</strong> (3 credits)</td>
<td><strong>EDUC 6225 Education Reform in STEM Education</strong> (3 credits)</td>
</tr>
<tr>
<td><strong>EDUC 6226 Leadership &amp; Research in STEM Education</strong> (3 credits)</td>
<td>EDUC 6423 Program Evaluation</td>
<td></td>
</tr>
<tr>
<td>Portfolio DEFENSE</td>
<td>Qualifying Paper</td>
<td>Dissertation Proposal</td>
</tr>
<tr>
<td>EDUC 6003 RESIDENCY II*</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Summer III</strong></td>
<td><strong>Fall III</strong></td>
<td><strong>Spring III</strong></td>
</tr>
<tr>
<td><strong>EDUC 7530 Dissertation Credits</strong> (3 credits)</td>
<td><strong>EDUC 7530 Dissertation Credits</strong></td>
<td><strong>EDUC 7530 Dissertation Credits</strong></td>
</tr>
<tr>
<td>EDUC 6003 RESIDENCY III* Dissertation Proposal</td>
<td></td>
<td>Dissertation Defense</td>
</tr>
</tbody>
</table>

*fee required*
Leadership in Schooling Ed.D. – Option: STEM Education
Course Descriptions

EDUC 6440  Foundations for Practitioner Scholars
This course will introduce students to seminal and recent work in the fields of philosophy, history, and psychology as they relate to education. Students will critically examine research and scholarly theory in these fields and their relationship to PK-12 practice.
3 credits

EDUC 6930  Organizational Learning
This course will introduce students to research and theory in the field of organizational learning and its application to PK-12 practice. Students will study the origins, evolution and contemporary findings of research in this field. Students will explore the practical implications of organizational learning for PK-12 leadership.
3 credits

EDUC 6910  Developing Inclusive School Contexts
This course will introduce students to theory and research about structural inequities, barriers to education, and promising practices for addressing these barriers. Students will examine theory and research and implications for practice in PK-12 leadership
3 credits

EDUC 6225 Education Reform in STEM Education
This blended course explores the ongoing efforts to improve the equity and quality of Science, Technology, Engineering, and Mathematics (STEM) education. By examining a series of STEM education reform efforts form the local, state, and national levels, students will gain a practical and theoretical understanding of both the historical role policy plays in education and its chronic shortcomings. Students will investigate an example of a local example of STEM reform and report on it to the class from a reform perspective. Finally, the educator's role in implementing effective reform in is considered
3 credits

EDUC 6226 Leadership and Research in STEM Education
Educators in this course will explore and analyze current research in STEM education, investigate how student performance data informs school and district program decision making, learn how to lead and empower teachers in the mapping of STEM curriculum across grade levels, and develop strategies to develop effective district-wide STEM professional development for K-12 educators.
3 credits

EDUC 6227 Foundations of Student Learning in STEM Fields
This course examines key crosscutting issues that enable STEM teachers to understand how knowledge is obtained and verified. During the course you will explore the theoretical foundations and research that would help you to better understand the nature of cognitive processes, the development of STEM reasoning abilities, and applications for teaching.
knowledge and skills leaders need to use data as a lever for improvement at scale, but on the
adaptive leadership skills required for meaningful systems change.

3 credits

EDUC 6960  Strategic Partnering with Families and Communities
This course will critically examine the variety of issues associated with partnering with parents,
families and community organizations. Through analysis of theory, research and collective
knowledge, doctoral students will learn how to strategically engage parents, families and
community organizations and recognize the different forms of engagement. This course will
emphasize collaborative strategies that “shares power” with key stakeholders in U.S. schools.

3 credits

EDUC 6911  Applied Research Design
This course is designed to provide PK-12 practitioners with an understanding of the principles of
research design and the ethical responsibilities of conducting a research study. Participants will
learn a broad range of research methodology approaches that can be applied to problems of
practice. Participants will become skilled at reading, evaluating, and judging the trustworthiness
of studies using different methodological approaches. They will design a practitioner-oriented
research study.

3 credits

EDUC 6921  Quantitative Data Analysis for Practitioner Leaders
The primary focus of this course is to prepare practitioner leaders to understand, interpret, and
analyze quantitative data as it relates to their identified problem of practice.

3 credits

EDUC 6931  Qualitative Data Analysis for Practitioner Leaders
This course will introduce practitioner leaders to the field of qualitative research and prepare
them with the skills, techniques and knowledge necessary to conduct qualitative investigation in
a practitioner-oriented research study.

3 credits

EDUC 6003  Leadership in Schooling: Residency
The residency is a required on-campus component of the Ed.D. in Leadership in Schooling.
Held during the summer, students spend several full days working with their student cohort and
selected faculty on program outcomes. Students establish study groups, conduct preliminary
work for the portfolio (for comprehensive exam I) and qualifying paper (for comprehensive
exam II), and participate in daily seminars. There is a fee associated with the residency.

3 credits

EDUC 6423  Program Evaluation
Evaluation tasks will be identified and the policy issues attendant to evaluation will be examined.
Students will identify and discuss several models of program evaluation, understand what needs to be
considered and addressed in needs assessment, learn to identify an appropriate design for a new
evaluation. Students will be expected to conduct program evaluation, present their ideas and illustrate
how evaluation results can be useful for program decision making.

3 credits
COMPREHENSIVE EXAM I – PORTFOLIO AND PORTFOLIO ORAL DEFENSE

The portfolio is intended to demonstrate readiness to move on to the development of a qualifying paper followed by the independent work of the dissertation. The portfolio is made up of four parts: the vision statement, the portfolio checklist, the artifact memos and the evidence binder. The portfolio defense is a formal presentation of the portfolio followed by questions from a faculty committee.

The vision statement. In an essay of 2000-words maximum, the student presents his/her vision for leadership in schooling, situating his/her views within the relevant seminal literature in the field of education:
- Social justice and equity
- Change and improvement
- Relationship of policy and practice
- Relationship of leadership and student learning

The portfolio checklist. Using the Leadership in Schooling Outcomes, the student will plot the major assignments she/he has completed for the courses he/she has taken, noting the outcome(s) for which each of the assignments stands as evidence. The student should be prepared to provide evidence and a rational for each item during the oral defense.

Leadership journey essay. In an essay of 2000 words maximum, the student will explain the intellectual journey she/he has forged during her/his time in the doctoral program explaining how he/she has evolved as an educational leader. The student will identify four artifacts that represent turning points in this leadership journey. Examples of artifacts are a paper written for a course, a publication, a written description of a K-12 curriculum the student developed, materials for a professional development initiative the student led, materials for an exercise in community advocacy/activism, materials related to an organizational change process in the student’s workplace, materials related to a conference presentation, etc.

Artifact memos. For each artifact you have selected, prepare an artifact memo. The artifact memo serves as a cover sheet for the artifact and provides the following information.
1. Name of artifact:
2. Approximate date(s) of its production:
3. Rationale for choosing artifact (50 words):
4. Explanation of context in and purpose for which it was produced (100 words):
5. Summary of the meaning of the artifact to your intellectual evolution consistent with what you have written in your scholarly process essay (100 words), including page number reference.

Research topic. The student will identify a practice-based problem that she/he plans to study and a researchable question pertinent to STEM education.

Defense: The student will formally present his/her portfolio in a defense. Both the written portfolio and the oral defense must be deemed as passing by at least three of four faculty members.
A student who does not successfully defend the portfolio defense the first time, may resubmit the portfolio and attempt a second defense. A second unsuccessful defense will result in termination of the student’s doctoral program.

**COMPREHENSIVE EXAM II-QUALIFYING PAPER**

The second comprehensive exam is a qualifying paper of approximately 25 pages, which demonstrates readiness to move on to the independent work of the dissertation. In the qualifying paper the student identifies a problem that is based on education practice in STEM education. The student describes the problem, the context for the program, and his/her rationale for studying this problem. The student presents a review of relevant scholarly research and describes the methodology that he/she will use to explore this problem. The student presents a review of relevant scholarly research and describes the methodology that he/she will use to explore this problem. The committee for comprehensive examination II is comprised of three faculty members, a minimum of two must be in STEM education and the third may be from Leadership in Schooling. Two of the three faculty members must deem the paper to have passed in order to continue to the dissertation phase.

A student who does not successfully pass Comprehensive Exam II the first time, may submit the paper a second time. A second unsuccessful defense will result in termination of the student’s doctoral program.

**DISSERTATION**

The student will submit and defend a dissertation consistent with Graduate School and Graduate School of Education policies.

**DISSERTATION COMMITTEE**

The dissertation committee is composed of three faculty members from the Graduate School of Education (GSE), a suitably credentialed fourth member from outside the college may also serve with the permission of the chair and approval of the dean. The dissertation chair is from the candidate’s major area of focus-STEM education. Exceptions to committee structures must be with the permission of chair and approval of dean.