

**AGENDA**  
For  
**UNIVERSITY GRADUATE COUNCIL**

Wednesday, Sept. 10, 2014

8:00 – 9:25 a.m.

SUB 235

Opening – 8:05 a.m.

Approval of Minutes – April 21, 2014

Announcements

- Welcome new members: Dr. Arthur Bangert from Education, Prof. Theo Lipfert from Arts & Architecture, and Dr. Randy Babbitt from Faculty Senate
- Thank you to Drs. William Ruff and Michael Reidy
- Curriculum Requests report, handout (Brown)
- Policy review on Graduate School website (Brown)
- New and Revised graduate forms, handout (Brown)
  - Program of Study
  - Report on Comprehensive Exam, Thesis/Dissertation
  - Graduate Representative template
  - Application to Graduate
  - Steps to Completion of Degree
- Coffee Talk on Tuesday, Sept. 9 and Wednesday, Oct. 29, handout (Brown)
- Annual Report (Hoo)
- Future Faculty Senate meeting: tentative 9/24/14 (Hoo)
- Celebrate Research (Hoo)
- University Council invitation (Dyer)

Old Business (Brown)

- Video Conference Policy – call for a vote
- Inactive students – policy proposal
- Review of Progress reports – set an effective date
- On 3/27/14 policy change was approved to limit P/F credits to 3 credits on doctoral programs of study – set an effective date

Policy Proposal (Cerretti)

- Consideration of 30 credits from master's towards doctoral, excluding thesis credits
- Doctoral course requirements beyond master's degree
- Exam-degree Completion
- Course age policy

Council Discussion

- Procedural review of processing course and program requests (Hoo)



The Graduate School  
(406) 994-4145 [www.montana.edu/gradschool](http://www.montana.edu/gradschool)

**Graduate Program of Study & Committee**

Date \_\_\_\_\_ Student ID \_\_\_\_\_

Last Name \_\_\_\_\_ First Name \_\_\_\_\_ Middle/Maiden \_\_\_\_\_ Phone Number \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

E-Mail: \_\_\_\_\_ Degree \_\_\_\_\_ Degree: \_\_\_\_\_ in \_\_\_\_\_ Degree Title \_\_\_\_\_

Please list all degrees you currently hold (include both undergraduate and graduate degrees):

Degree \_\_\_\_\_ Major \_\_\_\_\_ Institution \_\_\_\_\_ Date Conferred \_\_\_\_\_

Degree \_\_\_\_\_ Major \_\_\_\_\_ Institution \_\_\_\_\_ Date Conferred \_\_\_\_\_

**\*\*My signature is an acknowledgement of service on this committee and it certifies that the student's coursework on this Program of Study meets the minimum requirements for the degree at Montana State University. \*\***

**Graduate Committee Appointment: If the committee includes a co-chair, please indicate on line #2.**

1. \_\_\_\_\_  
Name (please print) (Chair) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_
2. \_\_\_\_\_  
Name (please print) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_
3. \_\_\_\_\_  
Name (please print) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_
4. \_\_\_\_\_  
Name (please print) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_
5. \_\_\_\_\_  
Name (please print) \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_
6. \_\_\_\_\_  
Name (please print) Graduate Representative \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_ E-Mail \_\_\_\_\_

Department Head \_\_\_\_\_ Date \_\_\_\_\_

The Graduate School \_\_\_\_\_ Date \_\_\_\_\_

Student Signature\* \_\_\_\_\_ Date \_\_\_\_\_

**\* Please note: a one-time \$50 processing fee will be charged to your student account upon approval of this form.**

Office Use Only:

Student Name/ID#: \_\_\_\_\_ Semester of Acceptance into Degree Program: \_\_\_\_\_

Indicate degree requirements by checking all that apply:

- Master's Qualifying Exam     Master's Comprehensive Exam     Master's Defense of Thesis  
 Doctoral Qualifying Exam     Doctoral Written Exam     Doctoral Oral Exam     Doctoral Defense of Dissertation

**4xx-Level Graded Coursework:** List all 4xx-level courses to be completed at MSU after admission to the degree program. Up to 9 credits at the 4xx-level are allowed on a graduate Program of Study. Prohibited courses included: 494/400, 492/470, 498/476, 588 and 589.

Office use

Rubric & Course #	Course Title	Instructor	Year	Number of credits each term			Grade
				F	S	Su	

**Subtotal Graded Coursework** \_\_\_\_\_

**5xx and 6xx-Level Graded Coursework:** List all 5xx and 6xx-level courses to be completed at MSU after admission to degree program. The total number of 5xx and 6xx-level course credits must be at least 2/3 of the total coursework, including Research Credits: 590, 690 or 575.

Office use

Rubric & Course #	Course Title	Instructor	Year	Number of credits each term			Grade
				F	S	Su	

**Subtotal Graded Coursework** \_\_\_\_\_

**Transfer/Non-Degree/Reserved Credits:** List all courses to be transferred from another institution, taken as a non-degree graduate or reserved as an undergraduate. A combined total of 9 credits with a grade of B or better may be applied.

Office use

T/N/R	Rubric & Course #	Course Title	Instructor	Year	Number of credits each term			Grade
					F	S	Su	

**Subtotal Graded Transfer Coursework** \_\_\_\_\_

Committee Chair's initials \_\_\_\_\_

Student Name/ID#: \_\_\_\_\_

**Research Credits:**

**Professional Paper/Project (575), Master's Thesis (590), Doctoral Dissertation (690), or Scholarly Paper/Project (675)**

Plan A: Thesis or Dissertation     Plan B: Professional Paper/Project

Rubric & Course #	Course Title	Instructor	Year	Number of credits each term			Office use
				F	S	Su	Grade

Subtotal Research Credits \_\_\_\_\_

**TOTAL CREDIT HOURS** \_\_\_\_\_

**List any courses required by the department that do not count towards degree requirements:**

Rubric & Course #	Course Title	Instructor	Year	Number of credits each Semester			Grade
				F	S	Su	

**Master's Degree credits to be considered toward the Doctoral Degree:** A maximum of 30 credits from the master's degree may be used. Thesis (590) and Professional Paper/Project Credits (575) cannot be considered/counted.

Rubric & Course #	Course Title	Instructor	Year	Number of credits each Semester			Office use
				F	S	Su	Grade

**Total Master's Degree credits to be considered toward the Doctoral Degree** \_\_\_\_\_

Committee Chair's initials \_\_\_\_\_



**\*\*Masters Students Only\*\***

Student ID \_\_\_\_\_

This report certifies that on:

\_\_\_\_\_ Date \_\_\_\_\_ Last name \_\_\_\_\_ First name \_\_\_\_\_ Middle name \_\_\_\_\_

Completed the following event:

- Qualifying Examination                      Passed       Failed
- Comprehensive Examination              Passed       Failed
- Defense of Thesis                              Passed       Failed

as prescribed and required for the degree of: \_\_\_\_\_

The Graduate School recommends all comments regarding the exam be *made in writing* to the student. This document is meant solely to inform The Graduate School of the pass or fail on the event noted. This form is not to be submitted by the student.

**Examining Committee Signatures**

*Approvals:*

*How did you attend?*

*Print Name*

*Signature*

**In Person**      **Video**

\_\_\_\_\_  
 Chair  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

N/A

*Dissenters (if any):* \_\_\_\_\_

\_\_\_\_\_  
**Department Head**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**The Graduate School**

\_\_\_\_\_  
**Date**



**\*\*Doctoral Students Only\*\***

Student ID \_\_\_\_\_

This report certifies that on:

\_\_\_\_\_ Date \_\_\_\_\_ Last name \_\_\_\_\_ First name \_\_\_\_\_ Middle name \_\_\_\_\_

Completed the following event:

- Qualifying Examination Passed  Failed
- Written Comprehensive Examination Passed  Failed
- Oral Comprehensive Examination Passed  Failed
- Defense of Dissertation (videoconferencing prohibited) Passed  Failed

as prescribed and required for the degree of: \_\_\_\_\_

The Graduate School recommends all comments regarding the exam be **made in writing** to the student. This document is meant solely to inform The Graduate School of the pass or fail on the event noted. This form is not to be submitted by the student.

**Examining Committee Signatures**

**Approvals:**

**How did you attend?**

*Print Name*

*Signature*

**In Person**    **Video**

Chair	_____	<input type="checkbox"/>	N/A
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
_____	_____	<input type="checkbox"/>	N/A

Graduate Representative

Signature

**Note:** The Graduate Representative must file a separate report to The Graduate School within one (1) week of the exam or defense.

**Dissenters (if any):** \_\_\_\_\_

Department Head

Date

The Graduate School

Date

## Steps to Completing a Master's Degree

Step	Procedure	Timeline
Admission	Discuss admissions with department of interest and apply online through The Graduate School ( <a href="http://www.montana.edu/gradschool">www.montana.edu/gradschool</a> ).	Per department deadlines.
Graduate Committee	Consult with department advisor or research chair to form committee.	To occur by the end of the 2nd term of registration.
Graduate Program of Study and Committee	Consult with Graduate Chair and Committee; submit form to The Graduate School ( <a href="http://www.montana.edu/gradschool/forms">www.montana.edu/gradschool/forms</a> ). An approved form results in a Grad Prog of Study Filing fee of \$50.	Must be submitted to The Graduate School before the end of the 2nd term of registration.
Qualifying Examination	If required by the department, consult with Graduate Chair and Committee to schedule.	The examination generally occurs during the 1st year of attendance.
Comprehensive Examination	Consult with Graduate Chair and Committee.	The examination usually occurs when at least 2/3rds of the required coursework has been completed.
Maintain Continuous Enrollment	Must be enrolled in 3 or more credits each term, excluding summer.	After passing any portion of the comprehensive examination (Plan A) or after completion of required coursework (Plan B).
Application to Graduate	Consult with Graduate Chair; submit form to The Graduate School ( <a href="http://www.montana.edu/gradschool/forms">www.montana.edu/gradschool/forms</a> ). Form processing results in a Graduate Student Audit fee of \$20 and a Graduation fee of \$30.	Must be submitted on or before the 3rd Friday of the intended term of graduation.
Defense of Thesis (Plan A)	Consult with Graduate Chair and Committee.	Must be passed at least 14 business days before the end of the intended term of graduation.
Approval of Thesis (Plan A)	Approval by the Graduate Dean and Graduate School Formatting Advisor. See submission procedures ( <a href="http://www.montana.edu/etd">www.montana.edu/etd</a> ).	Must be approved at least 14 business days before the end of the intended term of graduation.
Graduation Commencement	See Registrar's Office ( <a href="http://www.montana.edu/commencement">www.montana.edu/commencement</a> ).	December ceremony — summer and fall candidates May ceremony — spring candidates

This guide is general information for master's students. Reference your department's graduate handbook and The Graduate School policy for specific requirements and deadlines.



**The Graduate School**  
**9 /108 Montana Hall**  
**Office: (406) 994-4145**  
**Fax: (406) 994-4733**

**Website: [www.montana.edu/gradschool](http://www.montana.edu/gradschool)**  
**Email: [gradprogramofficer@montana.edu](mailto:gradprogramofficer@montana.edu)**

Revised 8/2014

## Steps to Completing a Doctoral Degree

Step	Procedure	Timeline
Admission	Discuss admissions with department of interest and apply online through The Graduate School ( <a href="http://www.montana.edu/gradschool">www.montana.edu/gradschool</a> ).	Per department deadlines.
Graduate Committee	Consult with department advisor or research chair to form committee.	To occur by the end of the 3rd term of registration.
Graduate Program of Study and Committee	Consult with Graduate Chair and Committee; submit form to The Graduate School ( <a href="http://www.montana.edu/gradschool/forms">www.montana.edu/gradschool/forms</a> ). An approved form results in a Grad Prog of Study Filing fee of \$50.	Must be submitted to The Graduate School before the end of the 3rd term of registration.
Qualifying Examination	Consult with Graduate Chair and Committee to schedule.	The examination generally occurs during the 1st year of attendance.
Comprehensive Examination	Consult with Graduate Chair and Committee.	The examination usually occurs when at least 2/3rds of the required coursework has been completed.
Maintain Continuous Enrollment	Must be enrolled in 3 or more credits each term, excluding summer.	After passing any portion of the comprehensive examination.
Application to Graduate	Consult with Graduate Chair; submit form to The Graduate School ( <a href="http://www.montana.edu/gradschool/forms">www.montana.edu/gradschool/forms</a> ). Form processing results in a Graduate Student Audit fee of \$20 and a Graduation fee of \$30.	Must be submitted on or before the 3rd Friday of the intended term of graduation.
Defense of Dissertation	Consult with Graduate Chair and Committee.	Must be passed at least 14 business days before the end of the intended term of graduation.
Approval of Dissertation	Approval by the Graduate Dean and Graduate School Formatting Advisor. See submission procedures ( <a href="http://www.montana.edu/etd">www.montana.edu/etd</a> ).	Must be approved at least 14 business days before the end of the intended term of graduation.
Graduation Commencement	See Registrar's Office ( <a href="http://www.montana.edu/commencement">www.montana.edu/commencement</a> ).	December ceremony — summer and fall candidates May ceremony — spring candidates

This guide is general information for doctoral students. Reference your department's graduate handbook and The Graduate School policy for specific requirements and deadlines.



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Revised 8/2014





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## Graduate Representative Report

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Date: \_\_\_\_\_

Name of Candidate: \_\_\_\_\_

Department: \_\_\_\_\_

College: \_\_\_\_\_

Name of Chair: \_\_\_\_\_

Names of Committee Members: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Type of Examination:     Oral Comprehensive     Written Comprehensive     Dissertation Defense

Public Format:     Yes     No

Mode of Presentation:     On Campus/Location \_\_\_\_\_

Video

Other \_\_\_\_\_

Presentation Format:     Slides

Whiteboard

Other \_\_\_\_\_

Duration of Presentation:    \_\_\_\_\_ hours

Comment on the level and degree of interaction between the candidate and the committee members:

Graduate Representative printed name: \_\_\_\_\_

Graduate Representative signature: \_\_\_\_\_

## **MASTERS and DOCTORAL**

### *Video Conferencing during the Comprehensive Exam and Thesis Defense*

The Graduate School requirements for videoconferencing are the following:

- The conference must be two-way with video.
- The student and/or department is responsible for initiating and implementing the conference process.
- The student and/or department are responsible for all costs incurred.
- If communication is broken during the examination and cannot be re-established, the examination must be terminated and rescheduled for completion at a later time/date.
- Two members of the committee, not including the Chair and Graduate Representative, are allowed to videoconference. The following exception to this allowance may be made due to the unique logistical issues for the College of Nursing's DNP Program:
  - The DNP student and committee members, including the Chair and Graduate Representative, must be visible via video camera to the entire committee, as well as be present at a College of Nursing campus (locations: Bozeman, Billings, Missoula, Kalispell, Great Falls). Neither the student nor any committee member is allowed to telephone into the conference.
- The following two items apply to the Masters and Doctoral Comprehensive Exams and a Masters Thesis Defense. They do not apply to a Doctoral Defense of the Dissertation:
  - The student and Chair may petition the Graduate School to allow more than two committee members including the Chair or Graduate Representative to participate via video conference. The petition must address why the stated requirement of allowing at most two committee members to participate via video conference cannot be accommodated.
  - If no committee member can be present with the student, then the Committee Chair is responsible for the integrity of the examination. This may include appointing a qualified proctor to be present at the student's location. The proctor must submit confirmation in writing via an email or letter to The Graduate School that s/he was present at the student's location for the entire examination.

Proposal to UGC

UGC Meeting Sept. 10, 2014

Topic: Inactive Student

<u>Policy</u>	<u>Remarks</u>
<p>Current: Our current system only inactivates a student once they have a) graduated, b) exceeded the number of terms allowed by continuous enrollment, or c) completed a university withdrawal.</p>	<p>We currently have no identifiers for a student who leaves prior to the enactment of continuous enrollment policy. This results in inaccurate data for enrollment and P&amp;T reports, and additional file management.</p>
<p>Proposed: After being absent for two (2) consecutive terms, not counting summer, the student's committee will be released. Students may reactivate their status by submitting an Intent to Register form and a new Graduate Program of Study &amp; Committee form.</p>	<p>Being able to identify inactive students early will enable the GS to a) improve the overall accuracy of enrollment and P&amp;T reports, b) identify committees that should be released, and c) identify graduate representatives whose service/time is not being utilized.</p> <p>Departments will be notified of all released committee members.</p>

Vote:

Effective Date:

Amendment:



The Graduate School  
(406) 994-4145 [www.montana.edu/gradschool](http://www.montana.edu/gradschool)  
**Review of Progress (Due at the end of every spring term)**

Student Name: \_\_\_\_\_  
Last Name First Name

Student ID Number: \_\_\_\_\_

Department: \_\_\_\_\_

- Masters ( Plan A  Plan B  Plan C)
- Doctoral ( Ed.D.  DNP  Ph.D.)

**Overall Progress**

- The student is making **satisfactory** progress.
- The student is making **unsatisfactory** progress for the following reasons:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

**Progress in the Scheduled Degree Requirements**

- The student has submitted a program of study term/year \_\_\_\_\_.
- DegreeWorks progress has been reviewed.
- Program of study has been reviewed and revised as needed.
- Qualifying Examination has been passed term/year \_\_\_\_\_.
- Oral Comprehensive Examination has been passed term/year \_\_\_\_\_.
- Written Comprehensive Examination has been passed term/year \_\_\_\_\_.
- Defense of thesis/dissertation scheduled term/year \_\_\_\_\_.

**Progress in Research**

- Manuscript in preparation
- Manuscript publications
- Studio in preparation
- Scholarly work
- Professional Paper/Project in preparation
- Oral presentation /poster session
- Conference attendance

**Comments:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_.

\_\_\_\_\_  
Committee Chair or Graduate Coordinator (*signature*)

\_\_\_\_\_  
Date

## **A Proposal to the Board of Regents of the Montana University System Requesting Approval to Initiate a Ph.D. Degree in Education Program**

### **1. Overview**

The purpose of this proposal is to establish a Ph.D. program in Education with three options in the areas of Adult and Higher Education, Educational Leadership, and Curriculum and Instruction. **The Ph.D. in Education is designed for graduate students seeking faculty positions in higher education or positions within research organizations that require educational research in highly specialized disciplines.** Specifically, this Ph.D. program will prepare students to develop knowledge and conduct research related to six (6) major areas of strength among our existing faculty: (1) Leadership and Policy Analysis (2) STEM Education, (3) the K-20 Trajectory, (4) Online and Distance Education Delivery, (5) Pedagogy and Teacher Preparation, and (6) Education Evaluation, Assessment, Research Design and Analysis. Special emphasis in these major research areas will address topics specific to Montana including working with rural communities and Native Americans on state and other educational issues. Graduates of this Ph.D. program in education will be well-positioned to directly and positively affect the data driven culture related to improving the educational systems of Montana and beyond. This program has been designed to align with Montana State University's strategic plan. The proposed Ph.D. in Education will advance the MSU Strategic Plan (2012) by contributing to the following main themes: Learning, Discovery, Engagement, Integration, and Access (see section 4, letter D below for specific details on the alignment).

### **2. Description**

The Department of Education, located in the College of Education, Health and Human Development (EHHD), is requesting approval to offer a Ph.D. in Education with three options: Adult and Higher Education, Educational Leadership, and Curriculum and Instruction. The proposed 64 credit-hour Ph.D. in Education program will be offered as terminal degree option for graduate students pursuing degrees in these three tracks. The Ph.D. in Education will provide graduate students with advanced statistical and research design theory coursework in addition to research apprenticeship experiences through interdisciplinary collaborations with other colleges and departments across campus. Additionally, these doctoral students will gain experience teaching in a variety of settings. The Educational Doctorate (Ed.D.), currently offered through the Department of Education, will be re-defined to include curricula designed to prepare effective practitioner-researchers in fields related to education.

### **3. Need**

#### **A. What specific need does this proposed doctoral program address?**

##### ***Responding to Changing Student Demographics and a Need for Their Educational Options.***

By offering a Ph.D. in Education, we are responding to the labor market professionalization and specialization that has taken place as the traditional college or university transforms to meet the needs of a more diverse student body and expectations of a changing public and countless stakeholders. Doctoral programs in education span the spectrum from practitioner-oriented

programs to those that emphasize theory and research. While some combination of theory and practice is desirable for the sake of breadth, targeted specialization is expected at the doctoral level. Students today want to be able to choose between an Ed.D. or Ph.D. program tailored to meet the market needs of their desired career.

***Responding to the Need for More Variety in Administration Training.***

Throughout most of the history of higher education, administrators rose from the ranks of faculty—often following a straight-line path from non-tenured faculty, to tenured faculty, to department chair, and then onto upper administrative and executive positions. Recently, a marked shift has occurred whereby many higher education professionals enter administration without holding faculty rank or department chair positions. This shift in who is being hired for higher education administration has occurred as the roles and duties of higher education administrators and executives have become more corporate, managerial, and based on outreach and fundraising (Bousquet & Nelson, 2008). There is a significant need to offer training to individuals aspiring to serve in education administration who have not ascended from the ranks of faculty.

***Responding to the Need for Faculty Members to Conduct Cutting Edge Research in Education.***

Education, including K-12 public education and higher education, are at an important crossroads. Organized groups such as the National Council on Teacher Quality (NCTQ), and PayScale.Com have published non-scientific, negative, and controversial reports on higher education's contribution to training teachers for K-12 public education. Many of these reports are based on small sample sizes, and data that are not valid and reliable. Policies are being promoted based on questionable research designs and statistical analyses, and for reasons other than the potential to improve student learning. Offering a research-based doctoral degree that educates leaders, teachers, and administrators to solve problems and develop data-based solutions in K-12 public education has never been more important. Given the increasing complexity of educational issues, the constant criticism of K-12 public education, and the need to develop scholars who can generate research projects that address educational issues, it is absolutely essential to train our next generation of scholars to conduct cutting edge research. If we train these scholars to conduct research, education will be improved, especially in underserved and impoverished communities. In summary, a “one-size-fits-all” approach is no longer appropriate, and departments of education need to offer both an Ed.D. and Ph.D. degree to respond to market needs (Baez, 2002).

Traditionally, Ed.D. and Ph.D. degrees are expected to have different foci and purposes. The Ed.D. is often designed for working educators and practitioners seeking administrative career paths. It focuses on the skill sets needed for effective educational leadership, management, and data analysis. The Ph.D. is meant to fit the traditional social science Ph.D. model and is often designed for individuals who seek an academic and research-oriented career path (Redden, 2010). Many argue that when only one degree is offered—especially that of the Ed.D.—the specialization focus of the degree becomes blurred. The Ed.D. is often seen as little more than a Ph.D.-lite, and it does not serve the “scholar-practitioner” students who truly seek a leadership route. Many of the students enrolled in Ed.D. programs do not aim to be researchers, yet their doctoral programs often treat them as such by offering experiences characteristic of Ph.D. programs, but without the sustained intensity of study needed by the Ph.D.. Similarly, if only a Ph.D. is offered, it may not adequately prepare students for leadership roles in higher education. It has been argued that offering a Ph.D. in the absence of a companion Ed.D. track, may lower the research foci and

training of a Ph.D. track. (Schulman, Golde, Bueschel & Garabedian, 2006). As Montana State University continues to function as a top Carnegie rated university, the doctoral program in education needs to evolve into two clearly defined routes, serving both the Ed.D. practitioner and the Ph.D. academic and research track.

According to the Carnegie Project on the Education Doctorate (CPED), the best practice to improve the Ed.D. and Ph.D. is to offer separate programs in Education leading to the Doctor of Education and the Doctor of Philosophy (Carnegie Project on the Education Doctorate, 2012). This is achieved by creating two different but equal high-quality programs. This approach is similar to the programmatic and pedagogical approach taken in the biomedical sciences that offer two degrees: the MD and the Ph.D. The recipients possess different but overlapping bodies of knowledge, view their professional practice through different lenses, and have been trained and assessed in ways specific to their intended professional commitments. Most importantly, education professionals are engaged in very different fields of practice; therefore, specialized education should be provided so students can learn to excel in specialized areas (Schulman et al., 2006). Table 1 summarizes differences between the Ed.D. and Ph.D. as established by the Carnegie Foundation (see Nelson & Coorough, 1994).

Table 1  
*Differences between Ph.D. and Ed.D Program Philosophy*

<b>Ed.D.</b>	<b>Ph.D.</b>
The Doctor of Education degree (Ed.D.) has traditionally been focused more on educational administration and scholarly practice.	The Doctor of Philosophy degree (Ph.D.) traditionally has been focused on research and scholarship.
Ed.D. programs typically offer more courses related to educational administration, policy studies, and applied knowledge and practice.	Ph.D. programs typically emphasize a more extensive and thorough study of theory, analysis, and research methodology.
Ed.D. students focus their dissertation research more narrowly on particular practices or policies that affect state or regional schools or school systems.	Ph.D. programs typically have more courses related to research. Students who pursue the Ph.D. in Education are more inclined to study national or international trends or large-scale practices and to engage in the production of new knowledge.
	Ph.D. dissertations generally contain more multivariate statistics, have wider generalizability, and focus more on certain areas of concentration.

*Notes.* Table Adapted from Carnegie Project on the Education Doctorate, 2012. About CPED. Retrieved from <http://cpedinitiative.org/about>.

**Currently there are no education Ph.D. degrees offered by any of the institutions of higher education in the state of Montana.** This Ph.D. program will serve to expand the scale, breadth and quality of doctoral education at Montana State University, and across the Montana University System. One of the strategic plan goals for Montana State University is to increase the graduate student population by 20 percent by 2019 (Montana State University's Strategic Plan, 2012,

retrieved March 20, 2014 from <http://www.montana.edu/strategicplan/>). New students enrolling in this Ph.D. program will help to accomplish this goal. The addition of this program will also support the university's goal of providing doctoral candidate apprentice researchers who can collaborate with faculty to increase research productivity in the form of publications and grants. Preparing Ph.D. level scientists will increase capacity to collaborate with other campus scientists in developing the educational and outreach components of funded projects such as those associated with the National Science Foundation (NSF). Establishing a Ph.D. in Education will elevate the research excellence and recognition of MSU faculty and help to improve MSU's rank among Carnegie Classified Research Universities.

### **B. How will students and any other affected constituencies be served by the proposed program?**

The economic climate and future growth potential for the state of Montana will be contingent, in part, on the development of a viable, sustainable workforce and the need for Ph.D. level individuals to drive the academic and administrative processes involved. The innovation required to create the desired workforce often comes from the rich, robust knowledge created by educational research, often initiated and conducted by Ph.D.'s in education. The cultural, geographic, economic and community variables of Montana are quite unique. Therefore, those who have been trained in Montana institutions will likely best understand these conditions, making a Ph.D. program in education vital. Ed.D. and Ph.D. graduates will serve the needs of employers in the state and greater Rocky Mountain Region who require individuals with advanced degrees who can solve educational problems.

MSU-Bozeman is the largest Teacher Education Program in Montana and the addition of the Ph.D. Program in Curriculum and Instruction as well as the Ph.D. programs in Adult and Higher Education and Educational Leadership will allow us to prepare highly skilled educators who can serve as researchers and professors of Teacher Education in the areas of K-12 Curriculum, English/Language Arts Education, Social Studies Education, and Science Education. It is our belief that our Ph.D. program in Education will elevate the status, effectiveness, and expertise of teacher education in Montana and help to strengthen the preparation of the next generation of new teachers.

Given the current implementation of the Common Core State Standards in English/Language Arts and Mathematics, the Next Generation Science Standards, and the Smarter Balanced Assessment program, the need has never been greater for MSU to prepare highly-skilled researchers and teacher educators who can collaborate with Montana's K-12 educators to develop data-based best practices for K-12 teaching and learning. Never before has preparation for increasing accountability been more important. In addition, new requirements set forth by our own teacher preparation accreditation board (the Council for the Accreditation of Educator Preparation or CAEP), will require departments to hire individuals trained to conduct research related to assessment. Our proposed Ph.D. programs in Adult and Higher Education, Educational Leadership, and Curriculum and Instruction will support these state-wide education reform efforts and provide enhanced opportunities to bridge the university/public education divide. A summary of benefits and needs addressed by the proposed PhD in Education program is presented in Table 2 below.



Table 2.  
*Need for A Ph.D. program in Education*

<p><b>Need:</b></p> <ul style="list-style-type: none"> <li>• Greater research connectivity across disciplines - more opportunity for interdisciplinary research</li> <li>• Preparing future scholars and researchers for higher education, supporting P-20 initiatives (including increasing accountability demands), &amp; research-based organizations</li> <li>• Need to conduct top quality research to address negative, non-scientific attacks on education</li> <li>• Need to train graduates to contribute to research examining the effectiveness of the Common Core, the new science standards, and the Smarter Balanced assessment (all of which are adopted by K-12 Montana schools)</li> <li>• Need to develop valid and reliable measures for CAEP accreditation of educator preparation programs</li> <li>• The only Education Ph.D program in the state</li> </ul>
<p><b>Strategic Plan Support:</b></p> <ul style="list-style-type: none"> <li>• Elevate the research excellence and recognition of MSU faculty</li> <li>• By 2019, MSU will improve its rank among Carnegie Classified Research Universities</li> <li>• Increase graduation rates at MSU</li> <li>• By 2019, the number of MSU education doctoral degrees awarded will increase from 3 to 12 per year</li> </ul>
<p><b>Ph.D. Options:</b></p> <ul style="list-style-type: none"> <li>• Curriculum and Instruction</li> <li>• Adult &amp; Higher Education</li> <li>• Educational Leadership</li> </ul>

***C. What is the anticipated demand for the program? How was this determined?***

Several surveys have been distributed to assess the need for adding a Ph.D. program. A 2013 poll of current Ed.D. students indicated that 80% of the students in Adult and Higher Education, 35% of the students in Curriculum and Instruction, and 15% of the students in Educational Leadership are interested in enrolling in a Ph.D. in Education degree program. Current inquiries about a Ph.D. program in all proposed track areas average 23-35 per semester, and we anticipate approximately 9 to 12 Ph.D. funded GTA/GRA positions per year.

**4. Institutional and System Fit**

***A. What is the connection between the proposed program and existing programs at the institution?***

Currently, the Department of Education offers an Educational Doctorate (Ed.D) in Adult and Higher Education, Curriculum and Instruction, and Educational Leadership. This advanced degree is for those who are primarily interested in pursuing administrative leadership in educational institutions or related organizations. The Ed.D curriculum emphasizes the development of thoughtful and reflective practitioners who can identify and solve complex problems in education. This program goal is accomplished through a curriculum that integrates research-based content, theory and practice. Students demonstrate their ability to operationalize these program elements through research-based, applied classroom and thesis projects. The emphasis is to produce graduates who can conduct well-designed research that can inform educational practice.

The Ph.D. in Education is designed to prepare professional researchers, scholars or scholar practitioners. A primary goal of this program is to produce graduates who develop competencies in educational scholarship and research that focuses on producing new knowledge. The Ph.D. curricula is investigative in nature with a greater emphasis on developing a deeper understanding of research methodologies. Special emphasis is placed on research design, statistical analysis, synthesis and scientific writing.

MSU has the faculty and institutional expertise to support the six focused research areas proposed by the Ph.D. in Education program. For example, institutes such as the Burton K. Wheeler Center, Jake Jabs Center for Entrepreneurship and The Institute of the Environment will provide outstanding opportunities for collaborative research efforts. Additionally, the Department of Education's Indian Leadership Education Development (ILEAD) program and the Center for Bilingual and Multicultural Education will provide further opportunities to support Ph.D. research. The synergy of these components will result in the establishment of a solid foundation for the expansion of interdisciplinary research across campus. Importantly, these efforts will foster the career development of graduate students and create a pipeline of new researchers with interest and expertise in important and contemporary educational issues across disciplines.

There are no existing programs at MSU that are similar to or in direct competition with this program. In addition, this program provides foundational coursework (e.g., research and statistics) for a potential Ph.D. program in Health and Human Development. A comparison of program features of the Ed.D. and Ph.D. degrees in Education is presented in Table 3.

Table 3

*Comparison of Proposed Ph.D. in Education Coursework to Current MSU Ed.D. Coursework*

<b>Ph.D.</b>	<b>Current Ed.D.</b>
Residency: Three terms of enrollment as a full time student*	Residency: None
Core Courses (13 Credits)	Core Courses (12 Credits)
Advanced Study to Options (15 hours)	Advanced Study to Options (15 hours)
Research Skills (12 credits)	Research Skills (9 – 12 credits)
EDCI 502 Statistics II	EDCI 502 Statistics II
EDCI 507 Qualitative Research Methods	EDCI 507 Qualitative Research Methods
EDU 607 Quantitative Research Methods	EDCI 607 Quantitative Research Methods
EDCI 608 Advanced Research	EDCI 608 Advanced Research
Advanced Research Skills (9 credits)	Advanced Research Skills
Minimum of 9 credits beyond basic credits	None
Internship	Internship
None	3-9 hours (optional based on previous experience) internship or practice based courses.
Dissertation (15 hours)	Dissertation (11-15 hours)

Note. Terms are defined as fall, spring or summer

***B. Will approval of the proposed program require changes to any existing programs at the institution?***

The ***content courses*** for Adult & Higher Education, Educational Leadership, and Curriculum and Instruction options will not change drastically. For example, the Curriculum and Instruction Ed.D and PhD will emphasize discipline-specific specializations through existing coursework. Additional statistics and research courses, along with research apprenticeships, will be required of the Ph.D. graduates. The Ed.D. program will be redefined to include the following:

- more focus on scholarly practice, leadership and administrative roles
- more courses related to policy of practice
- dissertation research focused on particular practices or policies that affect state or regional schools or institutions of higher education (see Tables 1 and 2)

The Ph.D. in Education program will prepare students to develop knowledge and conduct research related to six (6) major areas of strength among our existing faculty: (1) Leadership and Policy Analysis (2) STEM Education, (3) the K-20 Trajectory, (4) Online and Distance Education Delivery, (5) Pedagogy and Teacher Preparation, and (6) Education Evaluation, Assessment, Research Design and Analysis. Tables 4, 5 and 6 present the Department of Education Faculty profiles and provide evidence that they are well positioned to support PhD candidates in the six areas of expertise that the PhD in Education program will emphasize.

Table 4

*Curriculum and Instruction Faculty*

Curriculum & Instruction Faculty	Degree	Academic Rank	University	Area of Expertise		
				Scholarship	Teaching	Specialized Disciplines
Michael Brody	PhD	Associate Professor	Cornell	Science Teaching and Learning in Formal and Informal Settings, Environmental Education Assessment, Curriculum Development	Science Teaching and Learning in Formal and Informal Settings, Environmental Education, Assessment, Curriculum Development	STEM Education, Educational Evaluation, Assessment, Research Design and Analysis.
Jioanna Carjuzaa	Ph.D.	Associate Professor	University of Colorado-Boulder	Multicultural Education	Culturally Responsive Pedagogy, Indian Education for All, Linguistic Diversity	Pedagogy & Teacher Preparation
Jayne Downey	Ph.D.	Associate Professor	University of Northern Colorado	Educational Neuroscience, Teaching & Learning, Advanced Pedagogy, Mentoring & Induction	At-Risk Students, Rural Education, Educational Resilience Pre-service Teacher Preparation	Pedagogy & Teacher Preparation, STEM Education, Educational Evaluation, Assessment, Research Design and Analysis.
Ann Ellsworth	Ph.D	Professor	University of Wisconsin-Madison	Literacy Acquisition and Development/English Language Arts	Literacy pedagogy, literacy across the curriculum	Pedagogy & Teacher Preparation
Ann Ewbank	Ph.D.	Assistant Professor	Arizona State University, College of Education	Library Science Action Research, Mixed Methods Qualitative Research Children's/YA Lit Intro to Doc Studies Technology Integration	Library Science Advocacy/Policy Action Research Technology Integration	Pedagogy & Teacher Preparation, Online and Distance Education Delivery

Table 4 (continued)

Curriculum & Instruction Faculty	Degree	Academic Rank	University	Area of Expertise		
				Scholarship	Teaching	Specialized Discipline
Joyce Herbeck	Ed.D.	Associate Professor	University of Maine	Children's Literature and Young Adult Literature	Critical Literacy and Social Justice Issues in Children's Literature	Pedagogy & Teacher Preparation
Gilbert Kalonde	Ph.D.	Assistant Professor	Southern Illinois University-Carbondale	C & I & Tech. Ed.	Technology for inclusiveness in Teacher Educ.	STEM Education, Pedagogy & Teacher Preparation, Educational Evaluation, Assessment, Research Design and Analysis
Lynn Kelting-Gibson	Ed.D.	Assistant Professor	Montana State University	Classroom Assessment, Teaching Strategies, Curriculum Development	Classroom Assessment, Teacher Authenticity, Historical Curriculum	Pedagogy & Teacher Preparation, Educational Evaluation, Assessment, Research Design and Analysis.
Mary Leonard	Ph.D.	Associate Professor	University of Wisconsin-Madison	Science Education, STEM Education, Educational Psychology, Research Methodologies and Methods, The Learning Sciences/Learning Theories	Conceptual change in science education, Learning and teaching in integrated STEM contexts, Design research, Video sources in research, Model-based inquiry in STEM education	Pedagogy & Teacher Preparation, STEM Education
Priscilla Lund	Ph.D.	Associate Professor	The University of Iowa	Art Education	The relationship between the Arts and STEM education	Pedagogy & Teacher Preparation

Table 4 (continued)

Curriculum & Instruction Faculty	Degree	Academic Rank	University	Area of Expertise		
				Scholarship	Teaching	Specialized Disciplines
Fenqjen Luo	Ph.D.	Assistant Professor	University of Texas at Austin	Math Education	Mathematical thinking and reasoning	Pedagogy & Teacher Preparation, STEM
Nicholas Lux	Ed.D.	Assistant Professor	Boston University	Educational media and technology teaching and research	Mixed-methods research	Pedagogy & Teacher Preparation, Online and Distance Education Delivery, STEM Education
Sarah Schmitt-Wilson	Ph.D.	Teaching Professor	University of Northern Colorado	Educational Psychology, Research Methods, Statistics	Career development of children, adolescents, and young adults from rural communities	Pedagogy & Teacher Preparation, Educational Evaluation, Assessment, Research Design and Analysis
Christine Rogers-Stanton	Ph.D.	Assistant Professor	University of Wyoming	Curriculum & Instruction core & elective coursework, Literacy education, Indigenous education, Social Justice education	Advanced coursework and experience in quantitative and qualitative methodologies, Expertise in critical qualitative/indigenous methodologies, participatory community based research	Pedagogy & Teacher Preparation, Educational Evaluation, Assessment, Research Design and Analysis
Elisabeth Swanwson	Ph.D.	Professor	University of Georgia	Science Education Methods, qualitative research methods	Professional development for higher education faculty and K-12 teachers in STEM disciplines	STEM Education, Online and Distance Educational Delivery

Table 5

*Educational Leadership Faculty*

Educational Leadership Faculty	Degree	Academic Rank	University	Area of Expertise		
				Scholarship	Teaching	Specialized Discipline
Art Bangert	Ed.D.	Associate Professor	University of South Dakota	Educational Statistics, Quantitative Research Methods	Instrument Development, Assessment of Online Learning, Student Evaluations of Online Learning,	Education Evaluation, Assessment, Research Design, and Analysis, Online and Distance Education Delivery
David Henderson	Ed.D.	Assistant Professor	The University of Montana	Ed Leadership Masters: Foundations of Leadership, School Law, Schools and Diverse Communities; EdD: Leadership and Organizational Theory, Leading Social Justice	Research into leader identity and integrity resulting in authentic leadership; social justice in leadership; Indigenous identity and leader authenticity; facilitator for Parker Palmer's Circles of Trust	Leadership and Policy Analysis, Pedagogy and Teacher Preparation
William Ruff	Ed.D.	Associate Professor	Arizona State University	Educational Leadership	Qualitative and Indigenous research Methods, organizational leadership theory	Leadership and Policy Analysis, Education Evaluation, Assessment, Research Design, and Analysis,
Tena Versland	Ed.D.	Assistant Professor	Montana State University	Instructional Leadership; School Improvement; Teacher Evaluation	Montana State University	Leadership and Policy Analysis, Education Evaluation, Assessment, Research Design, and Analysis,

Table 6

*Adult and Higher Education Faculty*

Adult and Higher Education Faculty	Degree	Academic Rank	University	Area of Expertise		
				Scholarship	Teaching	Specialized Disciplines
Carrie Myers	Ph.D.	Associate Professor	Washington State University	Coursework in Adult & Higher Education disciplines, Honorable mention President's excellence in Teaching (2010)	Research foci: (1) faculty issues and institutional context; (2) k20 educational trajectory and higher education outcomes; (3) STEM issues and educational trajectory (4) program evaluation and assessment.,	Leadership and Policy Analysis, K-20 Trajectory, Education Evaluation, Assessment, Research Design, and Analysis, STEM Education
Tricia Seifert	Ph.D.	Assistant Professor	University of Iowa	Quantitative research design and methodology, survey methodology, mixed methodology, coursework in Adult and Higher education disciplines	Effect of experiences and environments on student learning, development and success; the relationship between postsecondary organizational structure and culture with student success; students' educational expectations and transition to postsecondary	Leadership and Policy Analysis, K-20 Trajectory, Education Evaluation, Assessment, Research Design, and Analysis, STEM Education
Sweeny Windchief	Ed.D.	Assistant Professor	University of Utah	Critical Race Theory/Institutional Research/College Student Development/Law and Policy in Higher Education	Indigenous Methodologies in Research/Indigenous Identity/Tribal Colleges/Critical Policy Analysis	Leadership and Policy Analysis, K-20 Trajectory, Education Evaluation, Assessment, Research Design, and Analysis, STEM Education



***C. Describe what differentiates this program from other, closely related programs at the institution.***

Students who wish to pursue an Ed.D. will be prepared for positions as educational practitioners. The Ph.D. program in Education is intended to prepare candidates to be higher education faculty and advanced researchers. Table 7 provides specific information about how the Ed.D. program in education is differentiated from the Ph.D. program in education.

Table 7  
*Comparison of Ed.D. and Ph.D. Programs*

	<b>Ed.D.</b>	<b>Ph.D.</b>
<b>Primary Career Intention</b>	Administrative leadership in educational institutions or related organizations	Scholarly practice, research, and/or teaching at university, college, institute or educational agency
<b>Degree Objective</b>	Preparation of professional leaders competent in identifying and solving practical and applied problems in education. Emphasis is on developing thoughtful and reflective practitioners	Preparation of professional researchers, scholars, or scholar practitioners competent in identifying and solving complex, multi-faceted problems. Develops competencies in educational scholarship and research that focuses on acquiring new knowledge
<b>Time to Degree</b>	Part-Time Study (5-8 years)	Full-Time Study (4-5 years)
<b>Knowledge Base</b>	Develops and applies knowledge for practice. Research-based content themes and theory are integrated with practice with emphasis on application of knowledge base	Fosters theoretical and conceptual knowledge. Content is investigative in nature with an emphasis on understanding the relationships to leadership practice and policy
<b>Research Methods</b>	Develops an overview and understanding of research including data collection skills for action research, program measurement, and program evaluation; applied research focus asking practical questions	Courses develop an understanding of inquiry, and qualitative and quantitative analysis and research. Develops competencies in educational research design, analysis, synthesis, and writing; theory-driven research questions
<b>Comprehensive Knowledge Assessment</b>	Knowledge and practice portfolios provide evidence of ability to improve practice	Written and oral assessments are used to understand theoretical and conceptual knowledge in the field
<b>Applicant Qualifications</b>	Masters degree in related field with strong academic record + 3 years successful experience in education	Masters degree in related field with strong academic record and potential for scholarly writing and inquiry; research interests compatible with Ed.D faculty
<b>Capstone</b>	Well-designed applied research of value for informing educational practice	Original research illustrating a mastery of competing theories with the clear goal of informing disciplinary knowledge
<b>Capstone Committee</b>	Committee includes at least one practicing professional in an area of relevance to the candidate's program	Composed primarily of active researchers in areas relevant to students' areas of interests

*Note.* Young, M.D. (2006). UCEA Review. XLV (2), Summer and Aiken, J.A., & Gerstl-Pepin, C. (2013). Envisioning the Ed.D. and Ph.D. as a partnership for change. *Planning and Changing*, 44(3/4), 168-169.

***D. How does the proposed program serve to advance the strategic goals of the institution?***

The proposed Ph.D. in Education with options in Adult and Higher Education, Educational Leadership, and Curriculum and Instruction addresses several MSU Strategy Plan Goals outlined here (Montana State University's Strategic Plan, 2012, retrieved March 20, 2014 from <http://www.montana.edu/strategicplan/>).

MSU Learning: *Goal - MSU prepares students to graduate equipped for careers and further education.*

- The Ph.D. program will have a strong research component that requires significant coursework in statistics and research methods, as well as publication and presentation at national conferences. (Reflective of MSU Metric L.2.2)

MSU Discovery: *Goal – MSU will raise its national and international prominence in research, creativity, innovation and scholarly achievement, and thereby fortify the university' standing as one of the nation's leading public research universities.*

- New student enrollment in the Ph.D. program will contribute to the increase in total graduate student population, doctoral student enrollment, and the number of graduate degrees conferred. (Reflective of MSU Metric D.1.3, D.3.1, D.3.2, D.3.3)
- Graduate students in these programs will be required and supported academically to present scholarly projects at regional and national conferences and will be strongly encouraged to publish their work. (Reflective of MSU Metric D.3.4)
- The Ph.D. in Education will strengthen MSU's position among our peers as a Carnegie Very High Research Activity University.
- Montana State University was recently accepted into the Carnegie Project for the Education Doctorate (CPED), a distinction bestowed upon only approximately 60 other Research-oriented universities in the country. This project is designed to assist universities develop cutting-edge curricula that is aligned with the needs of a rapidly changing educational climate; in addition, CPED provides guidance to help universities ensure that their Ph.D. is distinctly different from the Ed.D.
- Education faculty members are productive mentors of graduate students. Over the past 5 years, MSU Department of Education Faculty have graduated 35 students with Ed.D. degrees and have written grant proposals generating over 5 million dollars; throughout the past 4 years, they have co-authored 17 national/international presentations and 16 peer-reviewed publications with graduate students. Based on FY 2014, the Department of Education faculty submitted 12 grants totaling **\$2,483,292** with current total awards from eight funded grants of **\$1,821,743**. The Department of Education faculty have a 58% success rate for obtaining external funding.

MSU Engagement: *Goal – Members of the Montana State University community will be leaders, scholars and engaged citizens of their local, national, and global communities, working together with community partners to exchange and apply knowledge and resources to improve the human prospect.*

- Opportunities will be provided for MSU staff, faculty, and students to participate in a research focused educational experience, and in leadership development specific to educational settings. (Reflective of MSU Metrics E.3.1, E.3.2)

- Education Ph.D. students will be educated as leaders and will assume leadership roles and responsibilities within the institution and in educational, environmental, and public organizations across the state and country. (Reflective of MSU Metrics E.3.1, E.3.2)

**MSU Integration:** *Goal - By integrating learning, discovery and engagement, and by working across disciplines, the MSU community will improve the world.*

- Research projects in the Ph.D. program will integrate STEM disciplinary areas, facilitate partnerships with Montana's K-12 schools, and facilitate community-based research designed to improve education in Montana and beyond. (Reflective of MSU Metric I.1.1)
- Graduate students in these programs will be required and supported academically to present scholarly projects at regional and national conferences and will be strongly encouraged to publish their work in collaboration with faculty. (Reflective of MSU Metric I.1.4)
- The interdisciplinary nature of the Ph.D. will ensure that research and creative projects cross college and departmental boundaries. (Reflective of MSU Metric I.2.2)

**MSU Access:** *Goal – Montana State University is committed to widening access to higher education and ensuring equality of opportunity of all.*

- The essence of the proposed program is to provide an accessible academic pathway to graduate education for practicing administrators, educators, and educational researchers in the state of Montana and across the nation. (Reflective of Metrics A.1.3, A.1.4, A.1.7)

***E. Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs; and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation***

Although the University of Montana offers an Ed.D., there are no Ph.D. programs in Education across the MUS system. In addition, MSU currently offers the only terminal degree (Ed.D.) in the state in Adult and Higher Education. This proposal is the first in Montana seeking to establish a Ph.D. in with options in Adult and Higher Education, Educational Leadership, and Curriculum and Instruction. We would welcome partnering with other institutions, but no other institutions have put forth a similar proposal. As the largest producer of K-12 teachers in the state, and a very large producer of graduate students at MSU and within Montana, it is logical that we are the first to request the development of this Ph.D. program.

## **5. Program Details**

***A. Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications. NOTE: In the case of two-year degree programs and certificates of applied science, the curriculum should include enough detail to determine if the characteristics set out in Regents' Policy 301.12 have been met.***

The proposed curricula of the Ph.D. options of Adult and Higher Education, Educational Leadership, and Curriculum and Instruction meet several anticipated needs as outlined in Figure 1.

Figure 1.  
Ph.D. in Education program outline.

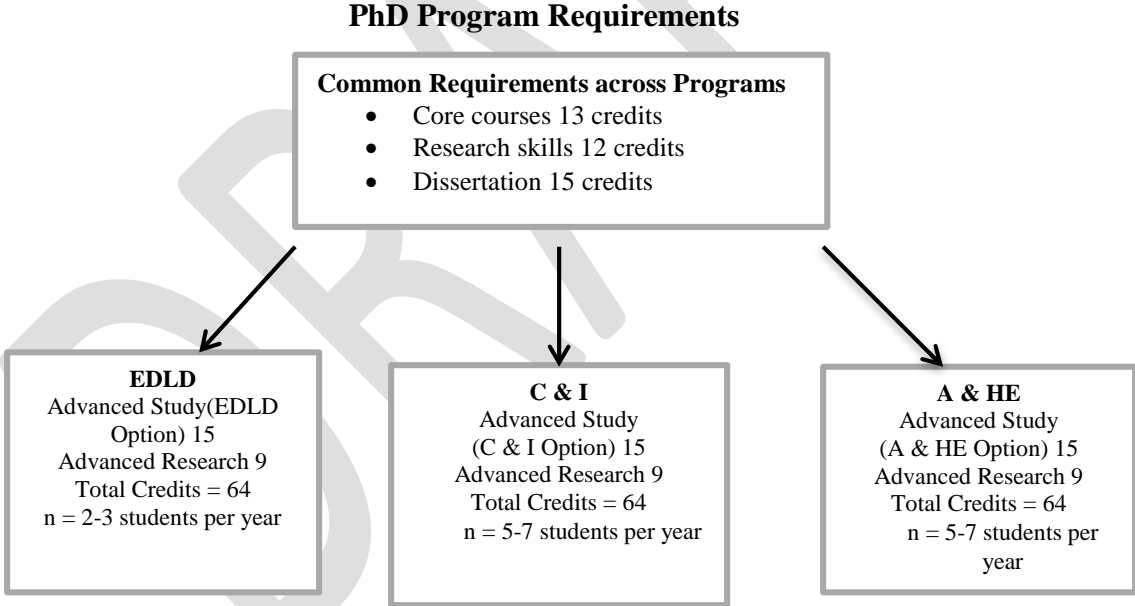
**Justification for Ph.D. Education**

**Need:**

- Greater research connectivity across disciplines- more opportunity for interdisciplinary research
- Preparing future scholars and researchers for higher education, research-based organization
- Need to conduct top quality research to address negative, non-scientific attacks on education
- Need to train graduates to conduct research examining the effectiveness of the Common Core, the new science standards, and the Smarter Balanced assessment (all of which are adopted by K-12 Montana schools)
- Need to develop valid and reliable measures for CAEP accreditation of educator preparation programs and assess the impact of teacher preparation programs on teacher/administrator success
- Only Ph.D. in Education program in the state

**Strategic Plan Support:**

- Elevate the research excellence and recognition of MSU faculty
  - By 2019, MSU will improve its rank among Carnegie Classified Research Universities
- Increase graduation rates at MSU
  - By 2019, the number of doctoral degrees awarded will increase from 3 to 12 per year



Ph.D. candidates must have 64 total credit hours beyond the bachelor’s degree. Thirty (30) credits may be transferred to the program from MSU or another program, upon approval by the department. The common requirements across the areas of Ph.D. study include 13 Core credits, 15 Specialization credits, 21 Research credits and 15 Dissertation credits for a total of 64 credits for the Ph.D. degree. These courses are outlined in Table 8 below. A large majority (over 85%) of proposed Ph.D. and Ed.D. curriculum core and research courses currently exist. A list of courses available for the Adult and Higher Education specializing in higher education administration or academics is provided in Appendix A. In addition, the Curriculum and Instruction program will collaborate with other MSU colleges to offer specializations in areas such as Curriculum Design, English/Language Arts, Social Studies Education, and Science Education (See Appendix B).

The anticipated number of new students admitted per year varies among the program areas, with Educational Leadership expecting 1-2 new Ph.D. students, Adult and Higher Education expecting 5-7 and Curriculum and Instruction expecting 2-3 new Ph.D. students. Each student from the program will request a major professor, matched based on research interests expressed. The major

Table 8

*Ph.D. in Education Coursework*

<b>Core (13 Credits)</b>		
<b>Choose 3 Courses (9 credits)</b>		
EDLD 505 History and Philosophy of Higher Education		
EDLD 643 Leading Social Justice		
EDLD 610 Educational Leadership and Organization Theory		
EDLD 530 College Teaching		
EDCI 508 Advanced Ed Psychology		
<b>Required Courses (4 credits)</b>		
EDCI 594 Dissertation Seminar (1cr)		
EDLD 6XX Doctoral Seminar		
<b>Options (15 Credits)</b>		
<b>Adult &amp; Higher Education (15cr)</b>	<b>Educational Leadership (15cr)</b>	<b>Curriculum &amp; Instruction (15cr)</b>
EDU 505 History/Philosophy HE	EDLD 620 School Supt.	Electives appropriate to area of specialization (Curriculum Design; English Language Arts Education; Social Studies Education; Science Education) & approved by Graduate Advisor See Appendix B
EDLD 510 Org/Admin of HE	EDLD 630 Adv. Inst. Leadership	
EDLD 528 College Students	EDLD 645 Personnel Mgmt	
EDLD 537 Institutional Research/Assessment	EDLD 650 Adv. Montana Finance/Facilities	
Electives appropriate to area of specialization (Academics or Administration) & approved by Graduate Advisor See Appendix A	EDLD 655 Adv. Montana Law/Policy	
	EDLD 657 Educational Policy/Politics	
	EDLD 6XX Ethical Leadership	
	EDLD 6XX School Systems, School Improvement Research	
<b>Research (21 Credits)</b>		
<b>Required (12 credits)</b>		
EDCI 502 Statistics II		
EDCI 607 Qualitative Research Methods		
EDCI 507 Quantitative Research Method		
EDCI 608 Advanced Research		
<b>Adult &amp; Higher Education (9cr)</b>	<b>Educational Leadership (9cr)</b>	<b>Curriculum &amp; Instruction (9cr)</b>
EDU 6XX Adv. Qualitative Research	EDU 6XX Adv. Qualitative Research	EDU 6XX Adv Qualitative Research
EDU 6XX Adv. Quantitative Research	EDU 6XX Adv. Quantitative Research	EDU 6XX Adv Quantitative Research
Choose From:	Choose From:	Choose From:
EDU 513 Critical Race Theory	EDCI 513 Critical Race Theory	EDCI 513 Critical Race Theory
EDLD 580 Indigenous Res Methods	EDLD 580 Indigenous Res Methods	EDLD 580 Indigenous Res Methods
EDLD 537 Institutional Research/Assessment	EDLD 537 Institutional Research/Assessment	EDLD 537 Institutional Research/Assessment
EDLD 511 Program Plan/Assessment	EDLD 511 Program Plan/Assessment	EDLD 511 Program Plan/Assessment
EDU 6XX Ed Measurement	EDU 6XX Ed Measurement	EDU 6XX Ed Measurement
<b>Dissertation (15 Credits)</b>		
<b>Total: 64</b>		

professor is responsible for guiding the student through the process of writing and defending a written and oral dissertation and a comprehensive examination. Committees, assigned to help the

major professor, should consist of three additional faculty members from Education, and one external committee member for a total of five committee members (4 internal and 1 external).

***B. Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.***

Table 9 presents the admissions requirements for the Ph.D. in Education.

Table 9  
*Admissions Requirements*

<b>Ph.D.</b>
GRE (Verbal 155, Quantitative 150)
Letter or statement of purpose
Current resume/vita
Three years education-related experience
Three letters of recommendation - one must be from an academic with university affiliation
Masters Degree
Official Transcripts
Personal interview (program specific)
International Students Language Requirement: <b>TOEFL</b> (International Applicants only) Applicants who are not U.S. citizens and not from countries where English is the official language are required to take the Test of English as a Foreign Language and score a minimum 213 (paper version - 550, 80 for the iBT). This requirement is waived if the applicant has earned an undergraduate or graduate degree from an institution in the U.S.

**6. Resources**

***Adjustments to Current Faculty Workloads and Proposed Faculty Lines to Accompany New Program***

The Ph.D. in Education will be developed with existing tenure-track faculty (22 FTE) and 10 full time GTA/GRAs. As the number of Ph.D. students increases, adjustment will be made to faculty workloads and course rotations, and GTA/GRA positions will be shifted from Ed.D. to Ph.D students with a goal of supporting more full time Ph.D. students.

To determine faculty workload adjustments and proposed faculty lines needed to support the proposed Ph.D.'s, several factors were considered. First, the number of current faculty members engaged in graduate responsibilities was examined. Second, the estimated number of graduate degrees per year was generated.

Table 10 presents projected graduate degrees generated year five years after this program is implemented. Currently, our program graduates an average of 3 Education doctoral students per year. At full Ph.D. and Ed.D. program implementation, assuming the continuation of our current 80% completion rate and the shift in students from part-time to full-time, we anticipate graduating approximately 12 doctoral students per year. Consideration was also given to the anticipated number of Ed.D. students in each of the tracks because many of the same faculty will be teaching and advising both Ph.D. and Ed.D. students concurrently.

Table 10

*Estimated Graduate Degrees Generated Per Year After Full Program Implementation (after five years)*

	Curriculum & Instruction	Adult and Higher Education	Educational Leadership	Total
Ed.D.	2	2	2	6
Ph.D.	3	5	1	9
Total	5	7	3	15

There are currently 22 (FTE) Department of Education faculty available to support students enrolled in the both the Ph.D. and Ed.D programs (see Tables 4, 5, & 6). We currently have 112 active doctoral students. We anticipate adding 15 Ph.D. (10) and Ed.D (5) students per year. Research by Hackman & McCarthy (2011) indicates that nationally, graduate faculty advise, on average, five doctoral students during the dissertation stage of their programs of study, which typically takes 1-2 years. Based on our projections, the average doctoral advisee load is estimated to be approximately 5 students per faculty member (112/22). This advising load according to Hackman & McCarthy’s figures is similar to the average faculty doctoral advising loads nationally.

**Program Costs**

Table 12 below presents a summary of the total costs associated with the addition of this Ph.D. Using 5-year doctoral student enrollment projections from Table 10, we anticipate shifting our current/existing funding for 10 GTA/GRAs from Ed.D. students to Ph.D. students. We currently have resources budgeted to support 15 GTA/GRAs. We plan to shift 10 Ed.D. GRA/GTA slots to Ph.D. GRA/GTAs with the remaining 5 slots allocated to Ed.D. students . Ultimately, we will continue to fund 15 doctoral students, 10 of whom will be Ph.D. students, and 5 of whom will be Ed.D. students. We will ask the additional students enrolled in the Ed.D. program to pay their own tuition. **There are no additional budgetary implications for this proposal.**

**B. Are other additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.**

**Research Commons**

Additional resources are being requested to establish a Research Commons to support faculty and graduate student research. The Research Commons infrastructure will be comprised of the following six research cores: (1) Leadership and Policy Analysis (2) STEM Education, (3) the K-20 Trajectory, (4) Online and Distance Education Delivery, (5) Pedagogy and Teacher Preparation, and (6) Education Evaluation, Assessment, Research Design and Analysis. These research cores combine the three Ph.D. graduate concentrations by targeting topics that overlap among the programs creating a more unified Ph.D. in Education (see Table 11) The Research Commons will enable us to recruit and support faculty and graduate students, create a network of

interdisciplinary researchers to collaborate and support one another, ensure quality of dissertation and research products, and increase efficiency of support by pooling resources across the three Ph.D. areas of concentration. The synergy of these components will result in the establishment of a solid foundation for the expansion of interdisciplinary research across campus. Importantly, these efforts will foster the career development of graduate students and create a pipeline of new researchers with interest and expertise in important and contemporary educational issues across disciplines.

This Research Commons will foster the development of both faculty and graduate student researchers so that funding and infrastructure resources are available at the critical juncture in these researchers' careers when they most need resources and guidance in their development as independent researchers. With this infrastructure in place, we will be poised to expand and strengthen the Research Commons to establish a scalable and sustainable research enterprise for MSU.

In addition to supporting student and faculty research efforts, the Research Commons will be designed to provide support for academic writing and professional development for online and distance delivery for core faculty. The Department of Education will collaborate with its library liaison to ensure that journals and other resources are available to support the Research Commons efforts. We propose that faculty will rotate in and out of the Research Commons as part of their workload assignment to support the dissertation process (e.g., guide research design, statistical analysis and technical writing). In addition, we propose that the Research Commons will have a .5 FTE Project Development and Grant Specialist to coordinate student and faculty research efforts and to seek access to internal and external resources to fund the Research Commons enterprise. The .5 FTE Project Development and Grant Specialist for the Research Commons would be funded from current Department of Education resources, the Dean of the College of Education, Health and Human Development, potential partnerships with the other MSU colleges/departments and possible future indirect grant funds.

The responsibilities of the Project Development and Grant Specialist would include:

1. Seek grant funding for designated research areas and support the faculty and Ph.D. GRAs in writing grant proposals.
2. Provide instruction, consultation, and support for faculty and doctoral students regarding cutting-edge research design, data analyses, academic writing, publication, and professional development in educational research and
3. Serve as a resource to Montana's K-12 community and Office of Public Instruction for analyses and interpretation of student achievement data that would be meaningful/usable to the state, the schools, and the public. For example, the topics OPI is most interested in studying are: a) comparing full time kindergarten to regular kindergarten; b) examining how IEFA is being used and how effective it is; c) the impacts of the 4 day school week; d) which instructional interventions increase achievement for students with Limited English Proficiency



Table 11

*Summary of Research Commons Core Features*

<b>Core Research Commons Areas</b>
Leadership and Policy Analysis
STEM and Teacher Education
The K-20 Trajectory
Online and Distance Delivery
Pedagogy and Teacher Preparation
Evaluation, Assessment, Research Design and Analysis

The Project Development and Grant Specialist for the Research Commons would be funded from resources across campus that would benefit from partnerships with the Department of Education and from extramural funding. Costs for the Research Commons are presented in Table 12. The salary for the .5 FTE Project Development and Grant Specialist would be \$27,000 per year plus 30% for benefits totaling \$35,100. This salary cost is covered by facilities and administrative costs from existing grants. In addition, the Research Commons will use one faculty member per semester to support the six research areas. Two faculty, one per semester housed in the Research Commons will require four course replacements each year @ \$3500 per course or a total of \$14,000. These costs will be split between the Dean office and the Department of Education. Courses replaced for faculty participation will be taught by the experienced and respected adjunct faculty such as Dr. Jim Rimpau, Dr. Steve Nash, Dr. Dawn Silva and Dr. Godfrey Saunders and others. The infrastructure required to support the Research Common would be office space required for 9-10 funded GTA/GRAs (based on new PhD student enrollments each year estimated in Table 12.). In addition, it is estimated that we also would need approximately \$5,000 yearly to provide the needed physical resources and support (office space, paper, copying, office assistance, etc.) for 9-10 GTA/GRAs. This estimate is based on \$500/student x 10 = \$5000.

Table 12

*Total Program Costs Associated with Ph.D. in Education*

Need	Projected Cost	Actual Budgetary Implications	Cost
10 existing GTA/GRA positions currently funding Ed.D.	Shift current/existing funding for 10 GTA/GRAs from Ed.D. students to Ph.D. students.	Current funding exists to support 15 GTA/GRAs. 10 Ed.D. GRA/GTA will be shifted to 10 Ph.D. GRA/GTAs slots. The remaining 4 slots allocated to Ed.D. students.	\$0
Research Commons <ul style="list-style-type: none"> <li>• Project Development and Grant Specialist</li> </ul>	The salary for the director will be \$27,000 per year plus 30% for benefits totaling \$35,000. This salary will be covered by facilities and administrative costs from existing grants.		\$35,100
<ul style="list-style-type: none"> <li>• Faculty Rotation</li> </ul>	Four course replacements each year @ \$3500 per course is \$14,000. These costs will be split between the Dean office and the Department of Education		\$0
<ul style="list-style-type: none"> <li>• Infrastructure</li> </ul>	Physical resources and support (office space, paper, copying, office assistance, etc.) for 9-10 GTA/GRAs. This estimate is based on \$500/student x 10 = \$5000. To funded by current grant indirect costs.		\$5,000
Total Projected Program Cost			\$40,100

**Projected Revenues**

Based on FY 2014, the Department of Education faculty submitted 12 grants totaling **\$2,483,292** with current total awards from eight funded grants of **\$1,821,743**. The Department of Education faculty has a 58% success rate for obtaining external funding and is positioned to fund the costs of the Ph.D. program, especially when grant Facilities and Administration costs from grants are returned to the Department.

## 7. Assessment

The assessment strategies and plan focus on four major goals for the proposed program. These goals include the following:

1. Recruit, support, retain and graduate Ph.D. students in Adult and Higher Education, Educational Leadership, and Curriculum and Instruction.
2. Provide a positive, effective, and scientifically rigorous academic curricula and informal learning experiences to prepare the graduates for long-term success as researchers in education.
3. Decrease the time to degree completion by assessing benchmarks and maintaining progress towards degree.
4. Position students for competitive, scholarly careers in education by providing access to high quality data sources, research support and experiences to conduct research and dissertation.

Assessments will consist of mixed methods analyses (e.g., qualitative and quantitative). The following questions will guide our assessment strategies and are based on the specific goals of the initiative.

- First, are the recruitment and retention efforts of quality graduate students effective? That is, do our efforts reach an appropriate target audience and accurately reflect whether the goals and expectations of the recruits and participants are consistent with program expectations?
- Second, do the curricular experiences provide positive, effective, and scientifically rigorous academic experiences that prepare the students for long-term success in research careers in education? How do the academic experiences and mentoring interactions lead to the students' development of marketable research skills (e.g., critical thinking, conference presentations, academic writing, and research practices)? Do the academic and mentoring experiences increase scholarly products (e.g., conference presentations, peer-reviewed publications, extramural funding)?
- Third, what scholarly and research based practices and understandings do the students contribute to their professions? Are the graduates of this program well-positioned and competitive for professional and academic careers in education?
- Fourth, does the academic experience lead to a timely progress-to-degree for the students? If so, what factors contribute to timely degree completion? If not, what factors contribute to student difficulties and how can we remedy these factors?
- Fifth, how does the research common support student and faculty research? To what extent does the research common support interdisciplinary research? Do the students and faculty have access to high quality research sources in which to support their research?

The assessment plan focuses on collecting qualitative and quantitative data using three main data types: baseline, formative, and outcome-based. Collecting the aforementioned data is crucial for both the program and the students to achieve significant success in meeting the four broad goals identified above. In this way, the assessment of the program becomes a programmatic element in itself. Baseline data on initial background and academic characteristics will be collected to

identify factors that contribute to the following outcomes among recruited students: (a) prior experiences and productivity in research, (b) participation in activities that enhance research development, (c) access to activities to enhance research skills, and (d) long term success and trajectories in research careers in education. Specific **outcomes measured** will include scholarly products, research and assessment collaborations, awards and honors, presentations and training and development opportunities. Likewise, **formative data** will be collected and analyzed for each benchmark activity to ensure processes are on-target and achieving the broader program goals. These activities include mentoring, academic experiences, collaborative research and assessment projects, infusion of scholarly projects, and **research conferences**. A **summative outcome-based evaluation** will be conducted each year to understand the comprehensive contexts that contribute to the success and progress of the students and the program. Specifically, we plan to examine how the academic experiences and various constituents help the program and the students achieve the intended outcomes. Evaluation methods include (a) entrance, formative, and exit surveys, (b) focus groups, (c) institutional records, (d) performance measures, and (e) qualitative data collection/assessment techniques. The evaluation methods target students, mentors, all key program personnel, and curricula. This evaluation plan guarantees a high level of transparency and awareness that permits the program to successfully monitor the effectiveness of activities in enhancing the students' productivity and their progress towards degree completion. Table 13 summarizes our proposed student assessment plan.

Table 13  
*Student Assessment Plan*

<b>Benchmarks</b>	<b>1st</b>	<b>2<sup>nd</sup></b>	<b>3rd</b>	<b>4th</b>	<b>5th</b>
<b>Coursework and degree completion</b>	Complete any prerequisite courses  Start core courses	Complete core courses	Begin research core	Complete coursework	Dissertation credits and committee review
<b>Academics</b>	Examine educational resources (library, state and government reports, non-profit, etc.)	Join academic writing group	Complete State of Understanding Topic paper	Complete empirically based project	Continued engagement with scholarly literature
<b>Dissertation</b>	Form dissertation committee and draft POS	Submit Program of Study (3 <sup>rd</sup> semester)	Pilot work on dissertation	Complete comprehensive exams  Dissertation proposal defense	Progress on/ or completion of dissertation
<b>Build a scholarly profile</b>	Present research locally	Present research locally and regionally	Present research locally and regionally	Present research at a national scholarly conference	Present research at a national scholarly conference

Table 13 (Continued)

<b>Professionalism</b>	Join appropriate state, regional, national, or international organizations	Engage in the professional community: chair conference sessions, proposal review, volunteer at conferences	Participate in collaborative scholarship with research team or faculty	Participate in collaborative scholarship with research team or faculty	Submit scholarship to a peer-reviewed journal
<b>Awards and Recognition</b>	Explore fellowship, grant, and scholarship opportunities	Explore fellowship, grant, and scholarship opportunities	Apply for at least one grant, award or recognition	Apply for at least one grant, award or recognition	Apply for at least one grant, award or recognition

**8. Process Leading to Submission**

*Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.*

Faculty initially decided to develop a Ph.D. in Education as a result of requests from current Ed.D. students wishing to pursue a Ph.D. instead. In addition, faculty became aware of the Carnegie Project on the Education Doctorate (CPED) and wanted to use the experience of other programs to move this proposal forward.

The committee met for one academic year to develop the Ph.D. in Education proposal. The graduate program coordinators from Educational Leadership, Adult and Higher Education, Curriculum and Instruction met weekly during 2013-2014 to develop the Ph.D. in Education proposal. Efforts of the committee members included conducting needs assessments, research in the areas of Ph.D. and Ed.D. programs, and exploration of current trends in graduate education and related discussions. Input from current and potential future students was also solicited to assist with the design of the Ph.D. in Education program. The background work included a review of existing and new Ph.D. and Ed.D. programs at peer institutions and review of the national literature (e.g., Carnegie Foundation for the Education Doctorate, Harvard University and American Educational Research Association) that calls for the differentiation of Ph.D. and Ed.D. programs. The draft proposal was reviewed multiple times by Department of Education faculty and feedback was obtained for consideration in making additional revisions to this draft proposal. Finally, the draft Ph.D. in Education Proposal was reviewed externally by Dr. Jill Perry, Executive Director for the Carnegie Project on the Education Doctorate.

Once the Department of Education faculty reviewed the Ph.D. in Education proposal, it was further reviewed by Jayne Downey, Chair of the Department of Education and Associate Dean of

EHHD, Lynda Ransdell, Dean of the College of EHHD and Karlene Hoo, the MSU Graduate School Dean. Based on feedback from the department, college and graduate school administration, the proposal was further revised and submitted to the MSU graduate council for consideration. As recommended by Aiken & Gerstl-Pipin (2013), we will convene a Doctoral Advisory Committee (DAC) to guide the program through initial development and implementation.

### References

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APPENDICES

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## Appendix A

### Specialization Courses

#### **Adult and Higher Ed Specialization (3 credits from the following list)**

Electives:

- EDLD 509 Issues and Trends in Higher Education (3 credits)
- EDLD 512 Finance and Administration in Higher Education (3 credits)
- EDLD 513 Resource and Program Management (3 credits)
- EDLD 529 Post Secondary Distance Delivered Education (3 credits)
- EDLD 530 College Teaching (3 credits)
- EDLD 531 Theoretical Foundations of Student Services (3 credits)
- EDLD 533 Law and Policy in Higher Education (3 credits)
- EDLD 535 Student Services (3 credits)
- NAS 523 American Indians and Minorities in Higher Education (3 credits)



## Appendix B

### Examples of Possible Electives for C& I Specialization

#### Curriculum Design

EDCI 504 Assessment and Evaluation in Education  
EDCI 520 Visual Arts and Learning  
EDCI 532 General School Curriculum  
EDCI 533 Middle Years School  
EDCI 536 Construction of Curriculum  
EDCI 540 Amer Indian Studies for Ed  
EDCI 541 History & Philosophy of Ed  
EDCI 542 Creative Processes in Education  
EDCI 544 Phil Issues in Ed  
EDCI 551 Education Technology: Teaching, Learning, and Leadership  
EDCI 591 Special Topics  
EDCI 592 Independent Study  
EDCI 598 Internship

#### English Language Arts Education

EDCI 512 Writing and Its Improvement  
EDCI 514 Mentoring New Teachers  
EDCI 534 Literacy Assessment and Instruction  
EDCI 540 Amer Indian Studies for Ed  
EDCI 549 Applications of Literature for Children and Young Adults  
EDCI 551 Education Technology: Teaching, Learning, and Leadership  
EDCI 591 Special Topics  
EDCI 592 Independent Study  
EDCI 598 Internship  
ENGL 510 Studies In Critical Theory  
ENGL 520 Pedagogy Theory & Practice  
ENGL 530 Writing Theory And Practice  
ENGL 540 Literary History  
ENGL 550 Focused Research Seminar

#### Social Studies Education

EDCI 510 Issues and Trends in Social Studies Instruction  
EDCI 514 Mentoring New Teachers  
EDCI 540 Amer Indian Studies for Ed  
EDCI 551 Education Technology: Teaching, Learning, and Leadership  
EDCI 591 Special Topics  
EDCI 592 Independent Study  
EDCI 598 Internship  
HIST 502 Public History  
HIST 503 History Of America Before 1860  
HIST 504 Topics In Environmental History  
HIST 505 U.S. History 1860 To Present

HIST 506 Topics In History Of Science, Technology & Society  
 HIST 507 Historical Writing  
 HIST 512 Topics In World History  
 HIST 513 Topics In Social And Cultural History  
 HIST 515 The American West  
 HIST 540 Historical Methods  
 NASX 505 Proseminar In Native American Studies  
 NASX 520 Feminist And Gender Theories In Native American Studies  
 NASX 521 Tribal Government: Yesterday And Today  
 NASX 523 American Indians And Minorities In Higher Education  
 NASX 524 Contemporary Issues In American Indian Studies  
 NASX 525 Indigenous Philosophies Of Sacred Ecologies  
 NASX 530 Federal Law And Indian Policy  
 NASX 540 Theoretical Positions In Native American Studies  
 NASX 541 A Critical Approach To NAS Methodologies  
 NASX 550 Native America: Dispelling The Myths  
 NASX 551 American Indian Art Survey  
 NASX 552 Indigenous Nations Of Montana  
 NASX 560 Native American Literary Traditions

### **Science Education**

#### Biology

BIOE 513 Terrestrial Ecology of Plains and Prairies  
 BIOE 516 Terrestrial Ecology of the Northern Rocky Mountains  
 BIOE 519 Biology of Riparian Zones and Wetlands  
 BIOE 520 Understanding & Managing Animal Biodiversity in YNP  
 BIOE 522 Birds of Prey of the Greater Yellowstone Ecosystem  
 BIOE 523 Wildlife Ecology of the Northern Rocky Mountains

#### Chemistry and Biochemistry

CHMY 500 Science Lab Safety and Risk Management  
 CHMY 505 Critical Concepts in Chemistry  
 CHMY 506 Integrating Computers into Laboratory Instruction

#### Earth Science

EARTH 594 Seminar: Field Geology  
 EARTH 512 Mountains and Plains Riparian Processes  
 EARTH 516 Northern Rocky Mountain Geology  
 EARTH 517 Electronic Hydrology  
 GEO 521 Dinosaur Paleontology of Hell Creek Formation  
 GEO 522 Dinosaur Paleontology II  
 GEO 560 Geology of the Yellowstone Volcanic Center

#### Science Education

EDCI 501 Inquiry Through Science and Engineering Practices  
 EDCI 514 Mentoring New Teachers  
 EDCI 518 Master Teaching Strategies for the Science Teachers

EDCI 525 Improvement of Instruction in Science  
EDCI 537 Contemporary Issues in Science Education  
EDCI 540 Amer Indian Studies for Ed  
EDCI 551 Education Technology: Teaching, Learning, and Leadership  
EDCI 591 Special Topics  
EDCI 592 Independent Study  
EDCI 598 Internship

#### Electrical Engineering

EELE 591 Solar Cell Basics for Science Teachers

#### Geography

GEOG 591 Global Warming, Climate Change, and Our Environment

#### Land Resources and Environmental Sciences

LRES 557 Thermal Biology in Yellowstone National Park  
LRES 569 Ecology of Invasive Plants

#### Microbiology

MB 536 Exploring Microbiology  
MB 538 Cell and Molecular Biology  
MB 539 Infection and Immunity  
MB 540 Applied Environmental Microbiology  
MB 541 Microbial Genetics  
MB 542 Microbial Ecology  
MB 547 Thermal Biology in Yellowstone National Park

#### Plant Sciences

PSPP 548 Flowering Plants of the Northern Rocky Mountains

#### Physics

PHSX 511 Astronomy for Teachers  
PHSX 512 General Relativity  
PHSX 513 Demystifying Quantum Mechanics  
PHSX 514 Comparative Planetology  
PHSX 582 Astrobiology for Teachers  
PHSX 583 Invisible Universe: Search for Astronomical Origin

#### Range Science

ARNR 529 Yellowstone Range Ecology