

PROGRAM MODIFICATION PROPOSAL FORM

Name of Institution: **University of South Carolina**

Briefly state the nature of the proposed modification (e.g., adding a new concentration, extending the program to a new site, curriculum change, etc.): **Adding a STEM Education concentration to the Ed.D. in Curriculum & Instruction**

Current Name of Program (include degree designation and all concentrations, options, and tracks):
Doctorate in Education (Ed.D.) in Curriculum and Instruction with concentrations in Curriculum Studies and Educational Technology

Proposed Name of Program (include degree designation and all concentrations, options, and tracks):
Doctorate in Education (Ed.D.) in Curriculum and Instruction with concentrations in Curriculum Studies; Educational Technology; and Science, Technology, Engineering, and Mathematics (STEM) Education.

Program Designation:

- | | |
|--|--|
| <input type="checkbox"/> Associate's Degree | <input type="checkbox"/> Master's Degree |
| <input type="checkbox"/> Bachelor's Degree: 4 Year | <input type="checkbox"/> Specialist |
| <input type="checkbox"/> Bachelor's Degree: 5 Year | <input type="checkbox"/> Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA) |
| <input checked="" type="checkbox"/> Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.) | |

Does the program currently qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes
 No

If No, should the program be considered for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes
 No

Proposed Date of Implementation: **Fall 2019**

CIP Code: **13.0301**

Current delivery site(s) and modes: **Delivered 100% online from the Columbia Campus**

Proposed delivery site(s) and modes: **The new concentration will also be delivered 100% online from the Columbia Campus**

Program Contact Information (name, title, telephone number, and email address):

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Institutional Approvals and Dates of Approval:

Instruction and Teacher Education Department Chair: October 19, 2018

College of Education Dean: October 20, 2018

Background Information

Provide a detailed description of the proposed modification, including target audience, centrality to institutional mission, and relation to strategic plan.

The proposed modification adds a STEM (Science, Technology, Engineering and Mathematics) Education Concentration to the existing Ed.D. in Curriculum and Instruction, which is available for online completion. The STEM Education concentration is primarily designed to target in-service K-12 teachers in South Carolina seeking to enhance their knowledge and skills related to integrating STEM approaches to their teaching practice. The concentration will prepare individuals to be both teacher-leaders and researcher-practitioners. The concentration emphasizes content and pedagogy related to integrated approaches to STEM instruction. Through the use of instructional methods, such as project-based learning, the STEM Education concentration provides in-depth instruction related to the integration of science, technology, and engineering and mathematics practices. The STEM Education concentration prepares practitioners and instructional leaders to

- (a) engage with and solve significant problems of practice within education settings related to STEM fields;
- (b) develop, integrate, and evaluate integrated STEM instruction; and
- (c) leverage project-based learning as a model for STEM practices.

The University of South Carolina College of Education is a member of The Carnegie Project on the Education Doctorate (CPED). The Ed.D. in Curriculum and Instruction applies the CPED framework which includes an inquiry as practice in which candidates focus their research on complex problems of practice. The STEM Education concentration will also follow the CPED framework.

The goals of the STEM Education concentration are to:

- (1) meet the need of STEM leaders at a wide range of institutional levels including school, district, and state;
- (2) support research-practitioners as they investigate problems of practice in STEM Education; and
- (3) explore the theory, history, and concepts in STEM educational settings.

The primary mission of the University of South Carolina Columbia is the education of the state's citizens through teaching, research, creative activity, and community engagement. The university mission goes on to state that it is the "University's responsibility to state and society to promote the dissemination of knowledge, cultural enrichment, and an enhanced quality of life". The STEM Education concentration will enhance the education of the state's citizens by helping SC educators develop their skills and knowledge of STEM practices. They will also learn to research and solve problems in their own educational settings, thus providing increased capacity for ongoing improvement in educational practices related to STEM in SC schools.

The University of South Carolina College of Education seeks to distinguish itself as a state and national leader in its efforts to be responsive, engaged, and collaborative in addressing the needs of its students, professions, and community. The College's strategic plan includes designing and implementing innovative and impactful curricula with a focus on building robust and thriving doctoral programs. The online STEM Education concentration of the Ed.D aligns with this mission and strategic plan as it is designed to make a positive impact on the needs of students, professionals, and the community.

Assessment of Need

Provide an assessment of the need for the program modification for the institution, the state, the region, and beyond, if applicable.

Between 2012 and 2022, the Bureau of Labor Statistics projects that jobs in areas of science, technology, engineering, and mathematics will grow to more than 9 million positions (<https://www.bls.gov/careeroutlook/2014/spring/art01.pdf>). In addition, skills such as critical thinking, innovation, and problem solving are key. These skills can be learned by subjects collectively known as STEM. Yet today, fewer American students pursue expertise in STEM fields, which may be in part due to an inadequate pipeline of teachers prepared to teach these subjects. In South Carolina, the numbers of students graduating with science and engineering degrees (approximately 18%) lags behind the percentage of students graduating nationwide (22%; <https://www.nsf.gov/statistics/state-indicators/compare/credentials-conferred-in-se/years>). Coupled with the teacher recruitment and retention crisis that currently exists in South Carolina and across the country, action is needed to ensure that the U.S. will remain a world leader in development and innovation.

Transfer and Articulation

Identify any special articulation agreements for the modified proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.

There are no transfer and articulation agreements associated with this proposed concentration.

Description of the Program

Projected Enrollment						
Year	Fall Headcount		Spring Headcount		Summer Headcount	
	New	Total	New	Total	New	Total
2019	0	0	0	0	8	8
2020	8	16	8	24	8	31
2021	8	38	8	45	8	52
2022	8	59	8	66	8	66

Explain how the enrollment projections were calculated.

The first cohort (8 students) will be admitted in Summer 2020 and 8 additional new students will be admitted each fall, spring, and summer semester. Students will typically take nine semesters to complete the Ed.D. degree. To account for natural attrition of students who do not continue in the program, after the first three semesters the College of Education accounts for one student not continuing in each cohort.

Curriculum

Attach a curriculum sheet identifying the courses required for the program.

The below represents the full curriculum for a student completing the Ed.D. in Curriculum and Instruction with a Concentration in STEM Education.

Curriculum and Instruction Core Courses (12 hours)

- EDCS 720 - Introduction to Diversity and the Curriculum
- EDCS 820 - Advanced Study of Diversity and Curriculum
- EDET 709 - Applications of Learning Principles
- EDET 722 - Instructional Design and Assessment

STEM Education Concentration (15 hours)

- EDTE 820 Principles of STEM Integration
- EDTE 731 Integration of Technology and Instruction
- ENCP 605 Principles of Engineering for Teachers
- EDSE 850 Advanced Readings in Science Education
- EDSE 851 Advanced Readings in Mathematics Education

Cognate (9 hours)

- EDTE 740 - Introduction to Project-based Learning
- EDTE 741 - Applications of Project-based Learning
- EDTE 742 - Practicum in Project-based Learning

Research (12 hours)

- EDRM 801 - Principles and Applications of Educational Research
- EDTE 812 - Research in STEM Education (does not exist yet)
- EDTE 712 – Action Research in Teaching
- EDTE 713 – Action Research Capstone Seminar

Dissertation (12 hours)

- 12 hours of EDCS 899 – Dissertation Preparation

Curriculum Changes

Courses Eliminated from Program	Courses Added to Program	Core Courses Modified
None	EDTE 820 Principles of STEM Integration	none
	EDTE 731 Integration of Technology and Instruction	
	ENCP 605 Principles of Engineering for Teachers	
	EDSE 850 Advanced Readings in Science Education	
	EDSE 851 Advanced Readings in Mathematics Education	
	EDTE 740 - Introduction to Project-based Learning	
	EDTE 741 - Applications of Project-based Learning	
	EDTE 742 - Practicum in Project-based Learning	

New Courses

List and provide course descriptions for new courses.

- **EDTE 820 - Principles of STEM Integration: Exploration of pedagogical practices and methodological approaches for integrating instruction across STEM disciplines.**
- **EDTE 812 - Research in STEM Education: Critical exploration of current research in STEM education.**

Similar Programs in South Carolina offered by Public and Independent Institutions

Identify the similar programs offered and describe the similarities and differences for each program.

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
Ed.D. Education Systems Improvement Science	A minimum of 30 hours beyond the master's degree.	Clemson University	Both programs are a professional doctorate.	The proposed concentration at USC-Columbia has a focus on STEM Education. The Clemson program focuses on systemic whole school reform.
Ed.D. in Educational Administration	75 hours beyond the masters.	South Carolina State University	Both programs are a professional doctorate.	The proposed concentration at USC-Columbia has a focus on STEM Education. The SC State University program focuses on Educational Administration.
Ed.D. in K-12 Leadership	60 credit hours	North Greenville University	Both programs are a professional doctorate.	The proposed concentration at USC-Columbia has a focus on STEM Education. The NGU program focuses on K-12 Leadership and Higher Education Leadership.
Ed.D. in Educational Leadership		Columbia International University	The CHE inventory of programs lists this program, but there is no information on the CIU website or bulletin regarding an Ed.D.	
Ed.D. in Educational Leadership and Curriculum and Instruction		Bob Jones University	The CHE inventory of programs lists this program, but there is no information on the Bob Jones University website regarding an Ed.D.	

Faculty

State whether new faculty, staff or administrative personnel are needed to implement the program modification; if so, discuss the plan and timeline for hiring the personnel. Provide a brief explanation of any personnel reassignment as a result of the proposed program modification.

Based upon the success in student enrollment of the two current concentrations of the Ed.D. (i.e., Curriculum Studies and Instructional Technology), the need for two faculty lines (one tenure track and one instructional/clinical) for the Ed.D. in STEM Education is anticipated. The positions would be advertised during year 1 with the new positions coming on board in year 2. Additionally, current ITE faculty with Mathematics and Science Education foci will support the program.

Resources

Identify new library, instructional equipment and facilities needed to support the modified program.

Library Resources: There will not be a need for any new library/learning resources. The current library resources include all books and journals that are necessary to support the current Ed.D. program and the proposed concentration.

Equipment: There will not be a need for any new equipment to support the modified program. The College of Education offers other online degree programs and the USC-Columbia offers several other online degree programs, thus the infrastructure is in place to deliver this concentration.

Facilities: There will not be a need for any new facilities or modifications to existing facilities to support the modified program. The College of Education offers other online degree programs and USC-Columbia offers several other online degree programs, thus the facilities are in place to deliver this concentration.

Impact on Existing Programs

Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain

Yes

No

Financial Support

Estimated Sources of Financing for the New Costs						
Category	1st	2nd	3rd	4th	5th	Total
Tuition Funding	20,818	204,278	379,932	543,875	571,199	1,720,102
Program-Specific Fees	0	10,560	21,912	33,924	36,696	103,092
Special State Appropriation						
Reallocation of Existing Funds						
Federal, Grant, or Other Funding						
Total	20,818	214,838	401,844	577,799	607,895	1,823,194
Estimated New Costs by Year						
Category	1st	2nd	3rd	4th	5th	Total
Program Administration and Faculty and Staff Salaries	0	182,000	182,000	182,000	182,000	728,000
Facilities, Equipment, Supplies, and Materials						
Library Resources						
Other (specify)						
Total	0	182,000	182,000	182,000	182,000	728,000
Net Total (i.e., Sources of Financing Minus Estimated New Costs)	20,818	32,838	219,844	395,799	425,895	1,095,194

Budget Justification

Provide a brief explanation for all new costs and sources of financing identified in the Financial Support table.

The tuition revenue is based on the USC Columbia in-state certified teacher tuition rate. Additional revenue includes program enhancement fee revenue in the Fall and Spring semesters (\$44 per credit hour). This fee is paid by all students enrolled in the College of Education. Among other things, this fee covers the cost of an assessment and student portfolio system that is provided to each student; supports undergraduate and graduate student academic activities including travel to and participation in local, regional, and national professional conferences; and helps to maintain and update technology, equipment, and facilities for the College to maintain high quality educational experiences.

New costs include one tenure-track faculty member and one clinical faculty member starting in Year 2.

Evaluation and Assessment

The program assessment plan in brief is designed to align with University Policy ACAF 3.00 Assessment of Student Learning. As a program that is not externally reviewed by an accrediting body, the program will undergo comprehensive periodic review as described in University Policy ACAF 2.20 Academic Program Review and be subject to a team of external reviewers.

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment Key Assessment (KA) listed below
The Ed.D. STEM Concentration equips practitioner-scholars with the skills needed to lead STEM pedagogy in organizations, conduct research and translate results into practice, and help all students to learn in an interdisciplinary and applied approach.	STEM practitioner-scholars apply knowledge and skills to integrate science, technology, engineering and mathematics curricula via an interdisciplinary approach into their teaching practice.	KA 1 KA 2
	STEM practitioner-scholars apply knowledge of culturally responsive practices and equity of opportunity to promote STEM literacy particularly for students from marginalized populations.	KA 1 KA 2
	STEM practitioner-scholars engage in leadership roles in STEM Education professional learning environments and communities.	KA 3 KA 4 KA 7
	STEM practitioner-scholars engage in action research related to STEM education.	KA 5 KA 6 KA 7

Description of Program Key Assessments (KA)

Degree candidates will-

- meet criteria of a **practitioner's portfolio** through which they teach, evaluate, and re-teach a minimum of two interdisciplinary STEM lessons with culturally relevant and engaging components (**Key Assessment 1**)
- meet criteria of a **comprehensive exam (Key Assessment 2)**
- **Present** scholarly work at a conference for STEM Education practitioners and/or scholars (**Key Assessment 3**)
- Author scholarly work in a **publication** for STEM Education practitioners and/or scholars (**Key Assessment 4**)
- Propose (**Key Assessment 5**), conduct and defend (**Key Assessment 6**) an **action research project** conducted with one or more schools.

Program Faculty will—

Collect and evaluate complete **employment data (Key Assessment 7)** by cohort to include professional roles, publication record, presentation record

Will any the proposed modification impact the way the program is evaluated and assessed? If yes, explain.

Yes

No

New key assessments specifically designed for the STEM concentration will be developed as described in the previous section.

Will the proposed modification affect or result in program-specific accreditation? If yes, explain; and, if the modification will result in the program seeking program-specific accreditation, provide the institution's plans to seek accreditation, including the expected timeline.

Yes

No

Will the proposed modification affect or lead to licensure or certification? If yes, identify the licensure or certification.

Yes

No

Explain how the program will prepare students for this licensure or certification.

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.

Yes

No