III. Program Profile

____ New Program Application __x_Program Renewal

Name of Program: Science Education (Biology, Chemistry, Earth Science, Physics)

Certificate Level: 8-12

Date submitted: September 14, 2014

EPP Submission Coordinator:

Name: Dr. Brett Criswell
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Program Type: Initial Certificate Graduate Level

Program Route: Traditional

Degree or Award Level: Master's_

Status: Non-profit IHE

Program Sites: Main/Residential Campus

Delivery Modes: Hybrid

Program Experiences:

The curriculum in the Science Education program includes the following required coursework. A syllabus for each course is located in Folder 1: Program Experiences, Sub-folder 2: Syllabi. Operational course descriptions are located in Folder 1: Program Experiences, Sub-folder 3: Regulation Compliance Documentation, 2nd level sub-folder b: Program Specific Compliance Documents.

SEM 634	Pedagogy in the Secondary School: Science	3 credits
SEM 770	Special Topics in STEM Education: Foundations of Pedagogical Theory in STEM Education	3 credits
EDC 533	Teaching Literacy Across the Disciplines	3 credits
EDC 638	Technology Education	1 credit
EDC 639	Multicultural Education	1 credit
EDP 658	Problems in Educational Psychology: Major Theories of Learning in Education	1 credit

EDS 604	Special Education for Secondary Education	1 credit
EPE 602 (formerly EPE 773)	Social Policy Issues and Education: Education in American Culture	1 credit
EDC 637	Classroom Management in Secondary Education	1 credit
ELS 691	Legal Perspectives for Teachers	1 credit
SEM 746	Subject Area Instruction in the Secondary School: Science	9 credits
Elective	*Selected in collaboration with advisor*	3 credits
Elective	*Selected in collaboration with advisor*	3 credits
Elective	*Selected in collaboration with advisor*	3 credits

Curriculum Contract/Guidesheet:

See Folder 1: Program Experiences, Sub-folder 1: Curriculum Contract and Guidesheets.

Clinical Educators (all IHE faculty who prepare educators in this program):

See Folder 2: Program Clinical Educators, Sub-folder 1: Clinical Educators Summary Table and Sub-folder 2: Clinical Educators Vitae.

Cohort Data:

See Folder 3: Cohort Data. This folder is populated with a series of Excel Spreadsheets that identify the candidates who were admitted to the program by cohort year, starting in 2008. The Excel worksheets were created in September 2014 and provide a snapshot of the cumulative status for candidates who were enrolled in that specific year, i.e., 2008-2009, 2009-2010, 2010-2011, 2011-2012, 2012-2013, and 2013-2014.

Assessment Table:

See Folder 4: Assessment. Note that the Assessment Standards Alignment Tables are located in Sub-folder 1: Standards Alignment Documents, 2nd Level Sub-folders for alignment of the assessments with the Kentucky Teacher Standards and the National Science Teachers Association standards.

Assessments aligned to Standards:

The program is aligned with the National Science Teachers Association (NSTA) standards. See Folder 4: Assessment, Sub-folder 1: Standards Alignment Documents, 2nd Level Sub-folders for alignment of the assessments with the Kentucky Teacher Standards and the NSTA standards.

FOR PROGRAM RENEWAL ONLY

Data Report and Use of Data Analysis:

Data are reported in the Sub-folders for each of the eight assessment areas. There are three 2nd level Sub-folders for each assessment: (a) Assessment Instrument and Documentation, (b) Data Tables, and (c) Data Analysis and Discussion.

Data are summarized in Folder 5: Data Report and Use of Data. There are two 2nd level Sub-folders in the Data Report and Use of Data Folder: (1) Summary Discussion of Assessment and (2) Use of Assessment Results for Program Improvement.

Description of the Clinical Model and Summary of the Experiences:

A description of the clinical model in the Science Education program can be found in Folder 6: Clinical Model and Experiences, Sub-folder 1: Program Clinical Model Overview, and Sub-folder 2: Program Clinical Experiences Detail by Course. Folder 7: Responsibility of University Personnel for Student Teaching Supervision includes documentation of clinical elements of student teaching in the Science Education program. Folder 8: Field and Clinical Practice (initial only) includes documentation of policies and procedures at UK ensuring compliance with regulations regarding field experiences, as well as program-specific description of field experience requirements in the program.

Responsibilities for University Personnel involved in Clinical Supervision of Student Teaching, as required by 16 KAR 5:040 Section 5:

Has the program ensured the university supervisor	**Yes**	**No**
a) demonstrates effective classroom management techniques that promote an environment conducive to learning.	**X**	
b) demonstrates best practices for the delivery of effective instruction.	**X**	
c) demonstrates dispositions that contribute to the mentoring and development of a pre-service educator.	**X**	
d) demonstrates knowledge and skills in the use of formative and summative assessments.	**X**	
e) demonstrates the ability to participate in a community of professionals committed to supporting the effective instructional practice of each student teacher.	**X**	
f) has made periodic on-site observations of the student teacher in the actual teaching situation (minimum of four)	**X**	
g) has prepared a written report on each observation	**X**	
h) has shared each report with the student teacher	**X**	

Initial Certification Programs

a) **How many pre-student teaching field/clinical hours are required of candidates in this program?**
275 **Minimum of 200 hours required by 16 KAR 5:040**

b) How does the program ensure candidates have experiences at each of the three levels (elementary, middle, and high) and other experiences as outlined in 16 KAR 5:040 Section 3(3)?

In accordance with 16 KAR 5:040, prior to student teaching, candidates will gain a minimum of 200 hours of electronically documented field experiences through a minimum of two informal school settings and three formal school settings. At least one of these experiences will be at an elementary school or with elementary-aged children, at least one will be at a middle school or with middle school aged children, and at least two at the secondary school level. A formal school setting is defined as during the school day with a highly qualified supervising teacher. An informal school setting is defined as after school or out-of-school activities and opportunities for which the candidate engages with the appropriate population in education-related activities and is not paid for their time.

Candidates participate in an Elementary STEM Day during which they set up booths and work with elementary students to showcase the science disciplines. Candidates are also placed at either a middle school or high school to work with students who are struggling in science. Documentation is recorded in the OTIS Assessment System for each field experience across the required three levels: elementary, middle, and high school.

Candidates also engage with a minimum of two ethnic, racial, or cultural groups of which they are not considered a member; with English language learners in at least two field experiences even if the candidates are English language learners themselves; and with students with disabilities. The program chair ensures that the placements made include these diverse student populations.

Candidates also have opportunities to work with P-12 students through formal and informal school settings, including, but not limited to, family resource centers, youth service centers, student tutoring, interaction with families of students, attendance at school board and school-based council meetings, participation in school-based professional learning communities, and opportunities to assist teachers or other school professionals in approved situations (approved by the program chair). Candidates gain valuable experience in informal field settings in SEM 770, during which they are required to obtain field experience hours in family resource centers, youth service centers, and interactions with families of students through STEM nights held in Fayette County schools. Candidates are also required to participate in at least one school-based professional learning community and a district-wide professional learning

community meeting or leadership network meeting. Additionally, candidates are required to attend at least one school board meeting and one school-based council meeting.

c) How does the program prepare and provide opportunities for each candidate to co-teach?

Each candidate is placed in a classroom with a highly-qualified and trained cooperating teacher. Within that student teaching placement, the student teacher and cooperating teacher will have the opportunity to and be expected to utilize each of the co-teaching strategies (St. Cloud, 2009) on a regular basis. The Science Education program defines a regular basis as 2-3 strategies per week. Co-teaching experiences are documented through the OTIS Online Assessment System, the Kentucky Field Experiences Tracking System, and candidates' regular reflections on their student teaching experiences.

- **One Teach, One Observe** – one teacher has primary instructional responsibility while the other gathers specific observational information on students or the (instructing) teacher. The key to this strategy is to focus on the observation – where and how the teacher is doing the instruction and observing specific behaviors. It is important to remember that either the teacher candidate or the cooperating teacher could take on both roles.
- **One Teach, One Assist** is an extension of one teach, one observe. One teacher has primary instructional responsibility while the other assists students with their work, monitors behaviors, or corrects assignments, often lending a voice to students or groups who would hesitate to participate or add comments.
- **Station Teaching** occurs when the Co-Teaching pair divides the instructional content into parts –Each teacher instructs one of the groups, groups then rotate or spend a designated amount of time at each station – often independent stations will be used along with the teacher led stations.
- In the **Parallel Teaching** approach, each teacher instructs half the students. The two teachers are addressing the same instructional material and presenting the material using the same teaching strategies. The greatest benefit to this method is the reduction of the student to teacher ratio.
- The **Supplemental Teaching** strategy allows one teacher to work with students at their expected grade level, while the other teacher works with those students who need the information and/or materials re-taught, extended, or remediated.
- **Alternative or Differentiated Teaching** strategies provide two different approaches to teaching the same information. The learning outcome is the same for all students however the avenue for getting there is different.
- **Team Teaching** incorporates well planned, team taught lessons, exhibiting an invisible flow of instruction with no prescribed division of authority. Using a team teaching strategy, both teachers are actively involved in the lesson. From a students' perspective, there is no clearly defined leader – as both teachers share the instruction, are free to interject information, and available to assist students and answer questions.

Candidates are exposed initially to these co-teaching models in their fall methods courses, SEM 634 and SEM 770, during which time the course instructors demonstrate the various co-teaching models for them.

d) **How many days is the student teaching experience for this program? _____70_____**
Minimum of 70 days required by 16 KAR 5:040

e) Does the program ensure candidates complete the following student teaching experiences required by 16 KAR 5:040 Section 6?

	Yes	No
Assume major responsibility for the full range of teaching duties, including extended co-teaching experiences, in a real school situation under the guidance of qualified personnel from the EPP and the partner school.	X	
Provide opportunities for the student teacher to develop and demonstrate the practical skills, knowledge, and professional dispositions essential to help all P-12 students learn and develop.	X	
Collaborate with the district in determining the specific placement of the student teacher.	X	
Collaborate with the district to provide necessary program resources and expertise.	X	
Use multiple performance assessments to document the student teacher's ability to support learning for all students.	X	
Require the use of technology to enrich student learning and support the student teacher's professional growth and communication	X	
Provide opportunities for the student teacher to: a) Engage in extended co-teaching experiences with an experienced teacher.	X	
b) Engage in reflective self-assessment that informs practice.	X	
c) Maintain regular professional conversations with experienced teachers other than the cooperating teacher.	X	
d) Participate in regular and extracurricular school activities.	X	
e) Participate in professional decision making.	X	
f) Engage in collegial interaction and peer review with other student teachers.	X	
g) Use TPA tasks or variation of these tasks to document student teacher's skills	X	

f) What percentage of teacher candidates admitted to student teaching satisfactorily completed student teaching beginning with the most recent academic year?

Academic Year	# of Candidates who started Student Teaching	# of Candidates who Satisfactorily Completed Student Teaching	Percentage of Candidates who Completed Student Teaching
2012-13	9	8	89%
2013-14	4	4	100%
2014-15	9	9	100%

Kentucky P-12 Curriculum Requirements (include links to specific section(s) in syllabi for evidence):

Briefly describe how candidates use the Kentucky P-12 Curriculum requirements (e.g., KCAS) and the Kentucky P-12 school assessment system (e.g., K-PREP) to guide instruction.

See Folder 9: Kentucky Curriculum Requirements, Sub-folder 1: KY Curriculum and Assessment Tools Integration and Use, for a description of integration of Unbridled Learning initiatives in the Science Education program.

Provide evidence (TPA/portfolio/other data) of candidates' use of the Kentucky P-12 Curriculum requirements in lesson plans (include lesson plan format if not using the current KTIP format).

The KTIP TPA lesson plan format is used in the Science Education Program. In 2014-2015, the new KTIP/PGES lesson plan format will be used. See Folder 9: Kentucky Curriculum Requirements, Sub-folder 2: KY Curriculum Requirements, Use in Lesson Planning, for a description of candidates' use of the Kentucky P-12 curriculum requirements in lesson planning.

Optional: Program-Initiated Innovations:

See Folder 10: Program-Initiated Innovations for an overview of recent revisions to the Science Education Program.

Rejoinder to EPSB Comments following the reading of the program submission. June 26, 2015

BIOLOGICAL SCIENCE GRADES 8-12 (Master's)

EPSB Comment 1: Discrepancies exist in the courses listed on the Program Profile and those listed on the curriculum contract. EDC 533 is not included on the profile; however, it is listed on the contract. The profile lists EPE 602 as having replaced EPE 773. The contract identifies only 773. The profile lists ELS 691, but the contract lists the course as EDL 691 (courses have the same title).

Both the Program Profile and Curriculum Contract have been revised to reflect the correct information. EDC 533 was added to the Program Profile. The correct identification of the EPE

course is 773, and this was changed in the Program Profile. The correct identification for the 691 course is ELS, and this was changed in the Curriculum Contract.

EPSB Comment 2: There is not sufficient evidence that the program addresses the teaching of writing. The narrative indicates there is a Teaching Literacy course (EDC 533), but there is no syllabus included for EDC 533 to demonstrate that writing is addressed.

The EDC 533 – Literacy Across the Disciplines syllabus has been added to the appropriate sub-folder within the Program 1 folder. Additionally, the SEM 634 syllabus shows a couple of lessons specifically focused on science-specific and general writing skills.

EPSB Comment 3: Documents in folder 7 include a statement that student teachers may not serve as substitute teachers unless given special permission by program faculty. It must be made clear in the documentation that teacher candidates cannot be employed by the school where they are student teaching. This is also an issue in the syllabus for SEM 746 (p.6).

The following statement was added to the appropriate section of the file 'Sci Ed – Doc Related to Stu Tech' in the Program Specific Documentation of Student Teaching sub-folder: "Further, student teachers cannot be employed in any capacity in the school in which they are student teaching during their time in this placement." This statement was also added to the SEM 746 Syllabus from whence the original text was obtained, and an updated version of the 746 Syllabus was placed in the proper sub-folder in Folder 1 – Program Experiences.

EPSB Comment 4: A syllabus for EDU 645 is included in the folder; however, this course is not listed in the profile nor is it listed on the contract. This syllabus also references Social Studies instruction instead of science.

That syllabus has been removed from the folder since it should not have been there in the first place.

EPSB Comment 5: A syllabus is provided for EPE 773 but the profile states this course was replaced by EPE 602 and no syllabus for this course was provided. The syllabus for 773 does not include current Kentucky education language.

As noted in response to 1), the use of the course designation 'EPE 602' as listed in the Program Profile was incorrect, and that error has been addressed. Thus, there will be no syllabus for EPE 602, but there will be one for EPE 773. Moreover, the language in the EPE 773 syllabus was amended to be representative of current Kentucky education language.

EPSB Comment 6: Several syllabi reference outdated terminology regarding the Kentucky Teacher Standards (EDC 637 p.7, EDC 638 pp. 4 and 7, EDC 639 p.1, EDU 645 pp. 2 and 4, SEM 634 p.9, and SEM 770 p.13).

The syllabi for EDC 637, EDC 638, and EDC 639 have been revised to contain the appropriate language related to the Kentucky Teacher Standards. There is no EDU 645 course or syllabus, so no change could be made with regards to that.

The SEM 634 syllabus was reviewed and the only reference to the KY Teacher Standards on p. 9 involved an identification of which standards were addressed by which assignments. Since this

information was accurate in relation to the time that it was written and used in the SEM 634 course, it is not clear what the issue here is.

In the SEM 770 syllabus, the phrase 'EPSB New Teacher Standards' was replaced by 'EPSB Kentucky Teacher Standards' on p. 13 to represent the current language.

EPSB Comment 7: The syllabus for EDP 658 has an incomplete course title as compared to the profile.

The syllabus for EDP 658 has been revised to contain a full title matching the one in the Program Profile.

EPSB Comment 8: The syllabus provided for ELS 691 is a draft dated 11-2-09 and references K-12 instead of P-12. It also references Lee Todd in a way that the reader might assume he is the current UK president.

The syllabus for ELS-691 has been edited and the concerns noted have been corrected.

EPSB Comment 9: The syllabus for SEM 746 repeatedly refers to KERA Initiatives and there is no mention of Unbridled Learning/Senate Bill 1.

The outdated references to KERA initiatives were all replaced by the updated references to Unbridled Learning / Senate Bill 1 and the revised syllabus was added to the file in folder 1.

EPSB Comment 10: The syllabus for SEM 770 continually references NCTM and math curriculum instead of science.

All of those references are appropriate as this course is a STEM methods courses combining the math and science MIC candidates in a single class. In the course, candidates are exposed to standards, readings, and learning experiences related to both math and science. Further, in presenting quotes in areas such as 'Commitment to Technology', NSTA has no position statements, whereas NCTM does, so it was reasonable to present passages from NCTM.

EPSB Comment 11: The syllabus for SEM 708 references K-12 instead of P-12.

The SEM 708 syllabi has been amended to read P-12 rather than K-12.

EPSB Comment 12: The curriculum contract includes EDC 533 but this course is not identified on the program profile.

That issue was addressed in response to item 1).

EPSB Comment 13: The program profile and syllabus for EDS 604 include the course title "Special Education for Secondary Education." The curriculum contract lists the course title as "Issues in Special Education."

The curriculum contract has been revised to have the proper title for the EDS 604 course.

EPSB Comment 14: The faculty matrix identifies a teaching assignment for EPE 773; however, no teaching assignment is listed for EPE 601, which according to the profile has replaced 773. Also, ELS 691 is listed as EDL 691 on the faculty matrix.

As indicated in the responses to both 1) and 5), it was a mistake to have identified the EPE course as 602, when the correct designation is 773. Given that fact, then there would be no faculty listing

for EPE 602, but is one for EPE 773 (Richard Angelo). In response to the other issue raised here, EDL 691 has been changed to ELS 691 in the third column of the information for Justin Bathon.

EPSB Comment 15: It is not clear why the Praxis II code is not listed for Biology: Content Knowledge while the codes for the other tests are identified.

The Biology Praxis test code was added. Also, as a result of searching for this number, it was recognized that all of the test codes were out of date. Now, all of the test codes have been revised to represent their current designations.

EPSB Comment 16: The curriculum contract does not specify that an undergraduate degree is required for admission to the program. The admission/retention policy document states that an undergraduate degree is required, but it does not specify that the undergraduate degree must be in one of the content areas listed for the program.

*A bullet point has been added to **4. Admission Criteria for the Program** to indicate the need for an undergraduate degree to allow admission to the program. Further, the language in the Admission / Retention policy document was changed to make clear that the degree must be equivalent to the science content area for which certification is being sought.*

Second Rejoinder to Comments from the EPSB on the program in Biological Science, 8-12

Submission Date: November 2, 2015

BIOLOGICAL SCIENCE GRADES 8-12 (Master's)

EPSB Comment 1) Syllabi continue to reference outdated terminology regarding the Kentucky Teacher Standards (EDC 637 p.7, EDC 638 pp. 4, and SEM 634 p.9).

a) SEM 634 Has been revised to correct the outdated terminology regarding the Kentucky Teacher Standards. The corrected version has been posted to the Science Education Program Submission.

b) EDC 637 "Classroom Management" has been edited to use current terminology.

c) EDC 638 "Technology Education" has been edited to use current terminology.

EPSB Comment 2) The syllabus provided for ELS 691 still references K-12 instead of P-12.

a) The syllabus for ELS 691, "Legal Perspectives for Teachers" has been edited to use the correct terminology.