

## Brothers, Sheila

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**From:** Farrell, Herman  
**Sent:** Wednesday, October 31, 2018 7:25 PM  
**To:** Bird-Pollan, Jennifer; Brothers, Sheila  
**Subject:** Chemistry Ph.D. change  
**Attachments:** PhD in Gerontology signed.pdf

The SAASC convened on Wednesday, October 31, 2018 to consider a proposal from the College of Arts & Sciences, Department of Chemistry to change the qualifying examination requirements for the Ph.D. in Chemistry.

Attendance: Brad Kerns, Susan Effgen, Tom Troland, Shawn Caudill, Azhar Swanson, Herman Farrell (Chair), Annie Weber (ex-officio)

Procedure:

Annie Weber acted as facilitator of the proposal.

Discussion:

The change involves the replacement of cumulative written qualifying examinations with original research proposals as the written qualifying examination. The rationale for the change is to help students build skill in reviewing and evaluating literature, assessing and developing a research plan and scientific writing, allow students to develop research relevant skills and increase the department's competitiveness in recruiting graduate students.

Vote:

A motion was made and seconded that the SAASC approve the proposal to change the qualifying examination requirements for the Ph.D. in Chemistry.

The committee voted 5 in favor, 0 opposed.

Herman Farrell  
Chair, SAASC

**Herman Daniel Farrell III**  
*University Research Professor  
Associate Professor - Playwriting  
SAASC - University Senate Committee Chair  
University of Kentucky  
Department of Theatre  
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## CHANGE DOCTORAL DEGREE PROGRAM FORM

### GENERAL INFORMATION

College:	<u>A&amp;S</u>	Department:	<u>Chemistry</u>
Current Major Name:	<u>Chemistry</u>	Proposed Major Name:	_____
Current Degree Title:	<u>Ph.D.</u>	Proposed Degree Title:	_____
Current Formal Option(s):	_____	Proposed Formal Option(s):	_____
Current Specialty Fields w/in Formal Option:	_____	Proposed Specialty Fields w/in Formal Option:	_____
Date of Contact with Institutional Effectiveness <sup>1</sup> ( <a href="mailto:OSPIE@l.uky.edu">OSPIE@l.uky.edu</a> ):		<u>3-23-18</u>	
Bulletin (yr & pgs):	<u>2017-2018 pg.1 Chemistry</u>	CIP Code <sup>1</sup> :	<u>40.0501</u>
		Today's Date:	<u>3-26-18</u>
Accrediting agency (if applicable):	_____		
Requested Effective Date:	<input checked="" type="checkbox"/> Semester following approval.	OR	<input type="checkbox"/> Specific Date <sup>2</sup> : _____
Dept Contact Person:	<u>Mark Lovell, DGS</u>	Phone:	<u>323-9540</u>
		Email:	<u>dgs.chemistry@uky.edu</u>

### CHANGE(S) IN PROGRAM REQUIREMENTS

	<u>Current</u>	<u>Proposed</u>
1. Number of transfer credits allowed: <i>(Maximum is Graduate School limit of total of 9 hours (or 25% of the credit hours needed to fulfill the pre-qualifying residency requirement.)</i>	_____	<u>No change</u>
2. Residence requirement: <i>(Minimum of one year before and after Qualifying Exams.)</i>	_____	<u>No change</u>
3. Language(s) and/or skill(s) required:	_____	<u>No change</u>
4. Provisions for monitoring progress and termination criteria:	_____	<u>No change</u>
5. Total credit hours required:	_____	<u>No change</u>
6. Required courses:	_____	<u>No change</u>
7. Required distribution of courses within program:	_____	<u>No change</u>
8. Minor area or courses outside program required:	_____	<u>No change</u>
9. Distribution of courses levels required (400G-500/600-700):	_____	<u>No change</u>
10. Qualifying examination requirements:	<u>Cumulative examinations as written qualifying examination</u>	<u>Original Research Proposal as written qualifying examination</u>

<sup>1</sup> Prior to filling out this form, you MUST contact Institutional Effectiveness. That office can also assist with the CIP code.

<sup>2</sup> Programs are typically made effective for the semester following approval. No program will be made effective until all approvals are received.

## CHANGE DOCTORAL DEGREE PROGRAM FORM

11. Explain whether the proposed changes to the program (as described in numbers 1 through 10) involve courses offered by another department/program. Routing Signature Log must include approval by faculty of additional department(s).

No additional courses required.

12. Other requirements not covered above:

None

13. What is the rationale for the proposed changes? If the rationale involves accreditation requirements, please include specific references to those requirements.

The existing cumulative exam process serves two primary functions. It tests student proficiency in specific areas of chemistry and fulfills the written requirement for the qualifying exam. The course work requirement serves a similar role in teaching and testing core concepts. Many of our students lack other fundamental skills necessary to perform Ph.D. level research. These include issues with reading and understanding the literature, formulating a scientific hypothesis, designing experiments, and evaluating data. The cumulative exam process does not adequately address these issues. Ideally, the written candidacy examination would be structured to help build student proficiency in each of these areas. Another concern is that prospective graduate student have indicated that our cumulative exam process factors into their decision in choosing a different university. An original proposal that consists of a research proposal would help to address these challenges and would reflect the wide range of roles our graduates perform in both industry and academia. The further development of research related skills would likely improve student success, prepare them for careers in chemistry, and would help to reduce the time to degree. A survey of Ph.D. written qualifiers used at comparable Universities shows that most use an original research proposal as the written qualifier.

The goal of this proposal is to replace the written portion of the qualifying exam with an original proposal requirement designed to:

1. Create a mechanism that allows students to build skills in reviewing and evaluating literature, assessing and developing a research plan, and scientific writing.
2. Allow our students to develop research relevant skills prior to qualifying exams.
3. Increase our competitiveness in recruiting graduate students.

A detailed summary of the proposed original research proposal as the written qualifier for the Ph.D. program is attached along with a proposed rubric for scoring the proposal.

## CHANGE DOCTORAL DEGREE PROGRAM FORM

### Signature Routing Log

#### General Information:

Proposal Name: Chemistry Ph.D. Written Qualifying Exam Change

Proposal Contact Person Name: Mark Lovell



Phone: 323-9540

Email: dgs.chemistry@uky.edu

#### INSTRUCTIONS:

Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

#### Internal College Approvals and Course Cross-listing Approvals:

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
Chemistry Department	3/8/18	Mark Meier / / mark.meier@uky.edu	
A&S EPC	4/24/18	Rynetta Davis / / rynetta.davis@uky.edu	
A&S Assoc Dean	4/24/18	Anna Bosch / / bosch@uky.edu	
		/ /	
		/ /	

#### External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision <sup>3</sup>
Undergraduate Council			
Graduate Council	9/27/18	Roshan Nikou	
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

<sup>3</sup> Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.

### **Detailed Summary of proposed requirements.**

This summary would also be placed in the graduate hand book to serve as a guide to students.

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The degree candidacy examination is composed of written and oral components. The written portion of the examination consists of an original proposal as described below.

#### **Written documents:**

- A. By November 15<sup>th</sup> of their 3<sup>rd</sup> semester, students must send two topics to their PhD committee. Each topic should include a title and a short description (3-5 sentences) describing the proposal and its importance. Each committee member will select one of the topics and communicate their choice to the student. The student must use the topic selected by the majority of the committee. In the event of a tie, the student is free to select either topic. Faculty must make their selection by December 1<sup>st</sup>.
- B. An electronic copy of the original proposal should be submitted to the committee as outlined below. The submission must include the cover page indicated in the appendix. The proposal should reflect a student's knowledge of the literature, ability to design experiments based on hypothesis driven research, and ability to analyze and assess data. The original proposal must be submitted to the graduate program staff assistant by March 1<sup>st</sup> of the 4<sup>th</sup> semester. The proposals will be due only at the prescribed time and there are no other opportunities. The only potential exception is through a written request due to substantial extenuating circumstances that must be approved by the GPC. The evaluation committee will grade and score the exam by March 15<sup>th</sup>.

**Original proposal:** The document must be written in Arial 11 point, Times New Roman 12 point, or Century Schoolbook 12 point font; be a minimum of 2500 words exclusive of figures, tables, and references; and have 1" margins on all sides. Figures are encouraged in the document but must be in line with the text. An outline with suggested section lengths is shown below. References should be cited and listed in an appendix to the proposal and do not count toward the page requirements. The title of the reference must be included for each citation in the bibliography. The document requires a minimum of 25 references. An evaluation committee will grade the proposal to determine if the student demonstrates the ability to plan, develop, and communicate a Ph.D. level project.

#### **Outline of original proposal (all estimates are for single spaced pages)**

- A. Hypothesis or purpose (**0.5 to 1 page**): Provide an outline of the hypothesis, product, or instrument development for the original proposal. The research topic may be in the same general field as the student's dissertation topic and may utilize the same methods. The topic cannot be directly related to the

student's work or other work in the student's group. The goals of the original proposal must be different than the focus of the thesis project.

- B. **Significance and innovation (1 to 2 pages):** Detail why the successful outcome of the proposal is important. Make sure to place the work in the context of the specific problem, gap in knowledge, advances in instrumentation, product innovation, or potential advancement being addressed as well in a broader context of the overall impact of the research.
- C. **Experimental Approach (2 to 4 pages):** What is the general experimental approach? Detail which methods you propose to use. The equipment and techniques do not have to be available to the student. Detail the expected results and discuss how they support the hypothesis. Discuss other potential outcomes and how they may alter your hypothesis.

## Grading

**Evaluation committee:** The evaluation committee will consist of 3 faculty members chosen at random through the DGS. Faculty assignments will be distributed evenly among all faculty. The evaluation committee for all eligible students will be chosen at the start of the spring semester. The advisor and members of the PhD committee will be exempt from serving on a student's evaluation committee. The committee will be randomly selected and not engineered to include faculty with specific expertise. The committee will be anonymous to the student and the student will be anonymous to the committee.

**Grading process:** Each member of the evaluation committee member will grade the proposal as pass or fail. The rubric contains several categories that should be graded. A final grade is assigned on a 0 to 3 scale as shown on the rubric. A score of 1.5 or higher is considered passing. The majority of the committee must score the proposal as passing for the student to pass their written qualifier. The completed rubric and scores will be emailed to the graduate studies staff assistant who will tabulate the results and communicate them to the student. The student will also receive copies of the completed rubrics. Students who do not complete the requirements by the listed deadlines will fail the written qualifying examination. This will result in a failure to make satisfactory progress in your degree program.

**Second attempt:** All students who fail get an opportunity to submit a new proposal. The student must present an entirely new proposal and not a rewrite of the previous proposal. The new proposal will go to a new evaluation committee. If approved by the PhD committee the student may use the second topic previously submitted. If not, the student will need to seek approval from their committee for a new topic. A second failing grade will result in the transition of the student to a terminal Master's program. In the event of a failed first attempt, the redo will be due by the last day of finals of their 4<sup>th</sup> semester. Faculty will grade the exam within two weeks.

**Grading guidelines:** The evaluation committee will grade the proposal based the rubric found in the appendix. Several criteria are covered including

1. Originality
2. Explanation of the significance
3. Clear and concise language
4. Relevant literature review
5. Appropriate experimental design and methodology
6. Understanding of the feasibility and likely outcomes

**Writing Style:** While grammar is not a deciding factor on whether the proposal passes, readability to enable the evaluator to follow the thought process and logic is imperative. Students are welcome to get help with grammar and spelling at the language center.

**Faculty Advisor input:** Faculty advisors and PhD committee members are not allowed to edit or provide advice on any part of the document or topic.

**Peer Input:** Students are allowed to consult with peers on all aspects of topic selection idea development, and proposal structure. Consultation is for the purpose of advice on proposal development only, and all work submitted by a student must be their own.

**Plagiarism:** All proposals will be subjected to a software based analysis against available documents on the web as well as previously submitted proposals. Any student found to have plagiarized their document will receive a failing grade and will not have an option of a second attempt. Rules on plagiarism are governed by the university guidelines on student conduct. The required cover page contains a statement attesting to the originality of the document.

## Dept. of Chemistry Original Proposal Rubric

	Exemplary (3)	Proficient (2)	Emerging (1)	Fail (0)
<b>Hypothesis/Purpose</b>				
Hypothesis clarity				
Statement of proposal specific aims or objectives				
Objectives supportive or sufficiently related to the hypothesis				
Description of proposal significance and long term impact				
<b>Significance and Innovation</b>				
Originality of proposed research				
Quality of background discussion and support for proposed studies				
Discussion of proposed studies discussed in the context of the field				
Identifies why the work is worth doing and what will be added to the field (e.g. gap filled, problem solved)				
<b>Experimental Approach</b>				
Detailed plan for data collection and analysis				
Plan for interpreting results				
Feasibility of Proposed studies.				
Discussion of anticipated results.				
Discussion of alternative approaches and outcomes.				
Overall proposal evaluation				
Overall Organization is logical				
Overall proposal clear and concise				

**Possible Score Calibration:**

- 0 – Poorly organized, lacks clear central hypothesis and sufficient background, lacks clear experimental design and analysis.**
- 1 – Satisfactory organization, central hypothesis and background. May need additional detail for data collection and analysis.**
- 2 – Well organized, strong central hypothesis and background. Only minor weaknesses in experimental approach/data analyses.**
- 3 – Excellent organization, well developed central hypothesis and background review. Outstanding experimental design/data analyses. Well described alternative approaches/outcomes.**

The overall rating is the proposal grade and can differ from the section scores above.  
A score of 1.5 or greater is considered passing.

**Overall Rating**

**Please provide brief comments for each proposal section**

**Hypothesis:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Significance:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Approach:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**Rationale for grading scale:** PhD students at the end of their career are expected to rank in a range of proficient to exemplary which correspond to scores between 2 and 3 on the grading scale used for the oral examination and at the dissertation defense. We propose to use a similar scale for the written qualifier. PhD students build skills through the various program requirements. This allows students to progress in their proficiency level. The written qualifier is a milestone that occurs during a student's 4<sup>th</sup> semester. We expect that students have built sufficient skill at this stage of their progression to be classified as emerging to proficient in the skills needed to write an original proposal. These same students will develop further skills by their dissertation defense and are expected to be proficient to exemplary at approximately the 5-year mark. A score of 1.5 on the written qualifier equates to our expectations that students are progressing in their development and advancing to proficiency. Use of a consistent rating scale for each stage of the program (written and oral qualifiers) allows us to track student success and allows us to clearly communicate expectations and progress to our students.

## Lovell, Mark

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**From:** Office of Strategic Planning and Institutional Effectiveness  
**Sent:** Friday, March 23, 2018 10:59 PM  
**To:** Chemistry Department - Director of Graduate Studies; Office of Strategic Planning and Institutional Effectiveness  
**Subject:** RE: UK SubChange Checklist for Proposed Change in Chem Ph.D.

Dear Dr. Lovell,

Thank you for your email regarding the proposed program change(s) to **Chemistry, PhD (40.0501)**.

My email will serve 2 purposes: 1.) Next steps for SACSCOC, and 2.) Verification and notification that you have contacted OSPIE—a Senate requirement for proposal approval.

1. **Next steps for SACSCOC:** None required
2. **Verification that OSPIE has reviewed the proposal:** Based on the proposal documentation presented and Substantive Change Checklist, the proposed program changes (refer to list below) are not substantive changes as defined by the University or SACSCOC, the university's regional accreditor. Therefore, no additional information is required by the Office of Strategic Planning & Institutional Effectiveness at this time. The proposed program change(s) may move forward in accordance with college and university-level approval processes.

List of Proposed Change(s):

- Changed graduation requirements from a cumulative examination to an original research proposal

Should you have questions or concerns about UK's substantive change policy and its procedures, please do not hesitate contacting me.

**RaeAnne Pearson, PhD**

Office of Strategic Planning & Institutional Effectiveness

University of Kentucky

Phone: 859-218-4009

Fax: 859-323-8688

Visit the Institutional Effectiveness Website: <http://www.uky.edu/ie>

**see blue.**

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**From:** Chemistry Department - Director of Graduate Studies  
**Sent:** Friday, March 23, 2018 10:15 AM  
**To:** Office of Strategic Planning and Institutional Effectiveness  
**Subject:** UK SubChange Checklist for Proposed Change in Chem Ph.D.

Good Morning,

Attached please find a completed UK subChange Checklist for a proposed change in the written qualifying exam for the Chemistry Ph.D. for evaluation.

Please let me know if I can provide any additional information.

Best regards,

Mark

April 25, 2018

Dear Graduate Council,

On behalf of the faculty of the College of Arts and Sciences, the Education Policy Committee discussed and approved the change to the Chemistry PhD Program 9:0:0 on Tuesday, April 24, 2018.

Sincerely,



Rynetta Davis  
Chair, Education Policy Committee

March 26, 2018



**University of Kentucky**  
**College of Arts and Sciences**

Department of Chemistry  
161 Jacobs Science Building  
Lexington, KY 40506  
P: 859-257-7080

<https://chem.as.uky.edu/>

Camille Harmon  
College of Arts and Sciences  
University of Kentucky  
Lexington, KY 40506

Dear Camille,

On March 8, 2018, the faculty of the Department of Chemistry held a faculty meeting at which the proposed change in our written qualifying exam system was presented. After in-depth discussion, the faculty voted nearly unanimously to change from the old “cumulative exam” system to the new “written proposal” system.

Please let me know if you have questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Mark S. Meier', with a long horizontal flourish extending to the right.

Mark S. Meier  
Professor and Chair  
Department of Chemistry

see blue.

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