

## Brothers, Sheila

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**From:** Cramer, Aaron  
**Sent:** Wednesday, April 24, 2019 11:51 AM  
**To:** Bird-Pollan, Jennifer; Brothers, Sheila; Ett-Mims, Joanie  
**Cc:** Dziubla, Thomas  
**Subject:** NEW UC: Biopharmaceutical Engineering  
**Attachments:** New UG Cert Form-biopharmaceutical Engineering-v7.pdf

Proposed New Undergraduate Certificate: Biopharmaceutical Engineering

This is a recommendation that the University Senate approve the establishment of a new Undergraduate Certificate: Biopharmaceutical Engineering, in the Department of Chemical and Materials Engineering within the College of Engineering under the condition that the courses CME 575 and PHS 522 are approved by the Undergraduate Council.

Rationale: The National Academy of Engineering has listed the engineering of better medicines as one of the grand engineering challenges. To meet this need, the pharmaceutical field will need engineering students who have a solid foundation in both chemical engineering and basic pharmaceutical principles. Through this educational experience, students who have interest in formulation design are encouraged to continue onto graduate programs in pharmaceutical studies and related fields, while students who are focused on process production will enter directly into the pharmaceutical industry. The proposed program will formalize a successful educational collaboration in this area that spans a decade. Enrollment of approximately 35 students is expected. The courses on which this recommendation is conditioned are scheduled to be considered by the Undergraduate Council on April 30, and it seems that the proposers have worked with the Undergraduate Council reviewers to address their concerns.

Aaron

Aaron M. Cramer  
Associate Professor, Electrical and Computer Engineering  
Director of Graduate Studies, Electrical Engineering  
Chair, Senate Academic Programs Committee  
University of Kentucky  
859-257-9113  
[aaron.cramer@uky.edu](mailto:aaron.cramer@uky.edu)

## NEW UNDERGRADUATE CERTIFICATE

An Undergraduate Certificate is an integrated group of courses (as defined here 12 or more credits) that are 1) cross-disciplinary, but with a thematic consistency, and 2) form a distinctive complement to a student's major and degree program, or 3) leads to the acquisition of a defined set of skills or expertise that will enhance the success of the student upon graduation. Undergraduate Certificates meet a clearly defined educational need of a constituency group, such as continuing education or accreditation for a particular profession; provide a basic competency in an emerging area within a discipline or across disciplines; or respond to a specific state mandate.

After the proposal receives college approval, please submit this form electronically to the Undergraduate Council. Once approved at the academic council level, the academic council will send your proposal to the Senate Council office for additional review via a committee and then to the Senate for approval. Once approved by the Senate, the Senate Council office will send the proposal to the appropriate entities for it to be included in the Bulletin. The contact person listed on the form will be informed when the proposal has been sent to committee and other times, subsequent to academic council review.

Please click [here](#) for more information about undergraduate certificates.

1. GENERAL INFORMATION			
1a	Date of contact with Institutional Effectiveness (IE) <sup>1</sup> :	7/25/2016	
	<input checked="" type="checkbox"/> Appended to the end of this form is a PDF of the reply from Institutional Effectiveness.		
1b	Home college: Engineering		
1c	Home educational unit (department, school, college <sup>2</sup> ): <i>Chemical and Materials Engineering</i>		
1d	Proposed certificate name: <i>Biopharmaceutical Engineering Certificate</i>		
1e	CIP Code <sup>3</sup> : 15.0615		
1f	Requested effective date:	<input checked="" type="checkbox"/> Fall semester following approval.	OR <input type="checkbox"/> Specific Date <sup>4</sup> : <i>Fall 20</i>
1g	Contact person name: <i>Thomas Dziubla</i>	Email: <i>thomas.dziubla@uky.edu</i>	Phone: <i>859-257-4063</i>
2. OVERVIEW			
2a	Provide a brief description of the proposed new undergraduate certificate. (300 word limit)		
	<i>The biopharmaceutical field is a continually changing industry that has classically been separated into upstream (drug formulation and development process) and downstream (process and manufacturing) components, with chemical engineering playing a critical role in both areas. The future of this field will depend upon innovative</i>		

<sup>1</sup> You can reach Institutional Effectiveness by phone or email (257-2873 or [institutionaleffectiveness@uky.edu](mailto:institutionaleffectiveness@uky.edu)).

<sup>2</sup> Only cross-disciplinary certificates may be homed at the college level.

<sup>3</sup> In consultation with the Undergraduate Council Chair and Registrar, identify the appropriate CIP code(s) prior to college-level approval.

<sup>4</sup> Certificates are typically made effective for the semester following approval. No program will be made effective unless all approvals, up through and including University Senate approval, are received.

**NEW UNDERGRADUATE CERTIFICATE**

	<i>new engineers who are able to easily communicate with people on either side. The goal of this program is to provide students a cohesive view of basic biopharmaceutical principles, so that they can more readily apply their chemical engineering skills to this diverse discipline.</i>		
2b	This proposed undergraduate certificate (check all that apply):		
	<input checked="" type="checkbox"/> Is cross-disciplinary <sup>5</sup> .		
	<input type="checkbox"/> Is certified by a professional or accredited organization/governmental agency.		
	<input type="checkbox"/> Clearly leads to advanced specialization in a field.		
2c	<b>Affiliation.</b> Is the undergraduate certificate affiliated with a degree program?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	If "yes," include a brief statement of how it will complement the program. If it is not affiliated with a degree program, incorporate a statement as to how it will provide an opportunity for a student to gain knowledge or skills not already available at UK. (300 word limit)		
	<i>The biopharmaceutical certificate program is a specialization within the chemical engineering degree and has been active for 10 years. In this program, students take courses in the college of Pharmacy and in chemical engineering. Some of these courses taken are only available to students in the PharmD program and the Biopharmaceutical certificate.</i>		
2d	<b>Duplication.</b> Are there similar regional or national offerings?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	If "Yes," explain how the proposed certificate will or will not compete with similar regional or national offerings.		
2d	<b>Rationale and Demand.</b> Explain the need for the new undergraduate certificate (e.g. market demand and cross-disciplinary considerations). (300 word limit)		
	<i>The National Academy of Engineering recognized Engineering better medicines as one of the grand engineering challenges. Part of this challenge is both the design of better medicine approaches and how to produce these medicines on a large scale under strict regulatory controls. To meet this need, the pharmaceutical field will need engineering students who have a solid foundation in both chemical engineering and basic pharmaceutical principles. Through this educational experience, students who have interest in formulation design are encouraged to continue onto graduate programs in pharmaceutical studies and related fields. Students who are focused on process production will enter directly into the pharmaceutical industry.</i>		
2e	<b>Target audience.</b> Check the box(es) that apply to the target student population.		
	<input checked="" type="checkbox"/> Currently enrolled undergraduate students.		
	<input type="checkbox"/> Post-baccalaureate students.		
2f	Describe the demographics of the intended audience. (150 word limit)		
	<i>The intended audience is currently enrolled chemical engineering undergraduate students. students apply in their sophomore year and begin their course work in their 3rd and 4th years. Note that each year, we will admit ~10-15 students/year. This translates to a running enrollment of 30-45 students in the program..</i>		
2g	<b>Projected enrollment.</b> What are the enrollment projections for the first three years?		
	Year 1	Year 2	Year 3

<sup>5</sup> An undergraduate certificate must be cross-disciplinary and students must take courses in at least two disciplines, with a minimum of three credits to be completed in a second discipline.

**NEW UNDERGRADUATE CERTIFICATE**

			(Yr. 1 continuing + new entering)	(Yrs. 1 and 2 continuing + new entering)
	Number of Students	35	35	35

2h **Distance learning (DL).** Initially, will any portion of the undergraduate certificate be offered via DL? Yes  No

If "Yes," please indicate below the percentage of the certificate that will be offered via DL.

1% - 24% <input type="checkbox"/>	25% - 49% <input type="checkbox"/>	50% - 74% <input type="checkbox"/>	75 - 99% <input type="checkbox"/>	100% <input type="checkbox"/>
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If "Yes," describe the DL course(s) in detail, including the number of required DL courses. (200 word limit)

**3. ADMINISTRATION AND RESOURCES**

3a **Administration.** Describe how the proposed undergraduate certificate will be administered, including admissions, student advising, retention, etc. (150 word limit)

*Students apply to the program during the fall semester of their sophomore year. The application process includes an online form, a written statement on career goals and an interview with two members of the faculty of record. In order for students to be admitted, they must have a least a 3.3 GPA and receive a B or better in CME 200. After this time, all students enrolled in the certificate meet once a semester with the director of the program or a faculty of record to assess progress, aide in course selection and provide guidance with career goals. Students enrolled in the program will meet once a semester with the certificate director to go over progress in the program.*

3b **Faculty of Record.** The Faculty of Record consists of the undergraduate certificate director and other faculty who will be responsible for planning and participating in the certificate program. Describe the process for identifying the certificate director. Regarding membership, include the aspects below. (150 word limit)

- Selection criteria;
- Whether the member is voting or non-voting;
- Term of service; and
- Method for adding/removing members.

*Director of the Program will be selected from the Department of Chemical and Materials Engineering and will be selected by the faculty of record. Director of the Program will be a 3 year appointment.*

*Faculty of record will come from the department of Chemical and Materials Engineering and from the Department of Pharmaceutical Sciences in the College of Pharmacy. The faculty will have appropriate experience in the pharmaceutical or pharmaceutically related fields, including biomaterials, drug delivery, biomedical sciences, etc. The faculty of record will be responsible for the oversight and direction of the program and will all be voting members.*

*Appointments to the faculty of record will be made yearly, with addition and removal will be made by the Director with guidance by the Chairs of the Department*

*Faculty of Record:*

*Dr. Thomas Dziubla - Director*

*Dr. Brad Berron*

*Dr. Dibakar Bhattacharyya*

**NEW UNDERGRADUATE CERTIFICATE**

	<i>Dr. J. Zach Hilt</i> <i>Dr. Daniel Pack</i> <i>Dr. Patrick Marsac</i> <i>Dr. Younsoo Bae</i>		
3c	<b>Advisory board.</b> Will the undergraduate certificate have an advisory board <sup>6</sup> ?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	If "Yes," please describe the standards by which the faculty of record will add or remove members of the advisory board. (150 word limit)		
	If "Yes," please list below the <u>number</u> of each type of individual (as applicable) who will be involved in the advisory board.		
	Faculty within the college who are within the home educational unit.		
	Faculty within the college who are outside the home educational unit.		
	Faculty outside the college who are within the University.		
	Faculty outside the college and outside the University who are within the United States.		
	Faculty outside the college and outside the University who are outside the United States.		
	Students who are currently in the program.		
	Students who recently graduated from the program.		
	Members of industry.		
	Community volunteers.		
	Other. Please explain:		
	<b>Total Number of Advisory Board Members</b>		
3d	<b>Course utilization.</b> Will this undergraduate certificate utilize courses from other academic units?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	If "Yes," two pieces of supporting documentation are required.		
	<input type="checkbox"/> Check to confirm that appended to the end of this form is a letter of support from the other units' chair/director <sup>7</sup> from which individual courses will be used. The letter must include demonstration of true collaboration between multiple units <sup>8</sup> and impact on the course's use on the home educational unit.		
	<input type="checkbox"/> Check to confirm that appended to the end of this form is verification that the chair/director of the other unit has consent from the faculty members of the unit. This typically takes the form of meeting minutes.		
3e	<b>Financial Resources.</b> What are the (non-course) resource implications for the proposed undergraduate certificate, including any projected budget needs? (300 word limit)		
	<i>The College of Engineering will provide a \$4,000/year stipend for the Director of the Certificate to compensate for the administration and organization of the program.</i>		
3f	<b>Other Resources.</b> Will the proposed undergraduate certificate utilize resources (e.g. departmentally controlled equipment or lab space) from additional units/ programs?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>

<sup>6</sup> An advisory board includes both faculty and non-faculty who advise the faculty of record on matters related to the program, e.g. national trends and industry expectations of graduates.

<sup>7</sup> A dean may submit a letter only when there is no educational unit below the college level, i.e. there is no department/school.

<sup>8</sup> Show evidence of detailed collaborative consultation with such units early in the process.

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	If “Yes,” identify the other resources that will be shared. (150 word limit)
	<p>If “Yes,” two pieces of supporting documentation are required.</p> <p><input type="checkbox"/> Check to confirm that appended to the end of this form is a letter of support from the appropriate chair/director<sup>9</sup> of the unit whose “other resources” will be used.</p> <p><input type="checkbox"/> Check to confirm that appended to the end of this form is verification that the chair/director of the other unit has consent from the faculty members of the unit. This typically takes the form of meeting minutes.</p>

**4. IMPACT**

4a	<b>Other related programs.</b> Are there any related UK programs and certificates? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
	If “Yes,” describe how the new certificate will complement these existing UK offerings. (250 word limit)
	<p>If “Yes,” two pieces of supporting documentation are required.</p> <p><input type="checkbox"/> Check to confirm that appended to the end of this form is a letter of support from the appropriate chair/director of the unit whose “other resources” will be used.</p> <p><input type="checkbox"/> Check to confirm that appended to the end of this form is verification that the chair/director has input from the faculty members of the unit. This typically takes the form of meeting minutes.</p>

**5. ADMISSIONS CRITERIA AND CURRICULUM STRUCTURE**

5a	<b>Admissions criteria.</b> List the admissions criteria for the proposed undergraduate certificate. (150 word limit)
	<i>In order to be eligible for the certificate, students must be chemical engineering undergraduate students in good standing. In addition, students must have at least a 3.3 GPA, receive a B or better in CME 200, submit an application for the program and go through the program interview process. selections are made between the fall and spring semester of the sophomore year and are made by vote of the faculty of record.</i>

5b	<b>Core Courses.</b> List the required courses below.		
Prefix & Number	Course Title	Credit Hrs	Course Status <sup>10</sup>
<i>BCH 401G</i>	<i>Biochemistry</i>	3	No Change
<i>PHR 522</i>	<i>Biopharmaceutical Sciences</i>	3	New
<i>CME 575</i>	<i>Fundamentals in Pharmaceutical Engineering</i>	3	New
<i>PGY 206</i>	<i>Physiology</i>	3	No Change
			Select one....

<sup>9</sup> A dean may submit a letter only when there is no educational unit below the college level, i.e. there are no departments/schools.

<sup>10</sup> Use the drop-down list to indicate if the course is a new course (“new”), an existing course that will change (“change”), or if the course is an existing course that will not change (“no change”).

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5c	<b>Elective courses.</b> List the electives below.		
Prefix & Number	Course Title	Credit Hrs	Course Status <sup>11</sup>
<i>CME 573</i>	<i>Drug Delivery</i>	3	New
<i>CME 570</i>	<i>Biotechnology: Interfaces and Devices</i>	3	New
<i>CME 395</i>	<i>Undergraduate Research( research must be on related topic)</i>	3	No Change
			No Change
			No Change
			Select one....
<i>Total Credit Hours:</i>		<i>18</i>	
5d	Are there any other requirements for the undergraduate certificate? If “Yes,” note below. (150 word limit)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
5e	Is there any other narrative about the undergraduate certificate that should be included in the Bulletin? If “Yes,” please note below. (300 word limit)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<b>6. ASSESSMENT</b>			
6a	<b>Student learning outcomes.</b> Please provide the student learning outcomes for this undergraduate certificate. List the knowledge, competencies, and skills (learning outcomes) students will be able to do upon completion. (Use action verbs, not simply “understand.”) (250 word limit)		
	<ol style="list-style-type: none"> <li>1. Students will demonstrate a knowledge of the various aspects of the Pharmaceutical Industry.</li> <li>2. Students will demonstrate understanding of the various pharmaceutical dosage forms, including their usage and their means of production.</li> <li>3. Students will be able to identify and solve Chemical Engineering Problems within the Pharmaceutical Field</li> </ol>		
6b	<b>Student learning outcome (SLO) assessment.</b> How and when will student learning outcomes be assessed? Please map proposed measures to the SLOs they are intended to assess. Do not use grades or indirect measures (e.g. focus groups, surveys) as the sole method. Measures likely include artifacts such as course-embedded assessment (e.g., portfolios, research papers or oral presentations); and test items (embedded test questions, licensure/certification testing, nationally or state-normed exams). (300 word limit)		
	<p><i>SLO 1: Assessment Artifacts will include Rubric review of Report/presentation in CME 674: Pharmaceutical Engineering</i></p> <p><i>SLO 2: Assessment Artifact for this aim will include the midterm and final exam from PHS 522</i></p> <p><i>SLO 3: Assessment Artifact will come from Final Exam/Project in CME 575: Fundamentals of Pharmaceutical Engineering</i></p>		

<sup>11</sup> Use the drop-down list to indicate if the course is a new course (“new”), an existing course that will change (“change”), or if the course is an existing course that will not change (“no change”).

**NEW UNDERGRADUATE CERTIFICATE**

6c	<b>Certificate outcome assessment<sup>12</sup>.</b> Describe program evaluation procedures for the proposed undergraduate certificate. Include how the faculty of record will determine whether the program is a success or a failure. List the benchmarks, the assessment tools, and the plan of action if the program does not meet its objectives. (250 word limit)
	<i>Program success will be evaluated on a 3-year cycle matching the cycle of SACS evaluation needs. Student performance and meeting of SLO outcomes will be used as primary success indicators. Secondary program success indicators will be measured by evaluating student placement upon graduation. As the program is geared towards identifying students interested in pharmaceutical engineering and training them for the field, the number of students to enter the pharmaceutical industry and pharmaceutical related graduate programs will be monitored.</i>

**7. OTHER INFORMATION**

7a	Is there any other information about the undergraduate certificate to add? (150 word limit)

**8. APPROVALS/REVIEWS**

Information below does not supersede the requirement for individual letters of support from educational unit administrators and verification of faculty support (typically takes the form of meeting minutes).

	Reviewing Group Name	Date Approved	Contact Person Name/Phone/Email
8a	<i>(Within College) In addition to the information below, attach documentation of department and college approval. This typically takes the form of meeting minutes but may also be an email from the unit head reporting department- and college-level votes.</i>		
	<i>Chemical &amp; Materials Engineering</i>		<i>Doug Kalika / 7-5507 / douglass.kalika@uky.edu</i>
	<i>College of Engineering</i>	<i>11/2/2017</i>	<i>Kimberly Anderson / 7-1864 / kimberly.anderson@uky.edu</i>
			/ /
			/ /

8b	<b>(Collaborating and/or Affected Units)</b>		
	<i>Department of Pharmaceutical Sciences</i>	<i>August 24, 2017</i>	<i>Joe Chappell / 218-0775 / Chappell@uky.edu</i>
	<i>Department of Biochemistry</i>	<i>August 10, 2017</i>	<i>Rebecca Dutch / 323-1795 / rdutc2@uky.edu</i>
	<i>Department of Physiology</i>	<i>July 28, 2017</i>	<i>Dexter F. Speck / 323-5383 / dfspeck@uky.edu</i>
			/ /
			/ /
			/ /

<sup>12</sup> This is a plan of how the certificate will be assessed, which is different from assessing student learning outcomes.



**NEW UNDERGRADUATE CERTIFICATE**

			/	/
			/	/
			/	/
8c	(Senate Academic Council)	<b>Date Approved</b>	<b>Contact Person Name</b>	
	Health Care Colleges Council (if applicable)			
	Undergraduate Council	10/16/18	Joanie Ett-Mims	



University of Kentucky

College of Pharmacy

Aug. 25, 2017

Thomas Dziubla, Professor  
Department of Chemical and Materials Engineering  
University of Kentucky  
Lexington, KY

**Joe Chappell, Professor & Chair**  
George A. Digenis Professor of Drug Design  
& Discovery  
*Department of Pharmaceutical Sciences*  
789 South Limestone Street  
Lexington, KY 40536-0082  
Office: (859) 218-0775  
Cell phone (859) 536-4593  
chappell@uky.edu

Dear Dr. Dziubla,

This letter is to confirm the Department of Pharmaceutical Science's support for the Biopharmaceutical Engineering Certificate. As you know, there has been a long-standing goal for more joint program efforts between our two departments and I believe formalization of an Undergraduate certificate is an exciting development. Indeed, a number of our faculty are listed as faculty of record, emphasizing the multidisciplinary nature of this program.

In addition to this program, it is our intention to create a new course, PHS 395 Research Experience for Undergraduates that could be used to fulfill elective requirements for the certificate program. This is simply a proposed new course, which must seek approve from the University Senate Undergraduate Council. This may or may not be possible because we currently do not offer any approved undergraduate programs. Our faculty, nonetheless, participate in supporting undergraduate research projects by their affiliations and appointments in other departments and programs.

Sincerely,

Joe Chappell



***Dexter F. Speck Ph.D.***  
*Professor of Physiology*  
*MS-515 Medical Center 0298*  
*Chandler Medical School*  
*University of Kentucky*  
*Tel: (859) 323-5383*  
*E-mail: [dfspeck@uky.edu](mailto:dfspeck@uky.edu)*

Thomas Dziubla, Professor  
Department of Chemical and Materials Engineering  
University of Kentucky  
Lexington, KY

Dear Dr. Dziubla,

This letter is to confirm the Department of Physiology's support for the Biopharmaceutical Engineering Certificate. I believe that this is an excellent opportunity for Chemical Engineering students to gain a better appreciation of the pharmaceutical field and basic human biology. We understand that as part of this track, students are expected to take Elementary Physiology, PGY 206, which is offered by our department. It is my understanding that students in your biopharmaceutical track have already been taking our PGY 206 for the past 10 years, and as such, I do not expect the certificate to increase the class load. As Director of Teaching for the Physiology Department, we are pleased to include this course as a part of the Certificate requirements.

If you have any additional questions, you are welcome to email me ([dexter.speck@uky.edu](mailto:dexter.speck@uky.edu)) or call (859-323-5383).

Sincerely,

Dexter F. Speck  
Professor of Physiology  
Director of Teaching



**College of Medicine**

*Rebecca Ellis Dutch, Ph.D.  
Department of Molecular and  
Cellular Biochemistry  
BBSRB B177  
Lexington, KY 40536-0509  
Tel: (859) 323-1795  
E-mail: rdutc2@uky.edu*

August 10, 2017

Thomas Dziubla, Professor  
Department of Chemical and Materials Engineering  
University of Kentucky  
Lexington, KY

Dear Dr. Dziubla,

After review of your application, I wish to confirm the Department of Biochemistry's support for the Biopharmaceutical Engineering Certificate. I believe that the certificate is of significant value to students, providing them an opportunity to augment their engineering education with a biomedical focus. As part of this track, students are expected to take fundamentals of Biochemistry, BCH 401G, which is offered by our department. It is my understanding that students in your biopharmaceutical track have already been taking BCH 401G for the past 10 years, and as such, I do not expect the certificate to increase the class load.

Please feel free to contact me if you need any additional information.

Sincerely,

A handwritten signature in cursive script that reads 'Rebecca J. Dutch'.

Rebecca Dutch  
Professor and Interim Chair, Molecular and Cellular Biochemistry  
Associate Dean for Biomedical Education  
University of Kentucky College of Medicine



**Department of Chemical and  
Materials Engineering**

*177 Anderson Hall  
Lexington, KY 40506-0046  
(859) 257-5507  
douglass.kalika@uky.edu*

November 10, 2017

TO: Prof. Kim Anderson, Associate Dean for Administration and Academic Affairs

RE: Approval of Proposed Certificate in Biopharmaceutical Engineering

The faculty of the Department of Chemical and Materials Engineering is pleased to unanimously support the proposal to establish the Undergraduate Certificate in Biopharmaceutical Engineering. Professor Thomas Dziubla will serve as the inaugural Director of the certificate.

The CME department's Undergraduate Studies Committee participated in the preparation of the certificate proposal. The details of the certificate were formally approved by the department faculty via e-mail circulation during the week of November 6<sup>th</sup> without objection.

Sincerely,

*Doug Kalika*

Douglass S. Kalika, Professor and Chair  
Department of Chemical and Materials Engineering



**University of Kentucky**  
**College of Engineering**  
*Office of the Dean*

351 Ralph G. Anderson Bldg.  
Lexington, KY 40506-0503

P: 859-257-1687

F: 859-257-5727

[www.engr.uky.edu](http://www.engr.uky.edu)

November 3, 2017

To Whom It May Concern:

The College of Engineering faculty reviewed the Undergraduate Certificate for Biopharmaceutical Engineering via email. There were no concerns or objections raised. The date of approval is November 2, 2017.

Sincerely,

Kimberly Anderson, Ph.D.  
Associate Dean for Administration  
and Academic Affairs

seeblue.

*An Equal Opportunity University*

## Brandenburg, Barbara J

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**From:** Pearson, RaeAnne M  
**Sent:** Thursday, November 09, 2017 5:12 PM  
**To:** Brandenburg, Barbara J  
**Cc:** Office of Strategic Planning and Institutional Effectiveness  
**Subject:** RE: Biopharmaceutical Engineering Certificate Application

Dear Barbara Brandenburg,  
Thank you for your email regarding the proposed program, **Biopharmaceutical Engineering, Undergraduate Certificate (15.0615)**.

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 proposed documentation presented and the Substantive Change Checklist, the proposed program does not constitute a substantive change 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 may move forward in accordance with college and university-level approval processes.

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:** Brandenburg, Barbara J  
**Sent:** Friday, November 03, 2017 3:05 PM  
**To:** Pearson, RaeAnne M  
**Subject:** FW: Biopharmaceutical Engineering Certificate Application

RaeAnn,

I should have sent this one to you as it included all the documents. I will also send you a new email on the production certificate.

Sorry for the confusion.

BJ Brandenburg  
College of Engineering

**UK**  
UNIVERSITY OF  
**KENTUCKY**  
Chemical & Materials Engineering

177 F Paul Anderson Tower  
Lexington, KY 40506-0046

859-257-8028  
fax 859-323-1929

[www.engr.uky.edu/cme](http://www.engr.uky.edu/cme)


March 6, 2018

Dear Sarah Kerckmar,

As part of the Biopharmaceutical Engineering Certificate, Pharmaceutical Engineering (CME 599) and Drug Discovery, Development and Commercialization (EGR 599) are listed as required courses. Pharmaceutical Engineering is a course being developed and cross-taught between faculty in the College of Pharmacy and College of Engineering. Drug Discovery, Development and Commercialization is a course currently offered in the College of Pharmacy and is being made available as an overview class for students in the undergraduate certificate through the 599 designation.

This letter is to confirm that these classes will be offered every other year to satisfy the certificate requirements. Additionally, after the courses have been offered twice under the 599 designation, a new course proposal will be submitted and the Biopharmaceutical Engineering Certificate will be updated to reflect the new course numbers.


Sincerely,



Thomas Dziubla  
Director of Biopharmaceutical Engineering Track



Douglass Kalika  
Chair, Department of Chemical and Materials Engineering, College of Engineering



Joseph Chappell  
Chair, Department of Pharmaceutical Sciences, College of Pharmacy

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Dr. Thomas D. Dziubla, Professor  
Department of Chemical and Materials Engineering  
177 F. Paul Anderson Tower, Lexington, KY 40506-0046  
Ph: (859) 257-4063 Fax: (859) 323-1929  
email: [dziubla@engr.uky.edu](mailto:dziubla@engr.uky.edu)

blue.





UNIVERSITY OF KENTUCKY

**College of Pharmacy**

Department of Pharmaceutical Sciences  
789 S. Limestone, Room 333  
Lexington, KY 40536-0596  
<http://pharmacy.mc.uky.edu/>

**Younsoo Bae, Ph.D.**

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Dear CME Committee Members:

I am writing to express my strongest support of having CME students participate in the introductory course of pharmaceutical sciences PHS922 at the College of Pharmacy.

As an instructor of PHS922 and course director of its precedent course PHS914, I have witnessed great benefits for CME students to learn fundamentals of pharmaceutical sciences along with our professional PharmD students in the past 10+ years.

CME students have been exposed to new fields of research encompassing pharmaceutical sciences, medicinal chemistry, drug delivery, formulation optimization, and various diseases requiring the development of new drug entities. Our records show that CME students with the new knowledge have explored unique careers in the industry and academia across various disciplines. In fact, several CME students have joined our graduate program and they have contributed to broadening and strengthen our efforts in educating best, young, future scientists. Importantly, the undergraduate CME students taking our courses have been successful among our PharmD students. For instance, total 16 students in 2015 received 11 As, 4Bs, and 1C.

I am certainly aware of your concerns that undergrads to be enrolled in a 900 level class may not be served for their educational needs unless a separate course for them is developed. However, the aforementioned records and evidence clearly show that CME undergrads can greatly benefit from participating PHS914/922. Therefore, I would like to appreciate your continuing support for CME undergraduate students to take our introductory pharmaceutical science course at the college of pharmacy.

Please let me know if you would have any further questions.

Sincerely yours,

Younsoo Bae, PhD