

February 5, 2010

TO: David Randall  
Senate Council  
201 Main Bldg.  
CAMPUS 0032

Dear Dr. Randall,

I am transmitting to you the Proposal for Change in Sensing Technologies Certificate to Bioactive Interfaces and Devices Certificate. The Graduate Council approved this proposal on February 4, 2010.

Sincerely Yours,

Jeannine Blackwell, Dean  
The Graduate School

Cc: Sheila Brothers

October 7, 2009



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**To:** Dean Jeannine Blackwell  
**CC:** Cleophus Price  
**From:** Dr. Kimberly W. Anderson (PI -IGERT)

**Subject:** Change in Sensing Technologies Certificate to Bioactive Interfaces and Devices Certificate

As you know, we recently received NSF funding for a new Integrative Graduate Education and Research Training (IGERT) Program focused on Engineered Bioactive Interfaces and Devices. As part of a previous IGERT, Dr. Bachas (PI of that grant) established a certificate in Sensing Technologies. With the new IGERT having a broader focus, we are requesting that the Certificate in Sensing Technologies be changed to a Certificate in Bioactive Interfaces and Devices. This change will enable us to reach a much wider range of students and include faculty members in a wide range of disciplines across campus.

I am including detailed information on the proposed changes in certificate requirements. These proposed changes will better reflect the focus of the new program.

If you need further information regarding this request, please don't hesitate to contact me either by phone at 859-257-4815 or by email at [kanderson@engr.uky.edu](mailto:kanderson@engr.uky.edu).

Thank you.

A handwritten signature in black ink, appearing to read "Kimberly W. Anderson", written over a horizontal line.

Dr. Kimberly W. Anderson

Director of IGERT Program on Bioactive Interfaces and Devices

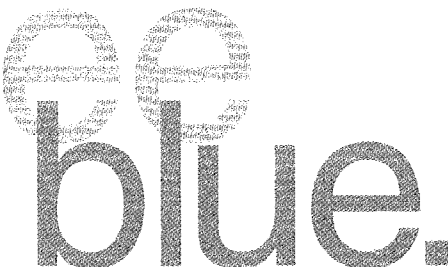
A handwritten signature in black ink, appearing to read "Eric Grulke", written over a horizontal line.

Dr. Eric Grulke

Associate Dean for Research, College of Engineering

Note: Signatures from Dr. Douglass Kalika, Chair of Chemical and Materials Engineering and Dr. Leonidas Bachas, Director of Certificate on Sensing Technologies is included on a separate page.

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## Proposal for Sensing Technologies Certificate Changes

Item	Current	Proposed	Explanation
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<b>Director</b>	Dr. Leonidas Bachas	Dr. Kim Anderson	The Certificate is based on a funded IGERT grant from the National Science Foundation. The PI on the new grant is Dr. Anderson and therefore, the Director on the Certificate needs to be changed also.
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<b>Name Change</b>	Sensing Technologies	Bioactive Interfaces and Devices	update language to modern terminology to make certificate appeal to a wider range of students
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<b>Objective:</b>	<p>Enhance graduate education through a cross-disciplinary curriculum in Sensors and Sensing Architectures. As the field of sensing development is an inherently multidisciplinary endeavor, the program will yield scientists and engineers with the ability to transcend traditional boundaries in their professional careers. The success of such students would also serve to increase the prestige of the departments and research ongoing at the University.</p>	<p>Enhance graduate education through a cross-disciplinary curriculum in Bioactive Interfaces and Devices. As the field of bioactive interfaces is an inherently multidisciplinary endeavor, the program will yield scientists and engineers with the ability to transcend traditional boundaries in their professional careers. The success of such students would also serve to increase the prestige of the departments and research ongoing at the University.</p>	<p>update language to modern terminology</p>
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<b>Requirement 3</b>	6 credit hours from courses selected from a list of approved courses. These could be courses from the student's home department.	3 credit hours from any of the below:	New certificate requires more required courses so the number of hours that can be chosen from this requirement has been decreased.
<ul style="list-style-type: none"> <li>• Bioanalytical Sensors (Chemistry)</li> <li>• Molecular Modeling (Chemistry)</li> <li>• Physical Principles of Sensing and Sensor Technology (Electrical Engineering)</li> <li>• Chemometrics and Parallel Instrumentation (Pharmaceutical Sciences)</li> </ul>	<p><b>BME 662</b> Tissue-Implant Interfaces</p> <p><b>CHE 626</b> Instrumental Analysis</p> <p><b>CME 599/780</b> Synthesis and Engineering of Advanced Materials</p> <p><b>CME 599/CME 780/PHR 760</b> Drug Delivery</p>		Many of the original classes are no longer offered and the new courses better reflect the focus of the current program.
	<p><b>BME 661</b> Biomaterials Science and Engineering</p> <p><b>BCH 604</b>, Structural Biology</p> <p><b>BCH 610</b>, Biochemistry of Lipids and Membranes</p> <p><b>BCH 612</b>, Structure and Function of Proteins and Enzymes</p> <p><b>CHE 550</b>, Biological Chemistry</p> <p><b>CHE 522</b>, Instrumental Analysis (non-Chemistry students only)</p> <p><b>CHE 626</b>, Instrumental Analysis (Chemistry or non-Chemistry students)</p> <p><b>EE/MSE 569</b>, Electronic Packaging Systems and Manufacturing Processes</p> <p><b>PHR 630</b>, Pharmaceutical Rate Processes</p> <p><b>PHR 631</b>, Equilibrium Phenomena in Pharmaceutical Systems</p> <p><b>PHR 760</b>, Techniques in Pharm. Analysis</p>		Additional new courses that reflect the focus of the current program.

**EE/CHE/CME/MSE 664**  
Multidisciplinary Sensors Laboratory

**CME 680** Biochemical Engineering

**CME599** Membrane Technology for Bio/Environmental Applications

**EE/CHE/CME/MSE 664** Multidisciplinary Sensors Laboratory

**CME 680** Biochemical Engineering

**CME 599** Membrane Technology for Bio/Environmental Applications

Courses remaining the same.

**Requirement 4** Ethics class could be taken in place of 1 hour of seminar

Ethics class is now required from the following (either 1 or 2 hours):

- NS 609** Ethics in Clinical Sciences Research (1hr)
- TOX 600** Ethics in Scientific Research (2 hrs)

Ethics is becoming more important in research and a course should be required.

**Requirement 5** Microsensors and Microelectromechanical Systems (Electrical Engineering)

**MSE 599** Chemical and Materials Fundamentals to Electronic and Nano-scale Device Fabrication (1 hr) or **NanoFabrication Workshop** (0 credits)

The original class was one of many elective options; the new class is required due to the program emphasis on device fabrication.