




UNIVERSITY OF KENTUCKY

The Graduate School

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To: Kaveh Tagavi
University Senate Council

From: Jeannine Blackwell, Dean 
The Graduate School

Date: November 16, 2006

At its meeting on November 16, 2006 the Graduate Council approved the proposal for the University Scholars Program between undergraduate in Electrical Engineering and Biomedical Engineering master's program.



0607-P002

March 13, 2006

Office of the Dean
College of Engineering
351 Ralph G. Anderson Building
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Dean Jeannine Blackwell
Graduate School
Gillis Building

Dear Dean Blackwell:

The College of Engineering supports the University Scholars Program between undergraduates in Electrical Engineering and Biomedical Engineering master's program.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Thomas W. Lester".

Thomas W. Lester
Dean

MAR 15 2006



UNIVERSITY OF KENTUCKY

**Department of Electrical
and Computer Engineering**

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March 7, 2006

Dr. Thomas Lester
Dean, College of Engineering

Re: University Scholar Program for MS in Biomedical Engineering & BS in Electrical Engineering.

Dean Lester:

I have attached a copy of the proposal for the University Scholar Program for MS in Biomedical Engineering & BS in Electrical Engineering. This proposal was reviewed by the faculty of the Department of Electrical and Computer Engineering (ECE) and was approved by a vote of 21-0 on the February 10, 2006 meeting of the ECE faculty. It includes the changes suggested by the Director of the Biomedical Engineering program, but still needs the official approval of that program.

Your approval and further processing of this proposal will be appreciated.

Sincerely,

A handwritten signature in black ink, appearing to read 'Vijay P. Singh', written over a faint, larger version of the same signature.

Vijay P. Singh
Professor and Chair

Xc: Dr. Don Hancher, Associate Dean, College of Engineering
Rosie Hicks, Dean's Office
Dave Puelo, Director, Biomedical Engineering

University Scholars Program

MS in Biomedical Engineering and BS in Electrical Engineering

Background

The MS in Biomedical Engineering (MSBME) is a multi-disciplinary graduate program offered by the Center for Biomedical Engineering at the University of Kentucky. The MSBME program is available as a thesis option (Plan A) requiring 26 hours of course work, or as a project option (Plan B) requiring 33 hours of course work. The Biomedical Engineering program is a graduate degree only program: The University of Kentucky does not offer an undergraduate degree in Biomedical Engineering. The University of Kentucky's College of Engineering offers a 4-year, 131-credit-hour Bachelor of Science degree in Electrical Engineering. The undergraduate program is accredited by the Accreditation Board of Engineering and Technology (ABET). This document proposes the establishment of a University Scholars program for the Biomedical Engineering program for students pursuing the undergraduate degree in Electrical Engineering. The program is intended to appeal to students who are studying Electrical Engineering at UK as an undergraduate, and who seek an advanced degree in Biomedical Engineering. It is recognized that programs in Biomedical Engineering at the undergraduate level are receiving increased visibility among students interested in careers in that field, because of the emphasis on health care needs in the nation, and increased funding from the Whitaker Foundation and NIH. The University of Kentucky has decided not to pursue an undergraduate program in Biomedical Engineering, and we believe the University Scholars approach will provide an attractive alternative for undergraduates interested in the biomedical field.

Program Structure

Admissions: A student desiring admission into the MSBME University Scholars program is required to meet the following requirements: 1) The applicant must be an undergraduate pursuing a BS degree in Electrical Engineering. 2) The applicant should apply for the MSBME University Scholars program at the end of his/her junior year. 3) The applicant must have senior standing (completed at least 90 hours of course work) and have completed all University Studies requirements. 4) The applicant must have an overall grade-point average of 3.2 or above on a 4.0 scale, and a grade-point average

of 3.5 or above in the undergraduate major. 5) The applicant must follow the current application procedures for the Graduate School, and must meet the admission standards of the Graduate School and the MSBME program.

Programs of Study

One of the criteria used for admission into the MSBME program is that at least one faculty member in BME agrees to serve as a graduate research advisor for an applicant. Upon admission to the program, the graduate research advisor in the Center for Biomedical Engineering will advise students regarding their participation in the dual degree program and in their graduate coursework. The students' undergraduate departmental advisors will advise on undergraduate coursework. Currently, four EE Technical Electives, two Technical Electives, and one Supportive Elective are required for completion of a BS degree in Electrical Engineering.

Dual degree with BS in Electrical Engineering and MS in Biomedical Engineering: Under the dual degree program, the total number of credit hours completed for the combined program may be up to twelve (12) hours fewer than the total required for both the bachelor's and the master's degrees. The requirements for the bachelor's and the MSBME degrees remain unchanged, however, prospective students in the dual program will share up to 12 credits for both degrees. In order for these 12 credits to satisfy the requirements of the BS and the MS degrees, a student will select EE Technical Electives and Technical Electives in the fourth year of study in consultation with the undergraduate advisor in Electrical Engineering as well as the director of graduate studies in Biomedical Engineering such that the selected electives meet the requirements of both programs.

Example

A student in the fourth (senior) year of his/her undergraduate curriculum could choose the following courses as their Supportive, Technical, and EE Technical Electives:

Course	Credits
Supportive Elective	
PGY 412G Principles of Human Physiology	4
Technical Electives/ EE Technical Electives	
course 1: BME 530 Biomedical Instrumentation	3
courses 2+3 Two of the following (each 3 credits)	6
at least one of it must be an EE course	
BAE 502 Modeling of Bio Systems	
BCH401G Fundamentals of Biochem	
ME501 Mechanical Design with Finite Element Methods	
ME/MFS 512 Manufacturing Systems	
EE 511 Introduction to Communication Systems	
EE 512 Digital Communication Systems	
EE 525 Numerical Methods and Electromagnetics	
EE 527 Electromagnetic Compatibility	
EE 560 Semiconductor Device Design	
EE 562 Analog Electronic Circuits	
EE 564 Digital Electronic Circuits	
EE 565 Circuit Design With Analog Integrated Circuits	
EE 567 Introduction to Laser and Masers	
EE 568 Fiber Optics	
EE 571 Feedback Control Design	
EE 572 Digital Control of Dynamic Systems	
EE 583 Microprocessors	
EE 587 Microcomputer Systems Design	
EE 599 Topics in Electrical Engineering (subtitle required)	
Total	13*

*Up to twelve of these credits are shared between the undergraduate and the graduate curriculum (two Technical Electives plus one EE Technical Elective plus one Supportive Elective).

In the first semester as a graduate student in the BME program (Fall) the student would take

- 1) BME605 Biomedical Signal Processing I 3
- 2) BME 672 Musculoskeletal Mechanics 3
- or BME 670 Bio-solid Mechanics 3
- 3) BME 661 Biomaterial Science and Engineering 3

In the second semester the student would take

- 1) BME 781/699 Special topics/problems in BME 3
- 2) BME 774 Graduate Biomed Engr Seminar 1

It is expected that the student will have started working on a thesis in the first semester as a graduate student in BME, with virtually their entire effort focused on completion of the research for thesis in the second and the third semesters. It is the expectation that students in this program may be able to complete the requirements for an MS degree within three semesters and one summer. The plan B option, which is a Masters degree in BME with a project instead of a thesis, will not be offered for students who join the BME program via this University Scholars program.

Brothers, Sheila C

From: Puleo, David A
Sent: Friday, December 01, 2006 4:26 PM
To: Brothers, Sheila C
Subject: RE: [1] Univ. Schol. Pgm bw BS Elec Engr and MSBME

Yes, it was approved. I sent to Dr. Singh a memo of support, dated March 21, 2006, indicating our faculty's unanimously support for the proposal. It should have been included with the other memos. Thanks.

Dave

Dave Puleo
Center for Biomedical Engineering
University of Kentucky
(859) 257-2405
puleo@uky.edu

From: Brothers, Sheila C
Sent: Friday, December 01, 2006 1:16 PM
To: Puleo, David A
Subject: Univ. Schol. Pgm bw BS Elec Engr and MSBME

Good afternoon! I am writing in regard to the proposal to create a University Scholars Program between the BS in Electrical Engineering and the MS in Biomedical Engineering (attached).

The memo from Professor Singh indicates that this proposal has not yet received your (as Director of the Center for Biomedical Engineering) official approval.

Could you please let me know if this proposal is approved by you? I cannot send this to a committee for review unless I am satisfied that all players are on the same page, so to speak. You can do a formal memo if you want, but all I really need is written (email is fine) approval by you.

If you have any questions, please do not hesitate to contact me.

Thank you,
Sheila

Sheila Brothers
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Brothers, Sheila C

From: Robert B. Grossman [robert.grossman@uky.edu]

Sent: Friday, January 05, 2007 12:59 PM

To: Brothers, Sheila C; Kaveh A Tagavi

Cc: Vijay Singh

Subject: Univ Schol Pgm BS Elec Engr & MS Biomed Engr

The Academic Programs Committee unanimously approves the proposed **University Scholars Program: BS in Electrical Engineering & MS in Biomedical Engineering.**

-- Bob