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The University of Georgia

University Council
Athens, Georgia 30602

August 15, 2008

UNIVERSITY CURRICULUM COMMITTEE – 2008-2009
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Dear Colleagues:

The attached proposal for an Interdisciplinary Life Sciences Program will be an agenda item for the August 22, 2008, Full University Curriculum Committee meeting.

Sincerely,

David Shipley

Mr. David E. Shipley, Chair
University Curriculum Committee

cc: Dr. Arnett C. Mace, Jr.
Professor Jere W. Morehead

Institution: University of Georgia Date: April 2, 2008

School/College:

Franklin College

Odum School of Ecology

College of Veterinary Medicine

Warnell School of Forestry and Natural Resources

Departments:

Cellular Biology

Plant Biology

Genetics

Biochemistry & Molecular Biology

Infectious Diseases

Marine Sciences

Microbiology

Forestry & Natural Resources

Approved:

Maureen Grasso, Dean
Graduate School

Interdisciplinary Life Sciences Program

Institution: University of Georgia Date: March 10, 2008
School/College:
Franklin College
Odum School of Ecology
College of Veterinary Medicine
Warnell School of Forestry and Natural Resources

Departments:
Cellular Biology
Plant Biology
Genetics
Biochemistry & Molecular Biology
Infectious Diseases
Marine Sciences
Microbiology
Forestry & Natural Resources

Name of Proposed Program: Interdisciplinary Life Sciences Program
Degree: No Degree
Intended Major: Interdisciplinary Life Sciences
CIP Code:
Starting Date: August 15, 2008

1) Need for the program:
We propose the creation of an interdisciplinary umbrella graduate program in the Life Sciences at UGA. This program represents a new approach to graduate student recruitment that would supplement the traditional, individual department-based programs that currently prevail at UGA. Currently admission to UGA graduate programs is accomplished solely through individual departments but with an Interdisciplinary Life Sciences Program we will create an additional portal whereby top students will be recruited to UGA's graduate degree granting programs. Currently a total of eight departments or academic units are participating but it is anticipated that other UGA departments will eventually take advantage of this admission portal.

2) Data that would support the need:
Follow up interviews with students who were recruited by, but ultimately did not enroll at, UGA has revealed that many of these students ended up accepting offers from institutions that offered interdisciplinary graduate programs (see list in #4). It is clear from these interviews that such admissions programs are very popular with today's lifesciences graduate students and the lack of such a program puts UGA in a less competitive position. While the average GRE scores of students applying to UGA programs in the Life Sciences have remained relatively steady over the last five years several trends are apparent and worrying. There has been a documented decline in the number of student applications. For example, in 2002 a total of 286 domestic students

applied for admission to programs in Cellular Biology, Genetics and Plant Biology, respectively. By 2007 those numbers had dropped to 150. When one compares this with the number of new students enrolling each year (8-12) it becomes immediately apparent that we can not be as selective as we were in the past.

3) Description of why students will apply to the program.

The umbrella approach is commonplace at peer institutions as well as those to which we aspire. Interdisciplinary admission programs are popular with many of the most talented graduate students because it affords them more options for their dissertation and thesis research topics. It will also facilitate interdisciplinary research efforts by both students and their faculty advisors. In the absence of such a program, many of the best students may not consider UGA for graduate studies. Instituting the proposed program will increase the overall academic excellence of our life science graduate programs, and because it will operate in parallel with traditional department programs, and will also build program capacity. By increasing the number of applicants the participating departments can be more selective and thus increase the caliber of their graduate programs. Initial feedback from UGA's recently instituted program in Neuroscience (http://www.biomed.uga.edu/divisions/neuroscience/) suggests that similar interdisciplinary programs will be successful at UGA.

4) Peer institutions with these types of programs.

A number of peer and aspirant institutions in the United States already have successfully established umbrella graduate programs:

University of Alabama at Birmingham:
Cell and Molecular Biology Program- Departments of Cell Biology, Biochemistry, Microbiology and Neurobiology
http://www.cmb.uab.edu/

Duke University:
Cell and Molecular Biology Program
http://cmb.duke.edu/umbrella/index.html

University of North Carolina:
Molecular, Cell and Developmental Biology
http://www.med.unc.edu/pmbb/ibms/intro.html
Evolution, Ecology, and Organismal Biology
http://www.bio.unc.edu/graduate/EEOB/
Interdisciplinary Biology
http://www.bio.unc.edu/graduate/interdiscipline.htm

University of Virginia:
Cell and Molecular Biology Program.
http://www.healthsystem.virginia.edu/internet/cmb/program.cfm

University of California at Riverside:
Evolution, Ecology, and Organismal Biology
http://www.biology.ucr.edu/academic_programs/EvBiol.html

University of California at Berkeley:
Integrative Biology
http://ib.berkeley.edu/

These and many other institutions have established interdisciplinary admissions programs that are effective in attracting quality graduate students. To compete for students in an increasingly difficult market these competing programs offer the academic flexibility and breadth that is appealing to many of today's top graduate prospects. By successfully competing for these talented young scientists UGA should increase its research productivity, particularly in areas that span multiple disciplines.

5) Budget Requirements:

Ten students will be admitted for each of the two focus areas (a total of 20 per year). Funding to cover the first year of support for each of these students will come from new monies that are being sought from the Board of Regents Enhancement program (currently under consideration by the BOR). The fact that the two targeted areas of support by this fund for FY 2009 are 1) enhancement of science, technology, engineering and mathematics education and 2) development of new research opportunities in the biomedical arena suggests that a request to fully fund these two graduate education portals will be looked upon favorably. Additional funds will be requested to cover the salary of a full time Graduate Secretary who will oversee the progress of the Interdisciplinary Life Sciences Program as well as one month's summer salary for each of the Faculty coordinators for the MCD and EEO programs. The source of these funds is a Program Enhancement Request that has been submitted and is currently under consideration by the University of Georgia Board of Regents.

Since the primary objective of the life sciences umbrella programs is to attract applications from high quality students and to increase the proportion of students that accept our offers, competitive stipends must be offered. The total package of these offers should be at a level equal to that of the current Graduate Presidential awards and in the first year would have a remission from teaching duties. In the case of students entering through the Molecular, Cell and Development (MCD) portal these stipends would be at an annual rate of $24,000. The culture for prospective Ecology, Evolution and Organismal (EEO) students is slightly different and it is thought that they would be more attracted to a program that offered both a competitive stipend and funds to support their dissertation research. As a result, it is recommended that each student in EEO Biology receive a minimum stipend of $20,000 per year and five years of research support at $4,000 per year. Once a student matriculates into a degree granting program the host department will be responsible for an additional four years of stipend support at this level or the Departmental minimum, whichever is higher.

6) Facilities:

During the first year students will enroll in established classes (see item # 9) and meet on a regular basis with the IR Program Coorindinator. Students will also carry out rotations in existing laboratories. After the first year students will matriculate into one of the established and participating departments. The only additional facilities that would be required would be a small office for the graduate secretary responsible for coordinating applications and admissions to the MCD and EEO programs and access to administrative support services (e.g. FAX, photocopying, mailboxes, etc.) It is envisioned that such space will be easily available within one of the participating departments which will play host to the interdisciplinary program.

7) Admissions:
Students will apply to either the MCD or EEO program through an online application. The application deadline will be December 15 of each year. Applicants will be asked to provide a short essay detailing research and career interests. Applicants will be asked to choose areas of research interest from the list of participating departments and will be given the option of listing up to four faculty of interest. Applications will be prescreened by the MCD and EEO selection committees and the top 40 applications for each program will be forwarded to the Graduate Coordinators of all the MCD and EEO participating departments by January 15. Through their representatives on the MCD and EEO selection committees the departments will convey their ranking of the top 40 applicants and from these 20 will be chosen for recruitment weekends. Students who are not selected for invitation to the recruitment weekend (including those not chosen during the prescreening process) will have their applications made available to the participating departments so that they might be recruited through the normal departmental based Graduate School mechanism. Criteria for selection of MCD and EEO students will be GRE scores, undergraduate GPA, letters of reference, research experience, and academic potential. The MCD and EEO programs will also consider the ethnic and gender diversity of the applicants.

8) Administrative Structure:
A dedicated staff member will be responsible for administering the distribution of applications to the MCD and EEO programs and for compliance checking of applications. This staff member will serve as the de-facto graduate secretary for students in both programs from the time of their admission up until they matriculate into a home department.
A graduate coordinator would be appointed to administer the MCD and EEO programs. The graduate coordinator would serve as the academic advisor for students enrolled in the Interdisciplinary Life Sciences Program and would facilitate both course selection and laboratory rotations with available faculty. The graduate coordinator would also serve as the instructor of record for the first semester introductory courses. Once a student is accepted into a laboratory from one of the participating departments the home department of that faculty member will assume responsibility for the student's progress from year two to the completion of their degree.

9) List of core courses:
Core Curriculum in Molecular /Cellular/ Developmental (MCD) Biology

<u>Fall Semester / year 1:</u>

Any two of the following:

BCMB 8010 Advanced Biochemistry and Molecular Biology I
GENE 8920 Nucleic Acids
CBIO 8010 Molecular Cell Biology
PBIO 8100 Plant Genetics

and:

Lab rotations (Two seven week rotations)

and:

Introduction to MCD Research

Spring Semester / year 1:

Any one of the following:

BCMB 8020 Advanced Biochemistry and Molecular Biology II
GENE 8930 Advanced Molecular Genetics
MIBO 8600 Fundamental Process of Prokaryotic Cell Biology
CBIO 8300 Advanced Developmental Biology
CBIO 8400 Advanced Cell Biology
PBIO 8111 Plant Development
IDIS 8010 Advanced Studies in Infectious Diseases

and:

GENE 8650 Responsible Science

and:

Upper level Biological Sciences Electives tailored to each student's research interests

and:

Lab rotation (one seven week rotation)

Core Curriculum in Ecology/Evolution/Organismal (EEO) Biology

A first year core curriculum has been developed for the EEO graduate students:

Fall semester:

GENE 4000/6000 – Advanced Evolutionary Biology
STAT 6310 – Statistical Analysis I (or another statistics course of equal content)
Special Topics in EEO Biology
Lab Rotations (2 six-week rotations)

In either the Fall or Spring Semesters

One of the following ecology courses:

ECOL 8000 – Topics in Modern Ecology (Fall)
ECOL (WILD) (PBIO) 8310 – Population Ecology (Fall)
ECOL 4010/6010 – Ecosystem Ecology (Spring)
MARS 8010 – Biological Oceanographic Processes (Spring)
MARS 8160 – Marine Ecology (alternate Springs)
A course in Organismic Biology

Spring Semester

GENE 8650 – Responsible Science
STAT 6320 – Statistical Analysis II (or another statistics course of equal content)
Special Topics in EEO Biology
Lab Rotation (1 six-week rotation)
One of the following systematic courses:

ENTO 8050 – Principles of Systematics (alt Springs)
PBIO 6350-6350L – Molecular Systematics (alt Springs)

10) Selection of a Major:

All Interdisciplinary Life Sciences graduate students will become affiliated with a sponsoring lab by the end of the Spring semester of the first year and will be admitted to the graduate program of the primary home department of their faculty advisor. Once a student matriculates into a home department they will be required to meet all the requirements for graduate students in that department. Students admitted through the Interdisciplinary Life Sciences Program will be asked to decide upon a major advisor by the end of the third rotation period (approximately by February 21 each year). An additional fourth rotation period will be allowed for students who remain undecided. A student must make satisfactory academic (maintain an average of 3.0 (B) both on the graduate transcript and on all courses on the program of study) and research progress (as defined by successful matriculation into one of the participating departments) in order to continue to be supported by the program.

A set of academic guidelines that specify the above requirements will be developed for the Interdisciplinary Life Sciences program. Students offered admission to the program will be presented with a copy of these guidelines and informed of these academic guidelines and requirements before they are enrolled.