STATE UNIVERSITY SYSTEM of FLORIDA
Board of Governors

AGENDA
Academic and Student Affairs Committee
Premier Club Level
FAU Stadium
Florida Atlantic University
Boca Raton, Florida
November 09, 2011
12:00 p.m. – 1:00 p.m.

Chair: Ann Duncan; Vice-Chair: Michael Long
Members: Frost, Marshall, Martin, Robinson, Stavros, Yost

1.	**Call to Order and Opening Remarks**	**Governor Ann Duncan**
2.	**Committee Minutes from September 15, 2011**	**Governor Duncan**
3.	**Academic Program Items**	**Governor Duncan**

a. B.S in Exceptional Student Education (CIP 13.1001), University of West Florida to exceed 120 credit hours to degree

b. B.S. in Elementary Education (CIP 13.1202), University of West Florida to exceed 120 credit hours to degree

c. B.A. Liberal Arts (CIP 24.0199), New College of Florida to exceed 120 credit hours to degree

d. Ph.D. in Environmental Engineering (CIP 14..1401), University of South Florida — **University Staff**

e. Ph.D. in Biomedical Sciences (CIP 26. 0102), Florida International University — **University Staff**

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4.	**Public Notice to Amend Regulation 6.018 Substitution or Modification of Requirements for Program Admission, Undergraduate Transfer, and for Graduation by Students with Disabilities**	**Governor Duncan**
5.	**Public Notice to Amend Regulation 8.016 Academic Learning Compacts, with Presentation**	**Dr. R. E. LeMon** *Associate Vice Chancellor*
6.	**Student Affairs Updates**	
	a. Council of Student Affairs	**Dr. Maribeth Ehasz** *Chair, SUS Council for Student Affairs*
	b. Florida Student Association	**Governor Michael Long**
7.	**Update – Academic Program Coordination Project**	**Governor Duncan**
8.	**Update - Adult Degree Completion Pilot**	**Governor Duncan**
9.	**Closing Remarks**	**Governor Duncan**

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Minutes of Meeting held September 15, 2011

PROPOSED COMMITTEE ACTION

Approval of minutes of the meeting held on September 15, 2011, at Florida International University.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Not Applicable

BACKGROUND INFORMATION

Board members will review and approve the minutes of the meeting held on September 15, 2011, at Florida International University.

Supporting Documentation Included: Minutes: September 15, 2011

Facilitators/Presenters: Governor Ann Duncan

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MINUTES
BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
ACADEMIC AND STUDENT AFFAIRS COMMITTEE
GRAHAM CENTER, MODESTO A. MAIDIQUE CAMPUS
FLORIDA INTERNATIONAL UNIVERSITY
MIAMI, FLORIDA
SEPTEMBER 15, 2011

Chairperson Ann Duncan convened the Board of Governors Academic and Student Affairs Committee meeting at 8:30 a.m., September 15, 2011, in the Gibbons Alumni Center on the University of South Florida campus. The following committee members were present: Vice Chair Michael Long, Patricia Frost, Frank Martin, Gus Stavros, Commissioner Gerard Robinson, and Rick Yost. Governor Stanley Marshall was absent.

1. Minutes of Prior Meeting

Chair Duncan asked for a motion to approve the June 23, 2011 meeting minutes as presented. The motion was seconded, and members of the Committee concurred.

2. Academic Program Items

a) Remove Limited Access for the Bachelor of Science in Geomatics (University of Florida)

Chair Duncan summarized the proposed status change for the UF BS in Geomatics program and explained that the program had been moved to the College of Agricultural and Life Sciences with no intention of remaining limited access. The request was not made at the time of the program's movement. Approval would mean the program would no longer need to file annual reports on limited access status. Chair Duncan asked for a motion to approve which was made and seconded. The motion carried unanimously.

b) Bachelor of Science in Biomedical Engineering (University of Florida)

i. Request to Exceed 120 Credit Hours

Chair Duncan explained that the University of Florida was asking that the BS in Biomedical Engineering be approved to exceed 120 credit hours in order to accommodate the necessary curriculum and to meet the Accreditation Board for Engineering & Technology requirements. Chair Duncan informed the committee that all

existing similar programs in the State University System have been approved to exceed 120 credit hours with the exception of the Geomatics program at Florida Atlantic University. Chair Duncan asked for a motion to approve which was made and seconded. The motion carried unanimously.

ii. Request for Limited Access Status

Chair Duncan summarized the UF request for Limited Access status and said that the proposed change is needed as the program is in high demand and operates with limited faculty and instructional facilities. In order to maintain quality standards, limiting enrollment to 70 students by 2015 was proposed. Chair Duncan asked for a motion of approval which was made and seconded. The motion carried unanimously.

3. Public Notice of Intent to Amend Board of Governors Regulation 6.018

This agenda item was deferred until the November committee meeting on the advice of the General Counsel in order to provide further clarification on the proposed amendments.

4. Adult Degree Completion Initiative

Chair Duncan introduced this presentation and expressed her ongoing interest in making adult degree completion a priority in the SUS. There are a significant number of former state university students who earned 60 to 90 credit hours or more, but that have yet to obtain a degree. Chair Duncan further explained that initiatives exist in other states and nationally to encourage adult degree completion. Chair Duncan asked university representatives Dr. Pamela Northrup (UWF) and Dr. Kathleen Moore (USF) to speak on this proposed initiative.

Dr. Moore told the committee about USF's Osher Reentry Scholar program which provides scholarships to students over the age of 25 who have completed most of the college degree and are now returning to the university. Dr. Moore summarized the one-page handout on the topic which illustrates statistics on jobs requiring bachelor's degrees, adults holding bachelor's degrees, and bachelor degree holder's having lower unemployment rates and higher pay grades. Dr. Moore listed the fastest growing occupations in Florida and explained that the initiative would help students with existing college credit reenroll to obtain degrees related to high need occupations. This particular initiative would target students with at least 60 hours of college credit and one component would be an assessment of prior learning (including non-classroom experiences, equivalency testing credit, etc.). The fundamental basis of the program would be a cooperative program agreement in which any State University System institution can participate. This program would include an informative web portal and

support services designed to facilitate the movement of adult learners through degree completion (orientation courses, study strategies, online learning resources, etc.).

Dr. Moore stressed the need for innovation in accelerated courses, flexible course time, and funding options. Dr. Moore said that the program is in its early development, but asserted that institutions can participate by creating appropriate curriculum programs and offering concentrations that can fit in other existing programs. The Florida Distance Learning Consortium is an important available resource as well as FACTS.org. Dr. Moore said the areas still needing attention were advocacy, marketing, the capability for prior learning assessment, and enhanced academic and student services. No information on cost had been developed.

Chair Duncan thanked both Dr. Moore and Dr. Northrup for their work on this initiative and asked for questions. Commissioner Robinson mentioned a similar program for community colleges in Virginia that secured funding through the Lumina Foundation, then applauded the work on the initiative and offered the suggestions of the Lumina Foundation and the Gates Foundation as possible sources of funding. USF President Genshaft mentioned this initiative will be helpful for veterans in need of assessment of their practical military experience in order to count for credit. UWF President Bense explained that her institution had been approached numerous times by professionals looking for ways to finish their degrees and how helpful this initiative will be in enabling these students to complete degrees. Chair Duncan requested a more refined business plan in November and added her hope for a program to be in place in the SUS by next summer or fall. A motion was made that asked the team that is working on the initiative to prepare the business plan mentioned earlier. The motion carried unanimously.

5. <u>Student Affairs Update</u>

Chair Duncan invited Dr. Maribeth Ehasz, Chair of the SUS Council for Student Affairs, to present an update on the council's recent SUS workshop.

Dr. Ehasz talked about the Health Insurance Consortium which involves five SUS institutions and said that the current broker has agreed to facilitate a standing SUS consortium workgroup that FGCU Vice President Mike Rollo has agreed to chair the SUS group. She then spoke on the completion of an assessment of student behavioral interventions and threat assessment practices based on the last meeting's discussion, the details of which will be shared in November. As this was the third week of fall term, Dr. Ehasz mentioned the successes of convocations and unfortunate tragedies already experienced by three institutions. She then lauded new initiatives existing at schools like Florida State University, University of Central Florida, and University of Florida to address existing risks. Dr. Ehasz informed the committee that student housing at all SUS institutions was full.

Chair Duncan asked if there were any questions for Dr. Ehasz. She then asked Committee Vice Chair Michael Long to present on the Florida Student Association.

Vice Chair Long briefed the committee on the FSA's approaching trip to DC for the purpose of lobbying for the needs of Florida's SUS. The FSA will introduce a new need-based scholarship in January. Vice Chair Long applauded Dean Colson for asking Board members to listen to student government presentations and mentioned the FSA legislative agenda is in line with the Board's legislative agenda.

Chair Duncan then updated the committee on the following: the SUS currently has a headcount of 9,400 enrolled student veterans, 34% of which are enrolled in science & engineering programs; the Board reached an agreement with the Marine Corps Installations East to implement the Leadership Scholar Program with the support of university participation and the first enrollments in the program should be expected next year; Provost Wilcox continues to work on the academic coordination issue; and lastly, Florida is hosting a STEM Summit 2 in Tampa later in September where Chancellor Brogan will be a key speaker.

6. <u>Adjournment</u>

Chair Duncan thanked the Committee for their work and having no further business adjourned the meeting at 9:10 a.m.

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Bachelor of Science in Exceptional Student Education, Specialization - Student/Elementary Education/ESOL/Reading at the University of West Florida to exceed 120 credit hours to degree

PROPOSED BOARD ACTION

Consider for Approval the Bachelor of Science in Exceptional Student Education, Specialization Student/Elementary Education/ESOL/Reading (CIP 13.1001) at the University of West Florida to exceed 120 credit hours to degree

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution; Subsection 1007.25 (8), Florida Statutes; Board of Governors Regulation 8.014

BACKGROUND INFORMATION

The University of West Florida (UWF) is seeking approval for its Bachelor of Science in Exceptional Student Education, Specialization Student/Elementary Education/ESOL/Reading to exceed 120 credit hours to degree in order to meet Department of Education and National Council for Accreditation of Teacher Education (NCATE) accreditation requirements for teacher education programs. The increase in credit hours is due to the curriculum requirements which call for 36 semester hours of General Studies, 9 semester hours of Statewide Common Prerequisites, 6 semester hours of coursework in an international or diversity focus, 9 semester hours of coursework to fulfill state lower level course requirements, and 72 semester hours in the major field of study including student teaching.

The UWF Board of Trustees approved the program to exceed 120 credit hours to degree on June 7, 2011. If the request is approved by the Board of Governors, UWF will implement the request effective immediately.

Supporting Documentation Included: University of West Florida Request

Facilitators/Presenters: Governor Ann Duncan
UWF Representatives

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Office of the Provost
11000 University Parkway
Pensacola, FL 32514-5750

MEMORANDUM
October 10, 2011

TO: R. E. LeMon, Associate Vice Chancellor
Academic and Student Affairs, SUS-BOG

FROM: Chula King, Provost

SUBJECT: **Requests to Exceed 120 Credit Hours to Degree:**
(a) Exceptional Student Education (CIP 13.1001), Specialization - Exceptional Student/Elementary Education/ESOL/Reading
(b) Elementary Education (CIP 13.1202), Specialization – Elementary Education/ESOL/Reading

During the review process pursuant to the Florida Department of Education (DOE) and National Council for Accreditation of Teacher Education (NCATE) visits, it was discovered that the necessary approvals for credits-to-degree in excess of 120 semester hours for the Exceptional Student/Elementary Education/ ESOL/Reading Specialization and the Elementary Education/ESOL/Reading Specialization had not been obtained from the Board of Trustees or the Board of Governors.

At its June 7, 2011, meeting the University of West Florida, Board of Trustees approved Requests to Exceed 120 Credit Hours to Degree in the following specializations:

(a) Exceptional Student Education (CIP 13.1001), Specialization – Exceptional Student/Elementary Education/ESOL/Reading

As currently configured and approved by the Florida Department of Education, this specialization requires completion of 36 semester hours of General Studies, 9 semester hours of Statewide Common Prerequisites, 6 semester hours of coursework with an international or diversity focus, 9 semester hours of course work to fulfill state lower level course requirements and 72 semester hours of coursework in the major field of study including student teaching. A total of 132 semester hours is required for the degree. The Exceptional Student Education/ESOL/Reading Specialization prepares students not only for the exceptional student classroom, but also for the elementary classroom.

Phone 850.474.2035 Fax 850.474.3131
Web uwf.edu

Following an intensive review of the required coursework along with DOE and NCATE requirements, the faculty determined that it is not possible to reduce the course requirements and still produce a highly-qualified graduate. In addition, graduates from this program will help fill a critical need Area of Programmatic Strategic Emphasis as defined by the Board of Governors.

This request does not affect the Exceptional Student Education – Educational Studies Specialization which requires 120 semester hours. This specialization, however, is not DOE approved and does not lead to teacher certification in the State of Florida.

(b) Elementary Education (CIP 13.1202), Specialization – Elementary Education/ESOL/Reading

As currently configured and approved by the Florida Department of Education, this specialization requires completion of 36 semester hours of General Studies, 9 semester hours of Statewide Common Prerequisites, 6 semester hours of coursework with an international or diversity focus, 9 semester hours of course work to fulfill state lower level course requirements and 68 semester hours of coursework in the major field of study including student teaching. A total of 128 semester hours is required for the degree.

Following an intensive review of the required coursework along with DOE and NCATE requirements, the faculty determined that it was not possible to reduce the course requirements while still producing a high qualified graduate.

This request does not affect the Elementary Education – Educational Studies Specialization which requires 120 semester hours. This specialization, however, is not DOE approved and does not lead to teacher certification in the State of Florida.

The supporting documents are attached for each request. Please let me know if additional information is needed.

Attachments (6):

1. Exceptional Student/Elementary Education/ESOL/Reading – BOT Action Item
2. Exceptional Student/Elementary Education/ESOL/Reading – Common Prerequisites Manual for CIP 13.1001
3. Exceptional Student/Elementary Education/ESOL/Reading –2011-2012 UWF Curriculum Change Request (CCR) 08083M
4. Elementary Education/ESOL/Reading – BOT Action Item

5. Elementary Education/ESOL/Reading – Common Prerequisites Manual for CIP 13.1202
6. Elementary Education/ESOL/Reading – 2011-2012 UWF Curriculum Change Request (CCR) 08023F

cc: Richard Stevens, Director, Academic and Student Affairs, SUS-BOG
Judith Bense, President, UWF
Robert 'Bob' Jones, Chairman, Board of Trustees, Academic and Student Affairs Committee, UWF
George Ellenberg, Vice Provost, UWF
Susan McKinnon, Associate Vice President, UWF
Pamela Northrup, Interim Dean, College of Professional Studies, UWF
William 'Bill' Evans, Director, School of Education, UWF

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Bachelor of Science in Elementary Education, Specialization - Elementary Education/ESOL/Reading at the University of West Florida to exceed 120 credit hours to degree

PROPOSED BOARD ACTION

Consider for Approval the Bachelor of Science in Elementary Education, Specialization - Elementary Education/ESOL/Reading (CIP 13.1202) at the University of West Florida to exceed 120 credit hours to degree

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution; Subsection 1007.25 (8), Florida Statutes; Board of Governors Regulation 8.014

BACKGROUND INFORMATION

The University of West Florida (UWF) is seeking approval for its Bachelor of Science in Elementary Education, Specialization - Elementary Education/ESOL/Reading to exceed 120 credit hours to degree in order to meet Department of Education and National Council for Accreditation of Teacher Education (NCATE) accreditation requirements for teacher education programs. The increase in credit hours is due to the curriculum requirements which call for 36 semester hours of General Studies, 9 semester hours of Statewide Common Prerequisites, 6 semester hours of coursework in an international or diversity focus, 9 semester hours of coursework to fulfill state lower level course requirements, and 68 semester hours in the major field of study including student teaching.

The UWF Board of Trustees approved the program to exceed 120 credit hours to degree on June 7, 2011. If the request is approved by the Board of Governors, UWF will implement the request effective immediately.

Supporting Documentation Included:	University of West Florida Request (with Agenda Item 3 a)
Facilitators/Presenters:	Governor Ann Duncan UWF Representatives

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Bachelor of Arts in Liberal Arts and Sciences at the New College of Florida to exceed 120 credit hours to degree

PROPOSED BOARD ACTION

Consider for Approval the Bachelor of Arts in Liberal Arts and Sciences (CIP 24.0199) at New College of Florida to exceed 120 credit hours to degree

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution, Subsection 1007.25 (8), Florida Statutes; Board of Governors Regulation 8.014

BACKGROUND INFORMATION

New College of Florida (NCF) offers only one degree program with concentrations available in various arts and sciences disciplines. The program is a rigorous honors program which includes innovative pedagogy, narrative evaluations, undergraduate senior thesis, and a baccalaureate exam. The foundation of a student's degree program is individualized study which utilizes contracts and Independent Study Projects. Credit hour equivalencies equally 124 credit hours have been in place since 1975 and serve as the basis for calculating tuition and transfer credit. Approving the program to exceed 120 credit hours to degree provides a level of definitive documentation, especially when working with Florida Prepaid representatives as well as NCF students and their parents regarding degree requirements.

Approval of the Request to Exceed 120 Credit Hours to Degree program is scheduled to be considered by the NCF University Board of Trustees on November 4, 2011. If the request is approved, it will be brought forward for consideration by the Board of Governors at the November meeting. Pending approval, NCF will implement the request effective immediately.

Supporting Documentation Included: NCF Request

Facilitators/Presenters: Governor Ann Duncan

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New College
THE HONORS COLLEGE of Florida

Office of the Provost and Vice President for Academic Affairs

September 30, 2011

TO: Board of Governors

FROM: Stephen Miles, Provost, New College of Florida

RE: Bachelor of Arts at New College of Florida

The Bachelor of Arts degree at New College requires the completion of the equivalent of a minimum of 124 Credit Hours. New College of Florida is a rigorous honors program which includes individualized study, innovative pedagogy, narrative evaluations, undergraduate senior thesis, and a baccalaureate exam.

New College requests an exception to the 120 credit hour to degree regulation for this degree. Rule 8.014 (1) c. states that programs with these features may be approved for greater than 120 credit hours.

5800 Bay Shore Road | Sarasota, Florida 34243-2109 | 941-487-4200 | Fax: 941-487-4200

New College Program Requirements

The requirements for the New College of Florida Bachelor of Arts degree are:

- Seven satisfactory semester contracts
- Satisfactory completion of the Liberal Arts Curriculum requirements (General Education), including: study in a broad range of subjects; basic proficiency in information technology, mathematics, and English language; and advanced proficiency in written and oral English language
- The satisfactory completion of 31 units (a unit being equivalent to a full semester course or ISP)
- Three satisfactory Independent Study Projects (ISPs)
- A satisfactory senior project or thesis
- A satisfactory baccalaureate examination (usually in the form of an oral defense of the senior project)
- Meeting the coursework and project requirements of an Area of Concentration (Major), as specified in the General Catalog

Unique Nature of New College Academic Program:

Students make progress toward graduation by satisfactorily completing semester contracts and independent study projects. Students do not earn grades instead they receive narrative evaluations of their academic work. Students do not accumulate credit hours.

Narrative Evaluation

For every course or project a student undertakes for transcript entry or as part of requirements towards graduation (the Senior Thesis, the Baccalaureate Examination) the student will receive a narrative evaluation. The written evaluation should include: a brief description of the course, tutorial, or independent work; a summary evaluation of the work; and a designation of the student's performance as "satisfactory," "unsatisfactory," or "incomplete." Incomplete evaluations must specify a deadline for completion.

The Contract

The contract system is the heart of the New College educational program. At the beginning of each semester, each student works out a program of study for the semester with his or her faculty sponsor, who is chosen by the student and who agrees to sponsor the student. The contract, drawn up jointly by the student and sponsor, includes: a statement of educational objectives; a list of courses, tutorials, and other academic undertakings to be taken, totaling at least three units (a unit being equivalent to a full semester course) for transcript entry; a description of otherwise undefined projects to be undertaken; and a statement of criteria (e.g., number of satisfactory course evaluations) to be met in order that the contract be certified as satisfactory at the end of the semester

The Independent Study Project

The ISP requirement addresses four educational objectives:

- to help students learn to conduct independent research

- to supplement the curriculum and to encourage off-campus study
- to provide an opportunity for non-traditional, innovative, experiential learning projects, and
- to allow a time for intensive involvement with one subject or activity.

A student chooses a topic in consultation with a faculty member who agrees to become the ISP sponsor. Projects may be carefully defined at the beginning, or left open-ended and exploratory. The content and demands should be roughly equivalent to that of a term-length tutorial. A full-time, four-week academic activity, usually completed during the January Interterm, three ISPs are required for graduation. A student may register for a fourth ISP.

Senior Thesis or Project

Students in their final year at New College are required to complete a senior thesis or project. Each New College graduate is expected to possess strong writing skills, and the completed project should satisfactorily demonstrate his or her ability to express ideas and information in writing. It also provides the basis for the oral baccalaureate examination. Work on the senior thesis/project is normally spread over the last two semesters before graduation and is normally included in those contracts. The sponsor must submit a formal written evaluation of the thesis/project. Each senior project shall be accompanied by an abstract or, where appropriate, a brief description, of approximately 200 words. The abstract or description shall be considered as an integral part of the thesis or project.

Baccalaureate Examination

The faculty has agreed on the following description of the baccalaureate examination: "The baccalaureate examination is logically the final requirement for graduation, coming normally in the final term and presupposing the completion of the senior thesis/project and the substantial completion of the area of concentration. The faculty as a whole will make the final certification that all requirements for graduation have been met. The examination represents the collegial responsibility of the faculty that no student may graduate until the quality of his/her educational achievement has been closely examined and approved by three faculty members. Each New College graduate is expected to possess strong oral communication skills. Therefore, a student's ability to express ideas and information orally is assessed as part of the baccalaureate examination evaluation process."

The baccalaureate examination usually includes a defense of the thesis or project, an examination in the area of concentration, and an examination of the student's education in general. A student's senior thesis/project committee, which is also the Baccalaureate Committee, is generally understood to include a senior thesis sponsor and at least two other faculty members, all of whom have signed the Thesis Prospectus/Area of Concentration form on file in the Office of the Registrar.

How the New College Academic Program Aligns with Credit Hours

1 unit = 4 semester hour equivalents

New College is the Honors College for the State of Florida and instructors have high expectations for student outcomes. Established performance norms are also high. Each New College Independent Study Project, and each semester-long course, tutorial, and Independent Reading Project is assigned 1 unit. For a modular (half semester) educational activity, ½ unit is assigned.

1 semester contract is equivalent to 16 semester hours

1 Independent Study Project is equivalent to 4 semester hours

Minimum Requirements for a New College Bachelor of Arts Degree are:

7 contracts @ 16 semester hours equivalent each = 112 semester hour equivalent

3 ISPs @ 4 semester hours equivalent each = 12 semester hour equivalent

Why does New College need this exception?

The New College academic program and the credit hour equivalencies described above have been in place since we joined the SUS as a college of the University of South Florida in 1975. These credit hours equivalencies have also been the basis for calculating tuition and transfer credit since 1975. They accurately represent the level of academic effort required to receive a Bachelor of Arts degree in the unique honors undergraduate program at New College. These New College practices preceded adoption of Rule 8.014 in 2007. Confirming the minimum requirement of 124 credit hours in addition to Rule 8.014 provides another level of definitive documentation, especially when working with Florida Prepaid representatives as well as NCF students and their parents regarding degree requirements in excess of 120 hours. Reducing the credit hour equivalency to 120 credit hours would significantly disrupt our academic program, our financial aid agreements, and transfer credit policy.

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Ph.D. in Environmental Engineering (CIP 14.1401) at the University of South Florida

PROPOSED COMMITTEE ACTION

Consider approval of the Doctor of Philosophy (Ph.D.) in Environmental Engineering at the University of South Florida, CIP Code 14.1401.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution; Board of Governors Regulation 8.011

BACKGROUND INFORMATION

The University of South Florida (USF) is proposing to offer a Ph.D. degree program in Environmental Engineering. This program will replace the current Environmental Engineering track offered within the Ph.D. in Civil Engineering, making it a stand-alone degree program. The primary goal of the proposed program is to allow students to perform specialized training and research, with the ability to practice and report original and significant environmental engineering research. This Ph.D. program will enable Florida to advance, via research and creation of new information and technology, a knowledge-based economy to manage the environmental stresses on its water, land, and air resources impacting social and economic opportunities for current and future generations.

The total minimum credits required is 48 and 78 for students with and without a Master's degree, respectively. The USF environmental engineering graduate program is currently well integrated with other USF colleges for research. Enrollment is estimated to start at 30 students and stabilize at 40. Documentation of communication with FAMU, UCF, and UF confirm the lack of overlap with their engineering programs. Eight faculty members are currently employed in the department.

The USF Board of Trustees approved the program on September 2, 2011. If approved by the Board of Governors, USF will implement the program in Spring 2012.

Supporting Documentation Included: Staff Analysis and Program Proposal

Facilitators/Presenters: USF Representatives

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BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
NEW DOCTORAL DEGREE PROPOSAL STAFF ANALYSIS

Program: Ph.D. in Environmental Engineering
CIP Code: 14.1401
Institution: University of South Florida
Proposed Implementation Date: Spring 2012
Staffed By: Marion Merzer
Initial Review Date: 9/6/2011 **Last Update: 9/23/11**

Estimated Costs:

	Total	% & $ Current Reallocated	% & $ New Recurring	% & $ New Non-Recurring	% & $ C&G	Cost per FTE	SUS 09-10 Average Cost per FTE
Year 1	$579,767	22% $129,767	0% $0	0% $0	78% $450,000	$5,767	$23,267 14 CIP
Year 5	$735,456	19% $141,456	0% $0	0% $0	81% $594,000	$4,795	

Projected FTE and Headcount are:

	Student Headcount	Student FTE
First Year	30	22.5
Second Year	30	22.5
Third Year	35	26.25
Fourth Year	35	26.25
Fifth Year	40	29.5

On March 29, 2007, the Florida Board of Governors approved BOG Regulation 8.011, which sets forth criteria for implementation and authorization of new doctorates by the Board of Governors, as well as criteria for implementation and authorization of Bachelor's, Master's and Specialist degrees by Boards of Trustees. The following staff analysis is an assessment of how well the university meets BOG Accountability and Readiness criteria for implementation of this degree program.

Proposal Page Numbers:

INTRODUCTION		ACCOUNTABILITY		READINESS				
Program Description	**System Analysis**	**Overall**	**Budget**	**Mission and Strength**	**Program Quality**	**Curriculum**	**Faculty**	**Resources**
2	3	3	10	13	17	18	25	28

A. Program Description:

The University of South Florida (USF) is proposing to offer a PhD degree program in Environmental Engineering. This new program will replace the current Environmental Engineering track offered within the PhD in Civil Engineering, making it a specific stand alone degree program.

According to the USF proposal, the primary goal of the PhD Environmental Engineering program is to allow students to perform specialized training and research, resulting in a degree that recognizes the student's scholarly competence and ability to practice and conduct and report original and significant environmental engineering research. USF proposes that this PhD program will serve the state's need by enabling Florida to advance, via research and creation of new information and technology, a knowledge-based economy to manage the many environmental stressors on its water, land, and air resources which impacts social and economic opportunities for current and future generations.

The total minimum credits required for a student with a Master's degree is 48 credits and the total minimum credits required for a student without a Master's degree is 78 credits. PhD students may work in one or more of the following specialty areas: 1) Water Quality Engineering, 2) Air Quality Engineering, 3) Fate and Transport of Contaminants in the Environment, 4) Waste Management, 5) Sustainable Design and Sustainable Engineering and, 6) Environmental Biotechnology Applied to Environmental Problems.

B. System-Level Analysis and Evaluation in accordance with BOG Regulation 8.011:

The PhD in Environmental Engineering program meets the economic development goals of the SUS Strategic Plan with its focus on Healthy Communities; Research and Innovation; Integrated Interdisciplinary Inquiry; and Community Engagement. The program directly supports the following goals: 1) access to and production of degrees; 2) meet statewide professional and workforce needs, 3) building world-class academic programs and research capacity, and, 4) meeting community needs and fulfilling unique institutional responsibilities. USF proposes that this program will help meet the needs of Florida communities because by definition, environmental engineering is that branch of engineering concerned with the application of scientific and engineering principles for: 1) protection of human populations from the effects of adverse environmental factors; and, 2) protection of environments, both local and global from the potentially deleterious effects of natural and human activities; and improvement of environmental quality.

Reported in the proposal and confirmed by staff review, ***CNNMoney.com*** reported in 2010 that environmental engineering was the 5th best job available (out of 100 ranked). They wrote, "An undergraduate degree in any engineering specialty can be enough, and a state license is not always required. But you'll fare better with a graduate degree in environmental engineering." The proposal cites several sources as evidence that Florida (and the Nation) is in need of graduate level environmental engineering students. The proposal quotes Engineering News Record (ENR) (www.enr.com) as reporting that the environmental engineering design market

now exceeds $30 billion in annual revenue and all of the top 15 companies on the ENR list of design firms have offices in Florida.

A staff review of the Bureau of Labor Statistics Occupational Employment Statistics, Employment and Wages, May 2010 report confirmed the proposal's findings. BLS reported that Florida is second in states with the highest employment level for Environmental Engineers. In the same report, Northeast Florida region is listed as the second highest nonmetropolitan area in the country in employment in this occupation, and Northwest Florida is listed as 5th highest. The U.S. Bureau of Labor predicts that environmental engineers are expected to have employment growth of 31 percent between now and 2018, one of the highest growth of all engineering disciplines and much faster than the average for all occupations. The proposal reports that *Empower Me Magazine* (May 10, 2010) listed environmental engineering as one of five of "the hottest green, environmental and infrastructure jobs for the next ten years" and includes it in the 30 fastest growing occupations for the decade of 2008-2018.

Florida is an ideal location for the work of Environmental Engineers. The lead state agency for environmental management and stewardship, the Florida Department of Environmental Protection (FDEP) is responsible for protecting our air, water and land. Research confirmed that the FDEP initiates and manages many projects and research studies in the areas of water, wastewater, air, brown field redevelopment, and waste management, which would employ Environmental Engineers. One major project currently for the FDEP, together with the South Florida Water Management District, is implementing the 30-year, $10.9 billion Comprehensive Everglades Restoration Plan (CERP), which covers 16 counties over an 18,000 square mile area (http://www.dep.state.fl.us/mainpage/about/about_dep.htm). The FDEP is involved with numerous projects in environmental conservation, sustainability or restoration, and partners with other agencies including the Department of Community Affairs, the Department of Business and Professional Regulation, the Department of Financial Services, the Board of Governors, Department of State, Department of Transportation and several of the state universities and municipal governments (Long Range Program Plan, http://floridafiscalportal.state.fl.us/PDFDoc.aspx?ID=3454). USF also proposes that its program will link well with research in Sustainability. A growing area, Sustainability programs have access to Federal funding for research from the National Science Foundation (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027). As USF proposes, there will be practice and research opportunities for students throughout the program and the ability to interact with experts statewide, nationally, and internationally. However, due to deep budget cuts this past fiscal year and in the near future, employment opportunities with the FDEP may be diminished.

The proposal states that the USF environmental engineering graduate program is currently well integrated with other USF colleges for research. USF's College of Public Health, College of Marine Sciences, and School of Global Sustainability will provide unique training and research collaboration opportunities with a doctoral graduate program in Environmental Engineering to advance social, economic, and environmental needs. USF Environmental Engineering graduate students currently take courses offered by the College of Public Health and there is existing collaboration between faculty in environmental engineering, public health, and applied anthropology in obtaining external research funding. According to the proposal, one Environmental Engineering faculty member is appointed in the College of Public Health in the

Department of Environmental and Occupational Health, which provides this proposed doctoral program a direct line of communication for collaboration.

Addressing the issue of student demand, the proposal reports that many current and prospective students have requested the doctoral program. With USF's Master's program in Environmental Engineering graduate class enrollment exceeding 30 to 40 students per course offering, it will be a good feeder for the doctoral program. A Master's level graduate program that combines training and service with the U.S. Peace Corps (see http://cee.eng.usf.edu/peacecorps/) and has a focus on sustainable development that has grown to 33 students in 2.5 years (the students in this program are from 31 different U.S. universities that represent 21 states) (p.6), will provide a natural transition for students. This partnership allows graduate environmental engineering students to combine their graduate education with 10 weeks of international training and 2 years of service as a water/sanitation engineer (see http://cee.eng.usf.edu/peacecorps/). Students then integrate their service with an international research experience. USF is the only university in Florida with this partnership.

More than 30 students are currently majoring in the PhD Civil Engineering program. The proposal reports that USF conducted an internal survey of students currently enrolled in the PhD Civil Engineering program with a track in Environmental Engineering, and suggested that close to 90% would select a PhD program that was specifically Environmental Engineering. USF does not expect that faculty workload would be compromised, as the Department currently has eight faculty members whose specialty is Environmental Engineering. However, the expectation of 40 doctoral student candidates within 5 years will place 5 students with each faculty advisor. The proposal estimates that the program will eventually produce 5-6 Ph.D. graduates per year. Review of Board data shows that currently, UCF and UF have similar programs with the same CIP of 14.1401. In 2010, the UCF program enrollment was 7 students, down from 18 in 2001, and the UF program had an enrollment of 59, up from 49 in 2001. USF's goal is to have 40 students at the end of year five.

With the need for more practicing Environmental Engineers in the coming decade, the external consultant who reviewed this proposal for USF, Dr. Amy Childress, emphasized that PhDs in Environmental Engineering will become highly sought after as faculty. She cites the U.S. Bureau of Labor Statistics that, "a total of 662,000 faculty jobs are expected to become available…from 2006-2016." She states that a 25-percent growth is expected for faculty in this field. Based on high expectations of employment growth mentioned above, graduates with a PhD in Environmental Engineering will be well suited to pursue employment as an academic faculty or with a public or private agency working in the field. The USF program will help to provide qualified PhDs in Environmental Engineering for these positions.

Addressing concerns over program duplication, the USF proposal provided evidence that communication was initiated by USF with each of five universities with similar programs (see Table, p. 8). USF reported no negative comments. According to the proposal, FAMU is interested in exploring an exchange of graduate level distance learning courses. The University of Florida offers a doctoral degree in Environmental and Engineering Sciences and the University of Central Florida offers a PhD in Environmental Engineering. Board staff confirmed both doctoral programs are CIP 14.1401. A letter of support from Dr. Tony Waldrop, Provost and Vice President for Academic Affairs at UCF suggested any impact on their

program would be minor. Letters of support provided by UF and UCF are attached at the end of the proposal.

C. Assessment of the University Review Process in accordance with BOG Regulation 8.011:

Due to the system of stair step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon University Board of Trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

1. *Overall –* *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

☒ ☐ **The proposal has been approved by the university board of trustees and includes all required signatures.**

University of South Florida Board of Trustees approved the program on September 2, 2011.

☒ ☐ **The university has provided a proposal written in the standard SUS format which addresses new academic program approval criteria outlined in BOG Regulation 8.011.**

The Board of Governors new degree program proposal format was used, as expressed in Board of Governors Regulation 8.011.

☒ ☐ **The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.**

The proposal provides information on each of these areas. Detailed tables are provided on projected enrollment (Table 1-B); on faculty effort (Table 4); and on budget (Tables 2 & 3).

☒ ☐ **The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The program plan for achieving diversity was reviewed and signed by the USF Equal Opportunity Officer on September 8, 2011.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and BOG policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

☒ ☐ **The University Board of Trustees has approved the most recent budget for this proposal.**

The current budget proposal has been approved the USF Board of Trustees on September 2, 2011.

Projected costs of the program as provided in Table 2 are considerably lower than the average expenditures at other SUS institutions (see Estimated Costs on page 1.) The USF proposal and supporting documents (Table 2) do not include costs of administrative support staff or other departmental costs. If administrative activities will be provided by current staffing in the Department of Civil Engineering, the dual usage should be acknowledged and factored in. The goal of 30 students in the first year may also be an overestimation. If enrollment in the first year is less than 30 students, the costs will be appreciably higher as well.

According to the proposal, most funding for the new program (not including faculty salaries and benefits) will be supplied by external grants. It is not clear from the proposal, but can be assumed, that the faculty salaries and benefits are expected to be covered by the Civil Engineering Department. However, if this is the case, and if faculty serve two major program areas and supervise an increasing number of doctoral students, the program may need to hire more faculty by the 5th year.

The proposal explains that doctoral students will be supported as Department Teaching or Research Assistants. Funding and grants are available from state agencies, local municipalities, private industry, or federal funding (e.g. NSF, EPA). The proposal describes two grants currently awarded to faculty: 1) $750,000+ Department of Education Graduate Assistantships in Areas of National Need (GAANN) Grant, which provides stipends, tuition and supply funds for doctoral students working in fields or water, energy and materials with a focus on sustainability; and 2) a $600,000 National Science Foundation S-STEM Scholarship grant that provides funding for masters' and doctoral graduate students with interests in providing sustainable water and transportation infrastructure.

☒ ☐ **In the event that resources within the institution are redirected to support**

the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.

According to the budget description and supporting tables and documentation, the proposed PhD program is not expected to have a negative impact on related programs or departments. All required courses are already offered at USF. Eight faculty members with Environmental Engineering specialties are already employed in the department at USF. As these faculty members have been teaching and advising in the Civil Engineering program, the proposal does not mention if they will continue in both programs or be assigned solely to Environmental Engineering. The proposal describes current and future collaboration and partnerships between the departments in the areas of shared courses and research.

According to the proposal there will be some short term decline in the PhD Civil Engineering enrollment as some students switch to the PhD Environmental Engineering program. The proposal explained that undergraduate students will benefit from the proposed program as it will enhance undergraduate education and research by serving as a mechanism for students in all engineering disciplines to continue their studies in Environmental Engineering at USF. Undergraduate engineering students will have opportunities to participate with the doctoral students in the proposed program in the development of undergraduate research or employment opportunities through professional ties developed between faculty members and external funding agencies.

READINESS

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

3. Program Quality *– The proposal provides evidence that the university planning activities have been sufficient and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

☒ ☐ **The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the University Board of Trustees.**

As described in the proposal, the planning process began with planning and development in the fall of 2010 (see tables on pp. 16 & 17, *Chronology of Activities Leading to Developing the Proposal,* and *Events leading to Implementation of the Proposal*). A collaborative process is described, involving Dr. James R. Mihelcic and the Civil & Environmental Engineering Graduate Director (Dr. Sarina Ergas) in addition to

discussions and meetings with faculty members in the Department of Civil and Environmental Engineering, Department Chairs in Engineering, Associate Dean in Engineering, Dean of Engineering, Graduate School, and the Faculty Senate. According to the proposal, the environment and sustainability have been major strategic emphases of USF for several years and there has been administrative support through the hiring of eight environmental engineering faculty members over the past eight years.

☒ ☐ **An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

In response to a request from USF, Dr. Amy Childress, Professor and Chair of the Department of Civil and Environmental Engineering at the University of Nevada, Reno provided an external review of the proposal for the PhD in Environmental Engineering. Dr. Childress' findings and comments were very favorable for the establishment of the new program. She described research findings from the Bureau of Labor Statistics and from the Chronicle of Higher Education projecting increases in employment and research opportunities for Environmental Engineers. Many other programs offer environmental tracks, but she added that this type of program "would distinguish the USF program from the majority of other PhD programs that offer specialization in environmental engineering but not a PhD in environmental engineering specifically." She stated that providing this type of program would give greater identity to these students. She concluded by confirming that this program would have regional significance in terms of its location in Florida and the state's needs. A copy of her review letter can be found at the end of the proposal.

☒ ☐ **The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

According to the proposal, the Civil & Engineering graduate programs were reviewed by two outside academic reviewers during a site visit on January 24, 2011. The reviewers were faculty members from Purdue University and Georgia Tech. A self study report was also prepared by the department in October, 2010.

The proposal summarizes two recommendations made by the reviewers that are relevant to the PhD program and describes USF's plans to implement those suggestions. The recommendations were: 1) the need to improve recruitment of graduate students through interaction with national and international communities. This has been addressed by USF in their proposal discussion on recruitment of students (Section II.E, pages 8-9); and 2) that the previous physical separation of graduate students created problems building a strong community of scholars. USF's response is addressed in Section X.C (page 35) in a discussion of the use of new

research laboratory space and offices.

☒ ☐ **The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

As presented in the USF proposal, the program will primarily be delivered through traditional on-campus methods on the Tampa campus. Students may have the opportunity to take classes off-campus as several graduate courses are offered through distance learning by USF or other universities. Research may also be conducted off-campus.

☐ ☒ **If necessary, the university has made allowances for licensure and legislative approval to be obtained in a timely manner.**

Engineering is not licensed at the PhD level.

4. Curriculum *- The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study, and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

☒ ☐ **The university has reviewed the curriculum and found that the course of study presented is appropriate to meet specific learning outcomes and industry driven competencies discussed in the proposal.**

As presented in the proposal, the curriculum has been designed to allow students to perform specialized training and research resulting in the scholarly competence and ability to conduct and report original and significant environmental engineering research. It is also designed to prepare students to work in a variety of specialty areas of Environmental Engineering, e.g. Water Quality Engineering; Air Quality Engineering, Waste Management, etc.

As described in the proposal, the curriculum includes the four required core courses deemed as knowledge and core competencies important for the understanding and practice of environmental engineering by the Environmental Engineering Body of Knowledge, American Academy of Environmental Engineers.

To further align the curriculum with industry driven competencies, the proposal reports that the Department of Civil & Environmental Engineering has established an outside advisory board that consists of up to eight outside members from engineering practice, research, and academics. These individuals provide input on the undergraduate and graduate programs offered through the department. These

advisory board members are available to provide input to curriculum development and student assessment.

☒ ☐ **The university anticipates seeking accreditation for the proposed doctoral program, or provides a reasonable explanation as to why accreditation is not being sought.**

There is no specialized accreditation for doctoral programs in Engineering.

5. Faculty *– The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments, and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

☒ ☐ **The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

There are 8 current faculty members (see Table 4) who will take on primary responsibility for program delivery. There is no mention in the proposal about any need for further hires or use of adjuncts. As these faculty members are currently members of the Civil Engineering department, there is also no mention of need to replace faculty there.

☒ ☐ **The university has reviewed the evidence provided and found that the faculty in aggregate has the necessary experience and research activity to sustain the program.**

As described in Table 4, all of the current faculty members hold terminal degrees in their fields and have tenure. There is one full Professor, two Associate Professors, and 5 Assistant Professors. According to the proposal, this will provide ample faculty and resources for mentoring, research and teaching.

☒ ☐ **The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

The proposal provides evidence that the eight faculty members have been productive in teaching, research and service, including publications and thesis and dissertation supervision (see Tables on pages 26-27). According to the proposal, in the past five years environmental engineering course enrollment has grown from under 20 students to 25-40 students per offering. The proposal reports that as of November 2010, the

number of graduate students advised by environmental engineering faculty had grown to 33 PhD and 42 MS thesis students.

According to the proposal, currently funded research within the environmental engineering faculty group exceeds $3.78 million. As evidenced in the proposal, the eight faculty members have participated in numerous national service opportunities (see Table on page 27).

☒ ☐ **If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

The proposal provides no stated plan for future hiring of additional faculty.

6. Resources *– The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program..*

YES NO

☒ ☐ **The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

The proposal provides evidence that sufficient library resources are available to implement the program and no additional resources are needed at this time. A statement was signed by the Dean of USF Libraries on September 6, 2011.

☒ ☐ **The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories and office space, is sufficient to initiate the program.**

The proposal describes adequate classrooms and laboratories to accommodate this program. Buildings throughout the USF campus are used for existing graduate classes. The Environmental Engineering program at USF maintains over 3,500 square feet of state-of-the-art research laboratory space, with another separate laboratory (approximately 500 square feet) dedicated for pilot plant research. The laboratories are equipped with hoods and bench space to accommodate approximately 30 research students. Development of additional laboratory space on the first floor of the IDR building will add another 5,300 square feet of space.

The proposal reports there is a plan to add 28 office spaces for doctoral students and postdoctoral research associates in the new Interdisciplinary Research Building (IDRB) space.

☒ ☐ **The university has ensured that necessary equipment is available to initiate the program.**

The proposal reports that USF currently has the specialized equipment needed for the program (see page 35).

☒ ☐ **The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

According to the proposal, there is no plan to allocate additional resources to the department or college to support doctoral students. All students enrolled in the program will have opportunities for a teaching or research assistant position. Graduate research assistantships and external funding support will be used. Faculty members conducting research normally support two or more research assistants. Thus, the Department typically supported 40-80 research assistants per year. A recent initiative to increase the number of PhD students in Engineering brought in 23 new doctoral students to the Department in fall 2010. The support for these new PhD students is $15,000/year.

☒ ☐ **If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

According to the proposal, opportunities are available for doctoral students to conduct research and be trained at many federal laboratories, such as: Environmental Protection Agency, Department of Energy, National Oceanic & Atmospheric Administration, and United States Geological Survey. The American Association for the Advance of Science provides opportunities for graduates of environmental engineering programs to be placed for fellowships with federal agencies in the Washington, D.C. area. In addition, some doctoral students will have their research occurring at local municipal water treatment, storm water management, and wastewater treatment facilities which provides students opportunities to interact with practitioners.

The proposal describes several international opportunities for USF's graduate students, including NSF funded travel to the UNESCO-IHE Water Laboratory in the Netherlands and travel to Bolivia to conduct research in sustainable development. As mentioned earlier, the department also has the only graduate partnership with the U.S. Peace Corps. Students spend 2+ years overseas working as a water sanitation engineer, while conducting field research with a developing world focus. The program is 2.5 years old

and has already attracted 33 domestic graduate students, who come from 31 universities representing 21 states.

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Florida Board of Governors
Request to Offer a New Degree Program

University of South Florida University Submitting Proposal	Spring 2012 Proposed Implementation Date
College of Engineering Name of College or School	Civil & Environmental Engineering Name of Department(s)
Engineering Academic Specialty or Field	PhD Environmental Engineering Complete Name of Degree (Include Proposed CIP Code): 14.1401

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

September 2, 2011
Date Approved by the University Board of Trustees

Judy Genshaft
President

Date

B. U
Signature of Chair, Board of Trustees

Date

9/7/11
Vice President for Academic Affairs

Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE)

	Projected Student Enrollment (from Table 1)			Projected Program Costs (from Table 2)		
Implementation Time Frame	HC	FTE		Total E&G Funding	Contract & Grants Funding	E&G Cost per FTE
Year 1	30	22.5		129,767	$450,000	$5,767
Year 2	30	22.5				
Year 3	35	26.25				
Year 4	35	26.25				
Year 5	40	29.5		141,456	$594,000	$4,795

Note: This outline and the questions pertaining to each section must be reproduced within the body of the proposal to ensure that all sections have been satisfactorily addressed.

INTRODUCTION

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including concentrations, tracks, or specializations;(c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

The USF College of Engineering proposes to implement a PhD in Environmental Engineering that will replace the existing Environmental Engineering track within the PhD in Civil Engineering.

The primary goal of the PhD Environmental Engineering program is to allow students to perform specialized training and research, which will result in award of a degree that recognizes the student's scholarly competence and ability to practice, and conduct and report original and significant environmental engineering research. The total minimum credits required for a student with a Master's degree is 48 credits and the total minimum credits required for a student without a Master's degree is 78 credits. PhD students may work in one or more of the following specialty areas: 1) Water Quality Engineering, 2) Air Quality Engineering, 3) Fate and Transport of Contaminants in the Environment, 4) Waste Management, 5) Sustainable Design and Sustainable Engineering, and, 6) Environmental Biotechnology Applied to Environmental Problems.

The proposed program integrates with research strengths developed at USF related to water, sustainable development and green design, public health, global sustainability, and environmental biotechnology. USF is the only university in Florida with a College of Public Health, College of Marine Science, and School of Global Sustainability. These provide unique training and research collaboration opportunities with a doctoral program in Environmental Engineering. Environmental Engineering has emerged as a distinct discipline in the past decade and the proposed program would not only respond to current demand in the workforce, but also allow us to recruit a high caliber, diverse group of students who are seeking an Environmental Engineering degree versus a civil engineering degree. A PhD program is needed to allow Florida to advance, via research and creation of new information and technology, a knowledge-based economy to manage the many environmental stressors on its water, land, and air resources which impacts social and economic opportunities for current and future generations.

In terms of being a distinct discipline, in 2006 Environmental Engineering was recognized as a distinct specialty on professional engineering licensing exams. In term of its size, engineers held approximately 1.5 million jobs in the United States and environmental engineering ranked #8 in terms of the total number. The U.S. Bureau of Labor Statistics counted over 54,300 environmental engineers employed in the U.S. in 2008. They project that environmental engineers are expected to have employment growth of 31 percent between now and 2018, one of the highest in growth of all engineering disciplines and much faster than the average for all occupations.[1] Furthermore, the upper range of environmental engineers employed is as high as 100,000.[2]

In addition, ***Empower Me Magazine*** (May 10, 2010)[3] listed Environmental Engineering as one of five of "the hottest green, environmental and infrastructure jobs for the next ten years" They state that environmental engineers jobs are slated to grow over 30% and are included in the 30 fastest growing occupations for the decade of 2008-2018. ***CNNMoney.com*** reported in 2010 that Environmental Engineering was the 5th best job available (out of 100 ranked).[4] They stated "An undergraduate degree in any engineering specialty can be enough, and a state license is not always required. But you'll fare better with a graduate degree in environmental engineering,"

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[1] U.S. Bureau of Labor Statistics, http://www.bls.gov/oco/ocos027.htm

[2] S. Jones et al., "An Initial Effort to Count Environmental Engineers in the USA," *Environmental Engineering Science*, 22(6):772-787, 2005

[3] http://www.empowermemagazine.com/?s=environmental+engineering <accessed December 27, 2010)

[4] http://money.cnn.com/magazines/moneymag/bestjobs/2010/snapshots/5.html <accessed December 27, 2010>

and a recent ***NY Times*** article (June 24, 2011)[5] discussed the appeal that environmental sustainability related professions have to college graduates.

B. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which goals the program will directly support and which goals the program will indirectly support. (See the SUS Strategic Plan at http://www.flbog.org/StrategicResources/)

This program meets the economic development goals of the SUS Strategic Plan with its focus on Healthy Communities; Research and Innovation; Integrated Interdisciplinary Inquiry; and Community Engagement. The goals that are directly supported include: 1) access to and production of degrees; 2) meet statewide professional and workforce needs, 3) building world-class academic programs and research capacity, and, 4) meeting community needs and fulfilling unique institutional responsibilities. As stated earlier, the proposed degree program addresses economic and community needs and will allow for the development of a world-class educational effort in environmental engineering. There will be practice and research opportunities for students throughout the program and the ability to interact with experts statewide, nationally, and internationally.

This program will help meet the needs of Florida communities because by definition, environmental engineering is that branch of engineering concerned with the application of scientific and engineering principles for: 1) protection of human populations from the effects of adverse environmental factors; and, 2) protection of environments, both local and global from the potentially deleterious effects of natural and human activities; and improvement of environmental quality. We expect to develop a program that produces 5-6 PhD graduates per year. Florida (and the Nation) is in need of graduate level environmental engineering students. For example Engineering News Record (ENR) (www.enr.com) reports that the environmental engineering design market now exceeds $30 billion in annual revenue and all of the top 15 companies on the ENR list of design firms have offices in Florida. ***CNNMoney.com*** reported in 2010 that environmental engineering was the 5th best job available (out of 100 ranked).[6] However, they stated "An undergraduate degree in any engineering specialty can be enough, and a state license is not always required. But you'll fare better with a graduate degree in environmental engineering." In addition, USF has also invested considerable resources in environmental engineering over the past eight years with the hiring of eight faculty who specialize in environmental engineering.

Institutional and State Level Accountability

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

The American Academy of Environmental Engineers (AAEE) defines Environmental Engineering as that branch of engineering concerned with the application of scientific and engineering principles for: 1) protection of human populations from the effects of adverse environmental factors; and, 2) protection of environments, both local and

[5] "Green Jobs Attract Graduates," NY Times, June 24, 2011.

[6] http://money.cnn.com/magazines/moneymag/bestjobs/2010/snapshots/5.html <accessed December 27, 2010>

global from the potentially deleterious effects of natural and human activities; and improvement of environmental quality.

Besides careers in research, academics, and government, the 2009 Body of Knowledge published by the American Academy of Environmental Engineers[7] reports that engineers in the consulting engineering field usually have doctoral degrees. As stated previously, the **U.S. Bureau of Labor** predicts that environmental engineers are expected to have employment growth of 31 percent between now and 2018, one of the highest growth of all engineering disciplines and much faster than the average for all occupations.[8] In addition, ***Empower Me Magazine*** (May 10, 2010)[9] listed environmental engineering as one of five of "the hottest green, environmental and infrastructure jobs for the next ten years" They state that environmental engineers jobs are slated to grow over 30% and are included in the 30 fastest growing occupations for the decade of 2008-2018. ***CNNMoney.com*** reported in 2010 that environmental engineering was the 5th best job available (out of 100 ranked).[10] They stated "An undergraduate degree in any engineering specialty can be enough, and a state license is not always required. But you'll fare better with a graduate degree in environmental engineering."

Engineering News Record (ENR) (www.enr.com) reports that the environmental engineering design market exceeds $30 billion in annual revenue and all of the top 15 companies on the ENR list of the largest environmental engineering design firms have offices in Florida. Many environmental problems in Florida result from the large concentrations of humans and infrastructure that exist at the water-urban interface. In fact, Florida shows some of the highest increases in population on the urban-coastal interface.[11] Some important program areas of the Florida Department of Environmental Protection (FDEP) include water, wastewater, air, brownfield redevelopment, and waste management. Brownfields are properties where expansion, redevelopment or reuse may be complicated by the presence or potential presence of environmental pollution.

Florida currently has the largest desalination plant in the U.S. (near Tampa) that converts seawater to drinking water. Florida also ranks with California as the two largest consumers of reclaimed (i.e., reused) water. Related to water quality, in November, 2010, the U.S. Environmental Protection Agency established final numeric nutrient water quality standards for lakes and flowing waters in Florida. This action was "pursuant to a January 2009 Clean Water Act determination and a consent decree with Florida Wildlife Federation to settle a 2008 lawsuit." [12] Also, an existing project to restore, protect and preserve the water resources of central and southern Florida, including the Everglades covers 16 counties over an 18,000-square-mile area and is estimated to take 30 years to design and construct with a current estimate of $9.5 billion for the 60+ projects.[13]

Florida's population is expected to increase to 22 million by the year 2020 and freshwater needs are expected to grow from 8.2 to 9.1 billion gallons per day.[14] In terms of water scarcity issues, the Florida Legislature has established "the encouragement and promotion of reuse of reclaimed water and water conservation…" as formal state objectives in Section 403.064(1), Florida Statutes (F.S.), and Section 373.250, F.S. The Florida Department of Environmental Protection along with Region 4 of the Environmental Protection Agency, the Florida Department of Health, Florida's five water management districts, the Public Service Commission, the Florida

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[7] http://www.aaee.net/Website/EEBoK.htm <accessed December 27, 2010>
[8] U.S. Bureau of Labor Statistics, http://www.bls.gov/oco/ocos027.htm
[9] http://www.empowermemagazine.com/?s=environmental+engineering <accessed December 27, 2010)
[10] http://money.cnn.com/magazines/moneymag/bestjobs/2010/snapshots/5.html <accessed December 27, 2010>
[11] Thomas J. Culliton, 1998, Population: Distribution, Density, and Growth, NOAA's State of the Coast Report, National Oceanic and Atmospheric Administration (NOAA), Silver Spring, MD
[12] US Environmental Protection Agency, http://water.epa.gov/lawsregs/rulesregs/florida_index.cfm <accessed March 6, 2011>
[13] US Army Corps, http://www.evergladesplan.org/about/about_cerp_brief.aspx <accessed March 6, 2011>
[14] Florida Council of 100, 2003, http://www.fc100.org/ <accessed March 6, 2011>

Department of Agriculture and Consumer Services, and the Florida Department of Community Affairs have developed the Statement of Support for Water Reuse in Florida. The Tampa-Clearwater-St. Petersburg Metro area is a perfect location to conduct this type of research. It has undergone some of the most rapid development in the US in the last three decades (Tampa Dept. Planning and Technology 2008). This area is water scarce, has a population learning to face water scarcity issues, and is situated in a state that is 90% dependent on groundwater for its water needs. There are also now 252 brownfield areas designated in Florida. Brownfields are properties where expansion, redevelopment or reuse may be complicated by the presence or potential presence of environmental pollution. The Florida Brownfields Program reports that to date, "the program has created nearly 30,000 new direct and indirect jobs and resulted in almost $1.68 billion of capital investment over the last 11 years."[15]

Lastly, one of the five principal conclusions that emerged from the 2008 Florida Energy and Climate Change Action Plan (www.flclimatechange.us) (using guidance provided in Executive Order 07-128) is that based upon the findings of the 4th Assessment of the Intergovernmental Panel on Climate Change, Florida's resources, communities, and economy are expected to experience significant impacts if the current trajectory of global greenhouse gas emissions is not reversed.

The future need for environmental engineers is strongly integrated with the U.S. Environmental Protection Agency's seven future priorities listed by Administrator Lisa Jackson[16]. The following five, directly require the problem solving skills inherent to the technical discipline of environmental engineering: 1) Taking Action on Climate Change: 2) Improving Air Quality, 3) Assuring the Safety of Chemicals, 4) Cleaning Up Our Communities (of wastes), and, 5) Protecting America's Waters.

Research needs in environmental engineering also continue to grow. For example, the National Science Foundation now funds research not only in environmental engineering, but also through programs created in "environmental sustainability" and "water, sustainability, and climate." The proposed PhD program's specialty areas match well with majority of research plans of EPA's Office of Research & Development including: 1) Water Quality Engineering, 2) Air Quality Engineering, 3) Fate and Transport of Contaminants in the Environment, 4) Waste Management, 5) Sustainable Design and Sustainable Engineering, and, 6) Environmental Biotechnology Applied to Environmental Problems.

The proposed program will build on research strengths developed at USF that include: 1) fresh and ocean water resources, 2) sustainable development and sustainable design, and, 3) environmental biotechnology applied to treatment of environmental contaminants and development of renewable energy. Important to this proposal, the USF environmental engineering graduate program is currently well integrated via many existing externally funded research projects with USF research strengths related to community engagement, renewable energy, social & behavioral sciences through anthropology, public health, and global sustainability.

USF is the only university in Florida with a College of Public Health, College of Marine Sciences, and School of Global Sustainability. These provide unique training and research collaboration opportunities with a doctoral graduate program in Environmental Engineering to advance social, economic, and environmental needs of current and future generations of Floridians. USF Environmental Engineering graduate students currently take courses offered by the College of Public Health and Department of Applied Anthropology and there is existing collaboration between faculty in environmental engineering, public health, and applied anthropology in obtaining external research funding. By its definition environmental engineering is involved with protection of human populations from the effects of adverse environmental factors. USF is also the only university in Florida that has

[15] Florida Brownfield Association, http://www.floridabrownfields.org/displaycommon.cfm?an=1&subarticlenbr=18 <accessed March 6, 2011>

[16] http://blog.epa.gov/administrator/2010/01/12/seven-priorities-for-epas-future/ <accessed December 27, 2010).

formal graduate school partnerships with the U.S. Peace Corps in the areas of environmental engineering, civil engineering, and global health. This partnership allows graduate Environmental Engineering students to combine their graduate education with 10 weeks of international training and 2 years of service as a water/sanitation engineer (see http://cee.eng.usf.edu/peacecorps/).

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

USF's existing Master's program in Environmental Engineering has grown significantly in the past few years with core graduate class enrollment now exceeding thirty to forty students per course offering. This includes development of a Master's level graduate program that combines training and service with the U.S. Peace Corps and has a focus on sustainable development that has grown to 33 students in 2.5 years (the students in this program are from 31 different U.S. universities that represent 21 states).

We have already had many requests from current or prospective students about the offering of a doctoral degree in Environmental Engineering. Environmental Engineering is a popular program that students will want to participate in. Our internal survey of students currently enrolled in the PhD Civil Engineering program who emphasize Environmental Engineering suggested that close to 90% would select such a program.[17] Currently USF offers two degrees that specifically have "environmental engineering" in the degree title. They are: 1) a 30-credit thesis-based Master of Science in Environmental Engineering and 2) a 30-credit coursework only Master of Environmental Engineering Degree. Graduate courses required for these degrees now have annual enrollments that range from 25 to over 40 students.

The number of students currently majoring in the PhD Civil Engineering major at USF who are concentrating on Environmental Engineering exceeds 30. This number of doctoral students in the classroom and individual faculty research groups does not pose a problem in terms of faculty workload. The Department currently has eight faculty members whose specialty is Environmental Engineering, and the Environmental Engineering program has gained national recognition over the past several years. In 2010 the Department won a competitive proposal to host the 2011 Education and Research Conference of the Association of Environmental Engineering and Science Professors (AEESP) (see http://aeesp2011.com/).

C. If similar programs (either private or public) exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of any communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). Provide data that support the need for an additional program.

Currently there are two similar programs in Florida. The University of Central Florida (UCF) offers a PhD in Environmental Engineering. The Graduate Coordinator at the University of Central Florida (Dr. Mohamed Abdel-Aty) was contacted about USF's proposed program and was supportive of our effort. He suggested there may be a minor impact on UCF enrollment and expressed an interest in collaborating with our group. The University of Florida offers a doctoral degree in Environmental and Engineering Sciences that shares the 14.1401 CIP code.

[17] Conducted in March, 2011.

The proposed program will differ from the programs at UF and UCF because of some research strengths developed at USF in: 1) fresh and ocean water resources, 2) sustainable development and sustainable design, and, 3) environmental biotechnology applied to treatment of environmental contaminants and development of renewable energy. Important to this proposal, the USF Environmental Engineering graduate program is currently well integrated via many existing externally funded research projects with USF research strengths related to community engagement, renewable energy, social & behavioral sciences through anthropology, public health, and global sustainability.

Further, USF is the only university in Florida with a College of Public Health, College of Marine Sciences, and School of Global Sustainability. These provide unique training and research collaboration opportunities with a doctoral graduate program in Environmental Engineering to advance social, economic, and environmental needs of current and future generations of Floridians. USF Environmental Engineering graduate students currently take courses offered by the College of Public Health and Department of Applied Anthropology and there is existing collaboration between faculty in Environmental Engineering, public health, and applied anthropology in obtaining external research funding. By its definition (provided in Section II) Environmental Engineering is involved with protection of human populations from the effects of adverse environmental factors. One Environmental Engineering faculty member (Dr. Amy Stuart) is appointed in the College of Public Health in the Department of Environmental and Occupational Health which provides this proposed doctoral program a direct line of communication to this important collaborator. Drs. Mihelcic and Stuart also teach graduate courses which are co-listed between the Colleges of Engineering and Public Health. There is also an interdisciplinary environmental research colloquium course taken by many Environmental Engineering graduate students that is co-taught by faculty members in environmental science & policy, environmental engineering, and public health.

Environmental Engineering faculty members are also collaborating with staff and affiliated faculty at the School of Global Sustainability (SGS) on research and teaching courses required for the MA degree in Global Sustainability The SGS has a research mission to generate innovations and new knowledge that will help cities around the world, including those in developing countries, to reduce their ecological footprint while improving their form and function to make them healthier, more livable, and more resilient. The research area related to provision of resilient and sustainable infrastructure also is related to existing collaborations between USF's Environmental Engineering graduate program and USF strengths in sustainability provided through the SGS, green engineering initiatives taking place in several departments in the College of Engineering.

USF is also the only university in Florida that has formal graduate school partnerships with the U.S. Peace Corps in the areas of environmental engineering, civil engineering, and global health. This partnership allows graduate environmental engineering students to combine their graduate education with 10 weeks of international training and 2 years of service as a water/sanitation engineer (see http://cee.eng.usf.edu/peacecorps/). Students then integrate their service with an international research experience. Research areas have included: water supply and treatment, provision of sanitation, bioenergy, hygiene promotion, and solid waste management. USF currently has 32 engineering students enrolled in this program, in both the M.S. and Ph.D. programs. The USF - Peace Corps graduate partnerships in engineering and global health provide unique research opportunities for environmental engineering doctoral students interested in issues related to global sustainability.

We contacted every other graduate engineering program within Florida that had some component of environmental engineering research present (most are housed within Civil Engineering units). Communication was made by email or personal contact with each individual in the "contact" column. All contacts responded. No negative comments were received as shown in the following table. Florida A&M was interested in exploring exchange of distance learning courses at the graduate level. The University of Florida and the University of Central Florida were both supportive of our efforts and both schools expressed an interest in collaborating with our group. The University of Miami saw no conflict and also expressed interest in collaboration.

Letters of support were provided by UF and UCF, the two institutions with existing doctoral programs in CIP 14.1401, and are attached to this proposal.

Table. The following individuals were contacted on January 18, 2011.

University	Location	Title of doctoral degree	Contact
University of Florida	Gainesville	Environmental Engineering Sciences	Dr. Paul A. Chadik, Professor and Chair pchad@eng.ufl.edu
Florida A&M University and Florida State University	Tallahassee	Civil & Environmental Engineering	Kamal Tawfiq, Professor and Chair tawfiq@eng.fsu.edu
University of Central Florida	Orlando	Environmental Engineering	Mohamed Abdel-Aty, Professor & Graduate Coordinator mabdel@mail.ucf.edu
Florida International University	Miami	Civil Engineering	Hector R. Fuentes, Professor and Senior Environmental Engrg faculty member fuentes@fiu.edu
University of Miami	Miami	Civil Engineering	Dr. James Englehardt, Professor and Senior Environmental Engrg faculty member, jenglehardt@miami.edu

D. Use Table 1 (A for undergraduate and B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 40 credit hours per year and graduate FTE will be calculated as 32 credit hours per year. Describe the rationale underlying enrollment projections. If, initially, students within the institution are expected to change majors to enroll in the proposed program, describe the shifts from disciplines that will likely occur.

Based on our current enrollment in the existing Environmental Engineering track in the PhD Civil Engineering program and a survey of our graduate population, we anticipate that our student body will be comprised of a mixture of domestic (both residents and non-resident) and international students. We expect enrollment to initially be 30 full-time students as many current doctoral students switch from the PhD Civil Engineering program to the PhD Environmental Engineering program. After that we expect steady growth in students who will identify with the new program and expect enrollment to grow to 40 full-time students.

E. Indicate what steps will be taken to achieve a diverse student body in this program, and identify any minority groups that will be favorably or unfavorably impacted. The university's Equal Opportunity Officer should read this section and then sign and date

Data suggest that underrepresented groups in STEM disciplines, particularly women, are attracted to careers where they feel that they can have a positive impact on the environment and society. Students are now looking to merge personal convictions with career; learn how to apply technology that is culturally, economically, and socially suitable; and apply their educational skills for protecting ecosystems and natural resources.[18]

[18] Widnall, S., *Digits of pi: Barriers and Enablers for Women in Engineering*, in *S.E. Regional NAE Meeting*. 2000: Georgia Institute of Technology. Hokanson, D.R., J.R. Mihelcic, L.D. Phillips, "Educating Engineers in the Sustainable Futures

There has been a steady increase in enrollment of under-represented minorities in the PhD Civil Engineering program over the past years. The past two years (2008, 2009) has seen a total of 9 under-represented minority PhD students enrolled each year (of 52 total in fall, 2009). In regards to gender, female enrollment in the doctoral program was 18 (of 52 total in fall, 2009). Mr. Bernard Batson serves as full time director for diversity and outreach programs in the College of Engineering and assists with recruitment of these students in the department. A number of our graduate students are funded through the NSF Bridge to Doctorate Program, the Alfred P. Sloan Fellowship Program, the McKnight Fellowship Program, among others. Recent large grants from the Department of Education (under the Graduate Assistantships in Areas of National Need [GAANN] Program) and the National Science Foundation (under the S-STEM and STARS programs) have provided priority funding for female and minority students who are underrepresented in STEM disciplines. Several student organizations, including the Florida-Georgia Louis Stokes Alliance for Minority Participation Club, the National Society of Black Engineers (NSBE), the Society of Hispanic Professional Engineers (SHPE), and the Society of Women Engineers (SWE), support these students and create a collegial learning environment in the college. A number of faculty members have been approved as research mentors for under-represented minority students under the Louis Stokes Alliances for Minority Participation (LSAMP) Program.

We also plan to utilize our existing marketing and recruitment strategies through professional associations (e.g., Association of Environmental Engineering & Science Professors) and conferences run by professional societies (e.g., Water Environmental Federation, American Geological Association, Air & Waste Management Association, Water Reuse Association, American Chemical Society) and other mediums and venues to work as partners with the USF College of Engineering, Graduate School, and the Office of International Affairs to promote the program. We will also be able to add the new degree to the searchable graduate program list server maintained by the Association of Environmental Engineering & Science Professors.

In terms of international students, we plan to reach out especially to our partnering international institutions including Ocean and Nankai Universities (environmental science) in China and Exeter University (water resources program) in the United Kingdom. Exeter, USF, and King Abdulaziz University (Saudi Arabia) were awarded a grant in March 2011 to build a research partnership around sustainable water, wastewater, and stormwater management by the British Council International Higher Education Programme with a focus on Strategic Partnerships. We have also developed an existing partnership with two universities in Hanoi Vietnam: Hanoi University and Vietnam Academy of Science and Technology (Memorandum of Understanding signed November, 2009). USF has also signed a memorandum of understanding with the UNESCO-IHE Water Laboratory in Delft (Netherlands) that provides for student exchanges.

Ted Williams

Ted Williams, Ph.D.
Associate Vice President, Diversity and Equal Opportunity
University of South Florida

9/8/11
Date

Model with a Global Perpective: Education, Research & Diversity Initiatives," *International Journal of Engineering Education*, 23(2): 254-265, 2007.

III. Budget

A. Use Table 2 to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

Most funding for the proposed program (except for faculty salaries and benefits) will be supplied by external grants. Doctoral students will be supported as Department Teaching or Research Assistants. Teaching Assistants work as graders for courses or help with laboratory courses and problem sessions. They are supported from the Department's OPS budget. Research Assistants are supported from professor's research contracts or start-up funds for new faculty. Funding in the environmental engineering areas comes from state agencies, local municipalities, private industry, or federal funding (e.g., NSF, EPA). A number of graduate students are currently funded through large fellowship and scholarship programs supported by competitive funding obtained from the federal government. For example, a environmental engineering faculty member is the lead PI on a recently secured $750,000+ Department of Education Graduate Assistantships in Areas of National Need (GAANN) Grant, which provides stipends, tuition and supply funds for doctoral students working in fields or water, energy and materials with a focus on sustainability. Four environmental engineering faculty members have also secured a $600,000 National Science Foundation S-STEM Scholarship grant that provides funding for master's and doctoral graduate students with interests in providing sustainable water and transportation infrastructure.

B. If other programs will be impacted by a reallocation of resources for the proposed program, identify the program and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

As mentioned previous ly, there will be some short term decline in the PhD Civil Engineering enrollment as some students switch to the PhD Environmental Engineering program. We believe the proposed program will enhance undergraduate education and research by serving as a mechanism for students in a wide variety of engineering disciplines to continue their studies in Environmental Engineering at USF. Undergraduate engineering students will have opportunities to participate with the doctoral students in the proposed program in the development of undergraduate research or employment opportunities through professional ties developed between faculty members and external funding agencies.

C. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

There is no expected impact on related programs or departments related to increased need for courses. All required courses are already offered at USF.

D. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

External funding in the environmental engineering area comes from state agencies, local municipalities, professional organizations (e.g., U.S. Green Building Council), private industry, and federal funding (e.g., NSF, EPA). A number of graduate students are currently funded through large fellowship and scholarship programs supported by competitive funding obtained from the federal government. For example, one environmental engineering faculty member is the lead PI for a recently secured a $750,000+ Department of Education Graduate Assistantships in Areas of National Need (GAANN) Grant, which provides stipends, tuition and supply funds for doctoral students working in fields or water, energy and materials with a focus on sustainability. Four environmental engineering faculty members have also secured a $600,000 National Science Foundation S-STEM Scholarship grant that provides funding for master's and doctoral students with interests in providing sustainable water and transportation infrastructure.

IV. Projected Benefit of the Program to the University, Local Community, and State

A. Use information from Table 1, Table 2, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

There will be immense benefit to USF and Florida with the development of the proposed program. By definition, environmental engineering is concerned with the application of scientific and engineering principles for: 1) protection of human populations from the effects of adverse environmental factors; and, 2) protection of environments, both local and global from the potentially deleterious effects of natural and human activities; and improvement of environmental quality. The program will help to further advance interdisciplinary training and research ties with the USF School of Global Sustainability, College of Marine Science, Department of Global Health, PhD program in Applied Anthropology, and across other science and engineering disciplines.

Florida's population is dependent on its water, land, and air resources for many current and future economic and societal benefits. Stressors of increasing population, changes in land use, loss of biodiversity, increased population density in counties near water resources, and potential impacts from climate change on societal infrastructure all will require training of engineers to solve problems associated with these stressors, as well as creation of new knowledge through research.

USF environmental engineering faculty members have existing research projects related to improving the social and economic climate of Florida, including projects on: production of algal biofuels from wastewater, sustainable

production of aquaculture, sustainable design and management of water and transportation, investigation of fate of emerging contaminants found in reused water, and impact that urban design has on air quality. Just by its geographical location, 16 of Florida's 21 metropolitan areas are built around an estuary or lie at the mouth of a river that flows into the ocean.[19] In addition, in terms of economic importance, in 2004, Florida's coastal counties had 17,714 ocean sector establishments, which contributed to over 500,300 jobs and $12.7 billion in wages, adding more than $27.4 billion to Florida's gross domestic product (GDP).[20] The water quality of these estuaries and rivers is strongly dependent on how human activities on land are designed and managed, something that environmental engineering doctoral graduates can contribute to.

The graduates from the proposed program will clearly benefit the State of Florida, the nation, and the world due to their ability to enhance environmental protection and sustainability. Florida (and the Nation) is in need of graduate level environmental engineering students. For example Engineering News Record (ENR) (www.enr.com) reports that the environmental engineering design market now exceeds $30 billion in annual revenue and all of the top 15 companies on the ENR list of top environmental engineering design firms have offices in Florida. Our expected graduation of 5-6 PhD Environmental Engineering students per year will help support these local businesses.

V. Access and Articulation – Bachelor's Degrees Only-N/A

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a request to the BOG for an exception along with notification of the program's approval. (See criteria in BOG Regulation 6C-8.014)

Not applicable

B. List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see Common Prerequisite Manual http://www.facts.org). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lowerlevel courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access."

Not applicable

C. If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional

[19] Southeastern Fishing Organization, http://www.southeasternfish.org/Documents/EcoValueAquatic.pdf <accessed March 6, 2011>

[20] Natural Resources Defense Council, http://docs.nrdc.org/water/files/wat_10052001a.pdf <accessed March 6, 2011>

"track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

Not applicable

D. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that community college transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in BOG Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

Not applicable

E. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see Statewide Articulation Manual http://www.facts.org). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

Not applicable

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan.

According to its stated mission,[21] USF is dedicated to excellence in: 1) student access and success in an engaged, and interdisciplinary, learner-centered environment, 2) research and scientific discovery, including the generation, dissemination, and translation of new knowledge across disciplines; to strengthen the economy; to promote civic culture and the arts; and to design and build sustainable, healthy communities, and, 3) embracing innovation, and supporting scholarly and artistic engagement to build a community of learners together with significant and sustainable university-community partnerships and collaborations.

The proposed PhD Environmental Engineering program is directly related to USF's mission to provide an interdisciplinary, learner-centered environment and generate and translate new knowledge across disciplines, while designing and building sustainable, healthy communities.

University programs such as the one proposed here with a focus in education, research, and outreach related to protection of human health and the environment align with Goals 1, 2, and 3 of the USF Strategic Plan (listed below) and also with national goals that have documented the rapid social, political, economic, and environmental

[21] USF Strategic plan, http://www.ods.usf.edu/Plans/Strategic/docs/USF-Strategic-Plan-2007-2012.pdf <accessed March 6, 2011>

changes occurring in the world and associated implications for education, research, practice, and importantly, the economic competitiveness of our Nation (for example, National Academy of Engineering's *Educating the Engineer of 2020*).[22]

- Goal I. Expanding world-class interdisciplinary research, creative, and scholarly endeavors.
- Goal II. Promoting globally competitive undergraduate, graduate and professional programs that support interdisciplinary inquiry, intellectual development, knowledge and skill acquisition, and student success through a diverse, fully- engaged, learner-centered campus environment.
- Goal III. Expanding local and global engagement initiatives to strengthen and sustain healthy communities and to improve the quality of life.

The proposed program meets the economic development goals of the SUS Strategic Plan with its focus on Healthy Communities; Research and Innovation; Integrated Interdisciplinary Inquiry; and Community Engagement. The goals that are directly supported include: 1) access to and production of degrees; 2) meet statewide professional and workforce needs, 3) building world-class academic programs and research capacity, and, 4) meeting community needs and fulfilling unique institutional responsibilities. As stated earlier, this degree program addresses economic and community needs and will allow for the development of a world-class educational effort in environmental engineering. There will be practice and research opportunities for students throughout the program and the ability to interact with experts statewide, nationally, and internationally. In addition, USF has also invested considerable resources in environmental engineering over the past eight years with the hiring of eight faculty who specialize in environmental engineering.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

USF's strategic plan is focused on interdisciplinary initiatives that strengthen and sustain healthy communities and improve the quality of life. By definition, the discipline of environmental engineering supports these goals. USF has eight environmental engineering faculty members[23] and strong education and research areas in related science/technology disciplines of environmental science, biology, chemical engineering, civil engineering, environmental and occupational health, global health, social sciences, sustainability, and geography. In addition, academic partners in the social sciences (e.g., anthropology) and environmental policy are critical for developing solutions to environmental problems that are not only technical in nature, but also consider societal implications and solutions.

As stated above, USF is the only university in Florida with a College of Public Health, College of Marine Science, and School of Global Sustainability. These provide unique training and research collaboration opportunities with a doctoral graduate program in environmental engineering to advance social, economic, and environmental needs of current and future generations of Floridians. USF environmental engineering graduate students currently take courses offered by the College of Public Health and Department of Applied Anthropology and there is existing collaboration between faculty in environmental engineering, public health, and applied anthropology in obtaining external research funding. By its definition (provided in Section II) environmental

[22] *Educating the Engineer of 2020: Adapting Engineering Education to the New Century*, Committee on the Engineer of 2020, Phase II, Committee on Engineering Education, National Academy of Engineering.

[23] For purposes of this proposal, seven of the eight faculty are appointed in Civil & Environmental Engineering (Drs. Cunningham, Ergas, Mihelcic, Stroot, Trotz, Yeh, Q. Zhang) and the eighth is appointed as a faculty member in the Department of Environmental & Occupational Health with a courtesy appointment in Civil & Environmental Engineering (Dr. Stuart).

engineering is involved with protection of human populations from the effects of adverse environmental factors. One environmental engineering faculty member (Dr. Amy Stuart) is appointed in the College of Public Health in the Department of Environmental and Occupational Health which provides this proposed doctoral program a direct line of communication to this important collaborator. Drs. Mihelcic and Stuart also teach graduate courses which are co-listed between the Colleges of Engineering and Public Health. There is also an interdisciplinary environmental research colloquium course taken by many environmental engineering graduate students that is co-taught by faculty members in environmental science & policy, environmental engineering, and public health.

Environmental engineering faculty members are also collaborating with staff and affiliated faculty at the School of Global Sustainability (SGS) on research and teaching courses required for the MA degree in Global Sustainability The SGS has a research mission to generate innovations and new knowledge that will help cities around the world, including those in developing countries, to reduce their ecological footprint while improving their form and function to make them healthier, more livable, and more resilient. The research area related to provision of resilient and sustainable infrastructure also is related to existing collaborations between USF's Environmental Engineering graduate program and USF strengths in sustainability provided through the SGS, green engineering initiatives taking place in several departments in the College of Engineering.

USF is also the only university in Florida that has formal graduate school partnerships with the U.S. Peace Corps in the areas of environmental engineering, civil engineering, and global health. This partnership allows graduate environmental engineering students to combine their graduate education with 10 weeks of international training and 2 years of service as a water/sanitation engineer (see http://cee.eng.usf.edu/peacecorps/). Students then integrate their service with an international research experience. Research areas have included: water supply and treatment, provision of sanitation, bioenergy, hygiene promotion, and solid waste management. USF currently has 32 engineering students enrolled in this program, in both the M.S. and Ph.D. programs. The USF - Peace Corps graduate partnerships in engineering and global health provide unique research opportunities for environmental engineering doctoral students interested in issues related to global sustainability.

This program will also draw on the expertise of USF's new sustainability and community engagement initiatives that include the Office of Sustainability and Office of Community Engagement. USF's Office of International Affairs will be directly involved with the program, especially in terms of international student recruitment. The students will have the opportunity to work with the Office of Sustainability on campus related environmental issues and student professional societies such as: Water Environment Federation, American Water Works Association, Emerging Green Builders, Engineers without Borders, and Engineers for a Sustainable World.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology (table) of activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

Planning Process

The planning process has largely involved Dr. James R. Mihelcic and the Civil & Environmental Engineering Graduate Director (Dr. Sarina Ergas) in addition to discussions and meetings with faculty members in the Department of Civil & Environmental Engineering, Department Chairs in Engineering, Associate Dean in Engineering, Dean of Engineering, Graduate School, and the Faculty Senate. The environment and sustainability have been major strategic emphases of USF for several years and there has been administrative support through the hiring of eight environmental engineering faculty members over the past eight years.

Table. Chronology of activities leading to developing the proposal.

Date	Participants	Planning Activity
9/2010	James Mihelcic	Development of pre-proposal for PhD Environmental Engineering
10/01/2010	James Mihelcic, Sarina Ergas	Receive comments from Civil & Environmental Engineering Graduate Coordinator
10/08/2010	Rafael A. Perez, Professor and Associate Dean, Academics and Student Affairs, USF College of Engineering	Dr. Perez notified Dr. Mihelcic that the pre-proposal had been approved after discussion at a meeting with Engineering Dean/Associate Deans and Department Chairs in the College of Engineering
10/13/2010	USF Roundtable/Graduate Executive Coordination Committee	Reviewed by Roundtable/Graduate Executive Coordination Committee
10/21/2010	Carol Hines-Cobb, Assistant Director, Academics University of South Florida Graduate School	Carol Hines-Cobbs of the USF Graduate School notified Dr. Mihelcic that he could proceed with a full proposal
10/28/2010	James Mihelcic, Civil & Environmental Engineering faculty and department chair	Received comments from Civil & Environmental Engineering faculty at department meeting
1/2011	James Mihelcic	Finalize Program Proposal for submission
1/18/2011	James Mihelcic	Contact made with related university programs in Florida
1/25/2010	James Mihelcic met with chair of USF Chemical & Biomedical Engineering, Venkat R. Bhethanabotla	Received recommendations from experience with biomedical engineering program on issues related to allowing advising of students from outside the Department of Civil & Environmental Engineering. Recommendations were incorporated into proposal.
1/25/2011	James Mihelcic, Jeffrey Cunningham, Wayne Echel berger, Sarina Ergas, Peter Stroot, Amy Stuart, Maya Trotz, Daniel Yeh, Qiong Zhang	Draft document reviewed by USF faculty who specialize in environmental engineering faculty for review and comment. All comments were incorporated into the discussion.
1/31/2011	Faculty members of Civil & Environmental Engineering	Department was provided proposal via email for review and comment
2/3/2011	James Mihelcic, Civil & Environmental Engineering faculty and department chair	Discussion and approval at faculty meeting of civil & environmental engineering
2/9/2011	James Mihelcic	Finalize program proposal for submittal
2/17/2011	College of Engineering Department Chairs and Graduate Coordinators	No objections received from College of Engineering. Message forwarded to Dr. Mihelcic by Associate Dean Perez.
2/18/2011	James Mihelcic, USF Associate Vice President, Diversity and Equal Opportunity, USF Dean of Libraries	Approval obtained from USF Associate Vice President, Diversity and Equal Opportunity & USF Dean of Libraries
2/28/2011	James Mihelcic, USF Graduate School (Dean Karen Liller and Carol Hines-Cobbs), USF College of Engineering Rep (Associate Dean Rafael Perez), and CEE Graduate Director (Sarina Ergas)	Meeting between representatives of the Department of Civil & Environmental Engineering, College of Engineering, and Graduate School to discuss current draft of the proposal
3/2/2011	James Mihelcic, Jennifer Collins Graduate Director, USF Department	Jennifer Collins informed Dr. Mihelcic that her graduate committee which represents the Department of Geography,

	of Geography, Environment, and Planning	Environment, and Planning had met to discuss the proposal. She informed him that her department was supportive of the proposal.
5/22/2011	Amy Childress, Chair, Civil & Environmental Engineering, University of Nevada-Reno	Outside review of proposal provided to USF.
6/27/2011	James Mihelcic and ACE Advisory Council	Comments provided by ACE Advisory Council and incorporated into proposal.

Table. Events leading to Implementation of the Proposal.

Fall, 2010	Program planning and development
February 23, 2011	Graduate School Review
March 23, 2011	Submission to Tampa Graduate Council
April 4, 2011	Tampa Curriculum Committee
April 18, 2011	Tampa Graduate Council Meeting
April 25, 2011	Review by the ACE Workgroup
May 22, 2011	Outside review received
June 27, 2011	Discussed at ACE-AC meeting
August 5, 2011	ACE Meeting
August 18, 2011	Board of Trustees/ACE Work Group
October 6, 2011	Board of Trustees Meeting
November 9-10, 2011	Board of Governors Meeting

Program Quality Indicators - Reviews and Accreditation

A. Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

The Department of Civil and Environmental Engineering manages a BS Civil Engineering degree that is accredited by the Accreditation Board for Engineering and Technology (ABET) . Doctoral graduate engineering programs are not accredited by ABET.

The Civil & Environmental Engineering graduate programs were reviewed by two outside academic reviewers during a site visit on January 24, 2011. The reviewers are faculty members at Purdue University and Georgia Tech respectively. A self study report was prepared before the visit (Self-Study Report: Graduate Programs in Civil Engineering and Environmental Engineering, (10/28/10)).

Recommendations made by the two outside reviewers specifically relevant to this proposal include:

1) Improving recruitment of graduate students through interaction of our graduate program with national and international communities. (The recruitment strategy has been addressed above in Section II.E);

2) In regards to space, the physical separation of graduate students has created problems in building a strong community of scholars. This item is addressed in Section X.B because laboratory and graduate student office space will be increased by approximately 5,300 square feet as additional laboratory space is being developed on the first floor of the Interdisciplinary Science building. This plan will have an open floor plan and 28 additional office spaces for doctoral students and postdoctoral research associates.

3) Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

The primary goal of the PhD Environmental Engineering is to allow students to perform specialized training and research, which will result in the award of a doctoral degree that recognizes the student's scholarly competence and ability to conduct and report original and significant environmental engineering research. Ph.D. students may work in one or more of the following specialty areas of Environmental Engineering.

- Water Quality Engineering
- Air Quality Engineering
- Fate and Transport of Contaminants in the Environment
- Waste Management
- Sustainable Design and Sustainable Engineering
- Environmental Biotechnology Applied to Environmental Problems

PhD Graduate Student Outcomes

- Outcome 1. The student has demonstrated competency in the following core fundamentals (physical chemical principles, biological principles, aquatic chemistry, and sustainability) how these core fundamentals can be applied to environmental engineering research and practice.
- Outcome 2. The student has written a dissertation in one of the specialty areas of environmental engineering that presents defensible conclusions drawn from verifiable evidence.
- Outcome 3. The student has written, and had accepted, a minimum of 1 scholarly technical paper to a refereed journal or conference in the area of environmental engineering. The peer reviews indicate that the quality of the research is suitable for publication.
- Outcome 4. The student will demonstrate an ability to formulate and solve complex environmental engineering problems using relevant data and techniques.

Core Competency Learning Objectives

- Estimate quantitatively the distribution of chemicals between environmental phases or compartments
- Identify the most important chemical properties and environmental characteristics that govern how a chemical behaves in the environment and engineered systems
- Assess qualitatively how chemicals in environmental systems will respond to a state of chemical non-equilibrium
- Understand aqueous chemical equilibrium and solve quantitative problems that involve: acid-base equilibrium, heterogeneous equilibria, coordination chemistry, redox reactions, and surface chemistry
- Comprehend literature covering chemical equilibria as it relates to water chemistry of natural and engineered systems
- Understand fundamentals of microbial physiology and metabolism and relationship to engineering design and operation of engineered systems
- Learn to apply current methods of biotechnology to understand engineered bioprocesses as they apply to the fate, transport, and treatment of environmental pollutants, as well as production of renewable bio-based energy.
- Apply engineering fundamentals and principles of sustainable development and green engineering (e.g., life cycle assessment) in the design, construction, operation, and maintenance of engineering projects
- incorporate environmental, societal, and economic considerations and community participation into engineering practice as applied to protection of human health and the environment

B. Describe the admission standards and graduation requirements for the program.

Admission Standards
GPA within major of ≥ 3.3; Overall GPA of ≥ 3.0

GRE: Verbal ≥ 450, Quantitative ≥ 700; Analytical ≥ 4.0

International students must also meet the University's English Language requirements through the TOEFL (> 79) or GRE (> 500 verbal) exams. All students are also required to submit a resume, statement of purpose, and a minimum of two letters of reference. These materials are all reviewed by the graduate admissions committee prior to admission to the program. In addition, doctoral students must be accepted into a research group with a Dissertation advisor in their research area of interest.

Application Deadlines:
Fall admission: February 15; Spring admission: October 15.

Graduate Requirements
The doctoral degree is granted in recognition of high attainment in a specific field of knowledge. It is a research degree and is not conferred solely upon the earning of credit, the completion of courses, or the acquiring of a number of terms of residency, but also the successful completion of scholarly work. The degree will be granted after the student has shown proficiency and distinctive achievement in a specified field, has demonstrated the ability to do original, independent investigation, and has presented these findings with a high degree of literary skill in a dissertation. The Doctoral dissertation committee will consist of at least five members, two of whom must come from the department of Civil and Environmental Engineering, one of whom must be a member of the College of Engineering outside the department of Civil and Environmental Engineering, and one of whom must be outside the College of Engineering. Dissertation committee members must be members of the graduate faculty or be approved by the department, college and graduate school to serve on the committee.

Components of Research Dissertation Considered:
The review of related research and literature is clearly related to the problem statement and research topic. The literature reviewed is sufficient (i.e., there is no missing literature). The content of the review is drawn from acceptable peer-reviewed journals. The review presents a clear understanding of the problem and provides a rationale for the research objectives and approach.

The research design follows logically from the research question. The process by which the data was generated, gathered, recorded and analyzed is appropriate and clearly described. For theoretical projects, a sound analysis including model development, calibration and verification is provided.

The research findings build logically from the problem and the research design, and are presented in a manner that addresses the research questions. All salient data and/or model results are accounted for in the findings. The findings are significant (i.e., high impact) to the field. The interpretations and conclusions are justified by the results.

PhD Graduate Student Outcomes

- Outcome 1. The student has demonstrated competency in the following core fundamentals (physical chemical principles, biological principles, aquatic chemistry, and sustainability) how these core fundamentals can be applied to environmental engineering research and practice.

- Outcome 2. The student has written a dissertation in one of the specialty areas of environmental engineering that presents defensible conclusions drawn from verifiable evidence.
- Outcome 3. The student has written, and had accepted, a minimum of 1 scholarly technical paper to a refereed journal or conference in the area of environmental engineering. The peer reviews indicate that the quality of the research is suitable for publication.
- Outcome 4. The student will demonstrate an ability to formulate and solve complex environmental engineering problems using relevant data and techniques.

PhD Program Graduation Requirements
Total Minimum Hours: 78 (beyond the baccalaureate degree) or **48** (beyond the Master's degree)[24]

Core Requirements
- A minimum of 48 hours coursework are required (excluding directed research and graduate instruction methods) that can include a maximum of 9 hours of independent study. A minimum 15 hours of coursework are required within the area of concentration that includes 4 core courses (no credits of directed research or graduate instruction methods may be used to meet this requirement).
- Minimum of 20 hours of dissertation research[25]
- 10 additional hours of additional coursework, independent study, directed research, dissertation research, or graduate instruction methods

Dissertation Requirements: A minimum of 20 hours of dissertation are required.

Additional Requirements:
- Students will submit and defend a research proposal detailing their planned dissertation research. Normally this is done within four semesters of entrance into the program.
- Students are required to write and submit a scholarly technical paper to a refereed journal or conference. The peer reviews must indicate that the quality of the paper is suitable for publication.

Core Courses (all doctoral students in environmental engineering are required to show competency in the following subjects from a previous degree or coursework taken at USF)
ENV 6002 Physical Chemical Principles (3 credits)
EES 6107 Biological Principles (3 credits)
ENV 6666 Aquatic Chemistry (3 credits)
One sustainability course [e.g., CGN 6933 Green Engineering for Sustainability (3 credits) *or* CGN 6933 Green Infrastructure for Sustainable Communities (3 credits) *or* CGN 6933 Sustainable Development Engineering (3 credits)]

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

PhD Program Requirements for students with a baccalaureate degree)
Total Minimum Hours: 78 (beyond the baccalaureate degree)[26]

[24] Further requirements may be imposed by the candidate's supervisory committee
[25] Dissertation hours will be taken with the major advisor(s) regardless of their specific department affiliation
[26] Further requirements may be imposed by the candidate's supervisory committee

Core Requirements

- A minimum of 48 hours coursework are required (excluding directed research and graduate instruction methods) that can include a maximum of 9 hours of independent study. A minimum 15 hours of coursework are required within the area of concentration that includes 4 core courses (no credits of directed research or graduate instruction methods may be used to meet this requirement).
- Minimum of 20 hours of dissertation research[27]
- 10 additional hours of additional coursework, independent study, directed research, dissertation research, or graduate instruction methods

Dissertation Requirements: A minimum of 20 hours of dissertation are required.

Additional Requirements:

- Students will submit and defend a research proposal detailing their planned dissertation research. Normally this is done within four semesters of entrance into the program.
- Students are required to write and submit a scholarly technical paper to a refereed journal or conference. The peer reviews must indicate that the quality of the paper is suitable for publication.

Core Courses (all doctoral students are required to show competency in the following subjects from a previous degree or coursework taken at USF)
ENV 6002 Physical Chemical Principles (3 credits)
EES 6107 Biological Principles (3 credits)
ENV 6666 Aquatic Chemistry (3 credits)
One sustainability course [e.g., CGN 6933 Green Engineering for Sustainability (3 credits) *or* CGN 6933 Green Infrastructure for Sustainable Communities (3 credits) *or* CGN 6933 Sustainable Development Engineering (3 credits)]

PhD Program Requirements for students with a Master's degree)
Total Minimum Hours: 48 (beyond the baccalaureate degree)[28]

Core Requirements

- A minimum of 18 hours coursework are required (excluding directed research and graduate instruction methods) that can include a maximum of 9 hours of independent study. (no credits of directed research or graduate instruction methods may be used to meet this requirement).
- Minimum of 20 hours of dissertation research[29]
- 10 additional hours of additional coursework, independent study, directed research, dissertation research, or graduate instruction methods

Dissertation Requirements: A minimum of 20 hours of dissertation are required.

Additional Requirements:

- Students will submit and defend a research proposal detailing their planned dissertation research. Normally this is done within four semesters of entrance into the program.
- Students are required to write and submit a scholarly technical paper to a refereed journal or conference. The peer reviews must indicate that the quality of the paper is suitable for publication.

[27] Dissertation hours will be taken with the major advisor(s) regardless of their specific department affiliation
[28] Further requirements may be imposed by the candidate's supervisory committee
[29] Dissertation hours will be taken with the major advisor(s) regardless of their specific department affiliation

Core Courses (all doctoral students are required to show competency in the following subjects from a previous degree or coursework taken at USF)
ENV 6002 Physical Chemical Principles (3 credits)
EES 6107 Biological Principles (3 credits)
ENV 6666 Aquatic Chemistry (3 credits)
One sustainability course [e.g., CGN 6933 Green Engineering for Sustainability (3 credits) *or* CGN 6933 Green Infrastructure for Sustainable Communities (3 credits) *or* CGN 6933 Sustainable Development Engineering (3 credits)]

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

The time for degree is expected to be three to five years, depending on whether a student has a M.S. degree or not. Incoming students will typically take a course load of approximately 3 courses per semester for their first academic year (range of two to four courses). The four required core courses follow the sequence as shown above. Core requirements can be completed in one academic year. Students will transition to more research credits and less course credits as they advance to through the program. It is expected that incoming doctoral students will defend a research proposal and advance to candidacy within two years of enrollment.

E. Provide a one- or two-sentence description of each required or elective course.

Four Required Core Courses
ENV 6002 Physical Chemical Principles (3 credits) *Investigates how chemical properties, physical processes, and environmental characteristics all influence the fate and transport of chemicals in natural and engineered systems. Includes theory, practical examples, and laboratory experiments.*

EES 6107 Biological Principles (3 credits) *This course improves the student's knowledge and problem solving skills with respect to the Biological Principles used by Environmental Engineers to design biological processes. Students will learn about microbial physiology and metabolism, and current methods used to understand bioprocesses.*

ENV 6666 Aquatic Chemistry (3 credits) *An introduction to the form, structure, and chemical activities of the important processes essential to treatment of domestic and industrial wastewater.*

Sustainability course (students must take one of the following three courses)
CGN 6933 G reen E ngineering f or S ustainability (3 credits) *This course will provide a foundation for green engineering design. Concerns regarding population growth, global warming, resource scarcity, globalization, and environmental degradation have led to an increasing awareness that current engineering design and policy strategies can be engaged more effectively to advance the goal of sustainability. Approaching sustainability from a design perspective requires the need for a fundamental conceptual shift from the current paradigms of product toward a more sustainable system based on efficient and effective use of benign materials and energy.*

CGN 6933 S ustainable D evelopment E ngineering (3 c redits) *Study of applying appropriate and sustainable engineering solutions and technology to control environmental pollutants found in a developing world setting and smaller communities in North America. Concepts of sustainable development are covered. Topics are drawn from several areas of engineering, including water supply, water treatment, water storage, wastewater treatment, materials, solid waste management, construction, and watersheds.*

CGN 6933 Green Infrastructure for Sustainable Communities (3 credits) *Develops core understanding of green design, sustainability principles and infrastructure management. Using the US Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system as a framework, students will learn integrated approaches for smart management of resources and components (e.g., water, energy, sites, transportation, habitat, materials and indoor quality) in the built environment.*

Elective Courses (related to environmental engineering) offered in Civil & Environmental Engineering

ENV5103 Air Pollution Control *Behavior and effects of atmospheric contaminants and the principles of making measurements in the air environment. Basic concepts of meteorology and control technology are discussed. Regulatory aspects and air pollution standards are covered.*

ENV5334 Hazardous Waste Management and Remedial Action (3 credits) *Introduction to hazardous waste management and remediation: RCRA regulatory concepts, definitions, aspects of hazardous waste management from within the plant to final disposal.*

ENV5345 Solid Waste Control (3 credits) *Introduction to solid waste management, including its definition as an umbrella for hazardous waste: regulatory concepts; waste types, quantities, and characterization; collection and recycling; facility siting; disposal; thermal treatment.*

ENV 6105. Air Pollution (3 credits) *A survey of air pollution fundamentals, including physics/chemistry of air pollution, sources and emissions estimation, Gaussian dispersion models, exposures and effects, measurement/monitoring, and management/control.*

ENV6438 Natural & Small Scale Treatment Systems (3 credits) *A study of the theory, analysis and design of natural aquatic systems to treat wastewater. Emphasis is on use of treated and partially treated wastewater or residues to enhance, restore, or create wetlands, as well as land application.*

ENV6614 Quantitative Environmental Risk Analysis (3 credits) *Quantitative approach to the determination of risk. Focus is on environmental and control and protection, but techniques apply widely. Covers assessment of risk factors, failure, contaminant transport, and health effects. Includes discussion of significance, implementation, and policy. Course project involves the development of small risk analysis model.*

ENV 6519 Physical and Chemical Processes in Environmental Engineering (3 credits) *Theory and design of processes used in advanced water and wastewater treatment, including membrane processes, absorption, electrodialysis, ozonation, irradiation.*

ENV6667 Environmental Biotechnology (3 credits) *Study of principles and applications of environmental biotechnology pertaining primarily to biological wastewater treatment and bioremediation. Under principles, we will review the basics of microbiology and cover topics such as electron and oxygen equivalents, stoichiometry, energetics and kinetics of microbial growth, substrate degradation kinetics, suspended- and attached-growth systems, bioreactor concepts for completely-mixed and plug flow systems. Under applications, we will cover treatment processes relevant to environmental engineering, such as lagoons and ponds, activated sludge, biological nutrient removal, membrane bioreactors, trickling filters and rotating biological contactors, fluidized bed reactors, and anaerobic digestion.*

CGN 6933 Seminar in Environmental & Water Resources Engineering (1 credit). *Students will develop a breadth of exposure to topics in environmental and water resources engineering and become familiar with up-to-date approaches to solving environmental and water resources problems.*

CGN 6933 Special topics in Civil and Environmental Engineering (credits variable) (topics include Transport in Porous Media, Community Air Pollution, Environmental Modeling, Groundwater Engineering, Molecular Biology in Engineering , and Air Quality for Environmental & Transportation Engineers and Membrane Technologies for Environmental Engineering)

CGN6941 Graduate Instruction Methods (3 credits) *Special course to be used primarily for the training of graduate teaching assistants.*

CGN 6209 Hydrodynamic Modeling (3 credits) *St. Venant Equations for unsteady flow in open channels; implicit and explicit solution techniques. The use of hydrodynamic modeling for storm water planning and design. Transport-diffusion equations and finite difference solutions.*

CWR 6305 Urban Hydrology (3 credits) *A study of the quantity and quality problems and solution techniques associated with urban runoff.*

CWR 6533 Water Quality Modeling (3 credits) *This course will develop the fundamental principals and concepts of water quality modeling and apply water quality models in a variety of contexts. The mathematical representations of environmental transport and transformation processes will be elucidated. Models of different complexity will be applied to a variety of environmental contexts.*

CWR 6534 Coast and Estuary Modeling (3 credits) *Digital modeling of coastal and estuary systems, currents, tide heights, sediment transport, erosion, date collection, temperature distribution, sources and sinks. Special emphasis on Florida regions.*

CWR 6535 Hydrologic Models (3 credits) *A study of the theoretical principles of hydrologic modeling and an examination of various numerical hydrologic models available. Students will be required to develop and apply computer models.*

CWR 6538 Advanced Hydrologic Models (3 credits) *Present the theoretical and applied concepts of advanced hydrologic modeling and especially integrated surface water/ground water modeling and to examine various numerical hydrologic models used in engineering proactive.*

F. For degree programs in the science and technology disciplines, discuss how industry driven competencies were identified and incorporated into the curriculum and identify if any industry advisory council exists to provide input for curriculum development and student assessment.

The four required core courses described previously for this doctoral environmental engineering degree are deemed by those in practice as knowledge and core competencies important for the understanding and practice of environmental engineering as described in the Environmental Engineering Body of Knowledge (EnvE BOK)[30] (American Academy of Environmental Engineers). This knowledge and core competencies includes: 1) enabling knowledge such as sustainability, 2) skills outcomes such as advanced knowledge and skills essential for professional practice of environmental engineering, and 3) several of the knowledge domains identified as specific areas of essential learning. The skills essential for professional practice in environmental engineering are defined as requiring students in this program to demonstrate competency in the following core fundamentals

[30] The Environmental Engineering Body of Knowledge describes the knowledge and core competencies important for the understanding and practice of environmental engineering. It builds on ABET outcomes applicable to all engineering specialties by adding outcomes specific and unique to environmental engineering.

(physical chemical principles, biological principles, aquatic chemistry, and sustainability) and how these core fundamentals can be applied to environmental engineering research and practice.

The Department of Civil & Environmental Engineering has established an outside advisory board that consists of up to eight outside members from engineering practice, research, and academics. These individuals provide input on the undergraduate and graduate programs offered through the department. These advisory board members are available to provide input to curriculum development and student assessment.

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

There is no specialized accreditation for doctoral programs in Engineering.

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?

The Department of Civil and Environmental Engineering offers a BS Civil Engineering degree that is accredited by the Accreditation Board for Engineering and Technology (ABET).

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.

The program will primarily be delivered through traditional on-campus methods on the main Tampa campus. However, some students may take the opportunity to take classes off campus because several graduate courses are offered through distance learning at USF or by other universities. In addition, research can be conducted in research laboratories and centers located off campus with approval of the student's graduate advisor and committee.

IX. Faculty Participation

A. Use Table 4 to identify existing and anticipated ranked (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practice, and supervising thesis or dissertation hours).

See Table 4

b. Use Table 2 to display the costs and associated funding resources for existing and anticipated ranked faculty (as identified in Table 2). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

See Table 2

C. Provide the number of master's theses and/or doctoral dissertations directed, and the number and type of professional publications for each existing faculty member (do not include information for visiting or adjunct faculty).

Table. Faculty and associated theses/dissertations directed and number of professional publications.

Faculty Name	Number of M.S. theses completed to graduation (and number currently advised)	Number of doctoral dissertations completed to graduation (and number currently advised)	Professional Publications Including all Peer-Reviewed and Others
Jeffrey Cunningham	4 (2)	3 (2)	57
Sarina Ergas	17(7)	4 (4)	69 plus 1 textbook
James R. Mihelcic	77 (21)	9 (6)	105 plus 3 textbooks
Peter Stroot	0 (0)	0 (3)	28
Amy Stuart*	11 (3)	0 (3)	45
Maya Trotz	2 (2)	3 (5)	22
Daniel Yeh	5 (5)	0 (8)	33
Qiong Zhang	5 (3)	2 (4)	30

Dr. Stuart is a faculty member in the Department of Environmental & Occupational Health with a courtesy appointment in Civil & Environmental Engineering.

D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, and qualitative indicators of excellence.

The academic units affiliated with this degree have been very productive and interdisciplinary. Core and elective environmental engineering graduate course enrollment has grown in the past five years from under 20 students to 25-40 students per offering. The department graduate roster from November 2010 showed that the number of graduate students advised by environmental engineering faculty had grown to 33 PhD and 42 MS thesis students. The environmental engineering faculty are also involved in national service as shown in the Table below.

Grant award (on a dollar per faculty basis) in the department has ranged from $80,000 to $170,000 over the past ten years. Example of current funded research within the environmental engineering faculty group exceeds $3.78 million dollars and includes: 1) US Department of Education Doctoral Graduate Fellowship Program at the Water-Energy-Materials-Human Nexus ($783,936); 2) NSF Graduate Scholarships to Achieve Sustainable Infrastructure at the Water/Energy Nexus ($600,000); 3) NSF Career Award on Multi-scale interactions of air

pollution, urban growth, and equity – integrated research methods and informal science teaching ($400,000); 4) NSF Tampa Interdisciplinary Environmental Research ($300,000); 5) NSF MUSES grant for Modeling and Analyzing the Use, Efficiency, Value and Governance of Water as a Material ($298,531); 6) Norwegian Research Council grant to develop a Sustainable Process to Capture and Store CO2 to Increase Production of Biorenewable Energy ($274,000); 7) NSF OISE grants bring students to Bolivia to research Sustainable Water Management ($149,969) and to the UNESCO IHE laboratory in Delft (Netherlands) to research Sustainable Clean Water Technologies for the UN's Millennium Development Goals ($149,937); 8) Water Reuse Foundation Grant to Review Models to Estimate the Carbon Footprint of Water Reuse and Desalination Facilities ($25,000), and 9) a US Green Building Council grant for research on Integrated Building Water Management Modeling ($149,525).

Table. Examples of the engagement of environmental engineering faculty members in national service

Faculty	Example of National Service
Dr. J. Cunningham	• Co-Chair, Association of Environmental Engineering and Science Professors (AEESP) 2011 National Conference (4/2010 – present). • Member, AEESP Thesis Award Committee (2008-2009)
Dr. S. Ergas	• Member, Research Symposium Committee, Water Environmental Federation • Chair Lectures Committee, Association of Environmental Engineering and Science Professors • Board Member, Membrane Specialist Group, International Water Assoc. • Board Member, Association of Environmental Engineering & Science Professors
Dr. J. Mihelcic	• Member, Environmental Protection Agency Science Advisory Board, Environmental Engineering Committee • Member, Environmental Protection Agency Chartered Science Advisory Board, • Board Trustee, American Academy of Environmental Engineers (AAEE) • Past President and Board Member, Association of Environmental Engineering & Science Professors (AEESP)
Dr. A. Stuart	• Vice Chair, Local Technical Committee for the 2011 Annual Meeting, Air &Waste Management Association (Fall 2009)
Dr. P. Stroot	• Faculty Advisor for Florida Water Environment Association
Dr. M. Trotz	• Co-Chair, Association of Environmental Engineering and Science Professors (AEESP) 2011 National Conference (4/2010 – present). • Youth Committee Chair, Caribbean Diaspora for Science, Technology and Innovation (CADSTI) (9/2008 – present). • Invited Observer, United Nations Secretary General's Advisory Board on Water and Sanitation (Bogota, Colombia, 2007 and Tokyo, Japan, 2008).
Dr. D. Yeh	• Member, Industrial Wastes Committee, Water Environment Federation • Co-Chair, National Water Pollution Committee, American Society of Civil Engineers Environment Water Research Institute (ASCE/EWRI) • Core Committee Member, Water Efficiency Technical Advisory Group (WE-TAG), US Green Building Council
Dr. Q. Zhang	• Developed and delivered two workshops at national conferences for American Society of Engineering Education (ASEE) and Association of Environmental Engineering and Science Professors (AEESP) to disseminate the learning suites developed to incorporate sustainability into the engineering education.

X. Non-Faculty Resources

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved for all doctoral level proposals.

Overview of USF Libraries, Mission, and Program/Discipline Strengths
The University of South Florida is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award degrees at the baccalaureate, master's, specialist, and doctoral levels, including the Doctor of Medicine. The institution was initially accredited in 1965 and was last reviewed and reaffirmed in 2005. The institution is scheduled to receive its next reaffirmation of accreditation review in 2015.

The University of South Florida's Library System consists of USF's main research library, located on the Tampa Campus; two special libraries, the Hinks and Elaine Shimberg Health Sciences Library and the Louis de la Parte Mental Health Institute Library, which are also located on the Tampa Campus; the Nelson Poynter Memorial Library, USF St. Petersburg; the Jane Bancroft Cook Library, USF Sarasota-Manatee; and the USF Polytechnic Library in Lakeland. Our vision is to become a globally recognized academic library system advancing knowledge through integrated resources, responsive services, research, and instruction. Together, the USF Libraries provide access to more than 2 million volumes and an extensive collection of electronic resources including approximately 6,500 e-journal subscriptions and 800 aggregator databases containing another 53,000 unique e-journal titles, 443,000 e-books, and 826,000 digital images. In addition, students have access to over 45,000 audio/visual materials including videos, CDs, and DVDs.

In addition to extensive electronic and print resources, the USF Libraries offer unique access to primary research materials through the Special and Digitized Collections Department. Specializations include: Holocaust & Genocide Studies, Science Fiction, Oral Histories, Florida Studies, Sacred Leaves medieval manuscripts, literature and book arts, children and young adult literature, sheet music, and rare books. Most special collections are available at the USF Tampa Library.

The library endeavors to develop and maintain a collection that will satisfy the needs for resources that support the undergraduate and graduate curriculum in Environmental Engineering, as well as serve the more specialized demands from graduate students and faculty for advanced research materials.

In addition to the Bachelor of Science in Civil and Environmental Engineering, the Civil and Environmental Engineering Department offers programs at both the master's and Ph.D. levels. Details of undergraduate degree programs include the current list of undergraduate Department Specializations and primary research thrusts: Geotechnical & Geoenvironmental Engineering, Structural & Materials Engineering, Transportation Systems, and Water Resources & Environmental Systems. The details for graduate degree programs, including Coursework Master's Degrees, Thesis Master's Degrees, and Doctoral Degrees are also available online.

Adding a distinct PhD in Environmental Engineering degree more accurately reflect the increased research focus, both at USF and at the national level, and will allow for more accurate comparisons to peer institutions across the country.

USF Libraries' Collections

The library collects current research materials in many subject areas within the Library of Congress subject classifications relating to general, civil, and environmental engineering topics in the call number areas TA1-2040. Library of Congress call number areas for the some of the more specific subject areas, including Hydrology – Water, Engineering (General), Environmental Engineering, Hydraulic Engineering, Environmental Technology, and Water Supply for Domestic and Industrial purposes, are:

▪ Hydrology. Water	GB651-2998
▪ Environmental Sciences	GE1-350
▪ Engineering (General)	TA1-2040
▪ Environmental Engineering	TA170-171
▪ Hydraulic Engineering	TC1-798
▪ Environmental Technology	TD1-1066
▪ Water Supply for Domestic and Industrial purposes	TD201-500

The number of monographs for the above subject areas*

Print: **15,516**
Electronic: **2,394**

The number of serials for the above subject areas*

Print: **769**
Electronic: **756**

* Numbers compiled using *WorldCat Collection Analysis Tool*

eBook Collections include: Springer eBook collection in Engineering, Springer eBooks in Earth and Environmental Sciences, Elsevier, Annual Reviews, NetLibrary, Ebrary, and Referex.

Online journals in the research fields of Environmental Engineering include the following subject areas: Environmental Pollution, Environmental Protection, Environmental Technology, Water; General, Groundwater, Global Sustainability (including Environmental Policy & Economic Development, Sustainable Development), Hydrology, and Public Health.

Notable online journals*, owned by the USF Libraries (and associated impact factors) include: *Applied Catalysis B – Environmental* (5.252), *Environmental Science & Technology* (4.630), *Water Research* (4.355), *Journal of Hazardous Materials* (4.144), *International Journal of Greenhouse Gas Control* (3.644), *Environmental Modelling & Software* (3.085), *Indoor Air* (2.891), *Ecological Engineering* (2.745), *International Journal of Life Cycle Assessment* (2.636), *Ambio* (2.486), *Waste Management* (2.433), *Environmental Chemistry Letters* (2.109), *Resources Conservation and Recycling* (1.987), *Journal of Cleaner Production* (1.867), *Building and Environment* (1.797), *Journal of the Air & Waste Management Association* (1.670), *Environmental Geochemistry and Health* (1.622), *Journal of the American Water Resources Association* (1.618), *Journal of Polymers and the Environment* (1.571), *Stochastic Environmental Research and Risk Assessment* (1.419).

* Top Twenty Journals in Engineering, Environmental with ISI Impact Factors – 2009 JCR Journal Citation Reports – Science Edition.

EJournal Packages include: SpringerLink, Science Direct, Wiley Online Library, JSTOR General Science, IEEE Xplore, GeoScienceWorld, OVID, SAGE Journals Online, and others.

Subject *	Books	eBooks	Total Books	Journals	eJournals	Total Journals
Biology	25,324	2.564	**27,888**	767	1,300	**2,067**
Chemistry	8,449	914	**9,363**	283	419	**702**
Engineering	50,884	8,072	**58,956**	3,047	2,781	**5,828**
Geography & Earth Sciences	18,435	2,202	**20,637**	893	739	**1,632**
Mathematics & Statistics	22,967	3,210	**26,177**	509	628	**1,137**
Public Health	10,577	902	**11,479**	4,944	2,164	**7,108**

*

Nu

mbers compiled using *WorldCat Collection Analysis Tool*

Number of Electronic Databases in Environmental Engineering - There are over 30 existing databases that directly cover topics in Environmental Engineering, including:

Applied science & technology full text
ASTA indexes the latest findings in every area of science, engineering, and technology covering trade and industrial publications, journal issues by professional and technical societies, and specialized subject periodicals.
ASCE research library
The ASCE research library is a comprehensive online tool for locating articles of interest across all disciplines of civil engineering. It provides access to more than 18,500 full-text papers from thirty ASCE journals and over 75 conference proceedings.
Civil engineering abstracts
Indexes and abstracts approximately 3000 serial titles as well as numerous non-serial publications in civil engineering and its complementary fields, including forensic engineering, management and marketing of engineering services, engineering education, theoretical mechanics and dynamics, and other related fields.
Compendex (1884-) (Engineering Village)
Compendex on the Engineering village 2 platform is the most comprehensive bibliographic database of engineering research available today, containing over ten million references and abstracts taken from over 5,000 engineering journals, conferences and technical reports.
Corrosion abstracts
Corrosion Abstracts provides the world's most complete source of bibliographic information in the area of corrosion science and engineering. International sources of literature are scanned and abstracted in the areas of general corrosion, testing, corrosion characteristics, and preventive measures.
EIS, digests of environmental impact statements
The federal government issues hundreds of environmental impact statements each year and this one resource provides detailed abstracts of all of those statements, also indexing them for easy reference. EIS extracts the key issues from complex government-released environmental impact statements.
Environmental engineering abstracts
Environmental engineering abstracts covers the world literature pertaining to technological and engineering aspects of air and water quality, environmental safety, and energy production. More than 700 primary journals are thoroughly indexed and abstracted. Over 2,500 additional sources are also indexed.

Environmental sciences & pollution management
This multidisciplinary database, provides unparalleled and comprehensive coverage of the environmental sciences. Abstracts and citations are drawn from over 4000 scientific journals and thousands of other sources including conference proceedings, reports, monographs, books and government documents.
Health and safety science abstracts
This database covers the latest perspectives on topics of widespread concern such as aviation and aerospace safety, environmental safety, nuclear safety, medical safety occupational safety, and ergonomics.
IEEE Xplore
Provides full-text access to IEEE transactions, IEEE and IEE journals, magazines, and conference proceedings published since 1988, and all current IEEE standards; brings additional search and access features to IEEE/IEE electronic library users.
International critical tables of numerical data, physics, chemistry, and technology
This classic and well-known reference was originally published for the National Research Council in 7 volumes. It contains an enormous amount of critical data on inorganic and organic compounds, and pure substances.
National Technical Information Service
The National Technical Information Service is the federal government's central source for the sale of scientific, technical, engineering, and related business information produced by or for the U.S. government and complementary material from international sources.
Pollution abstracts
This database provides fast access to the environmental information necessary to resolve day-to-day problems, ensure ongoing compliance, and handle emergency situations more effectively. Pollution Abstracts combines information on scientific research and government policies in a single resource.
Referex: Chemical, petrochemical and process engineering
Referex: Chemical, petrochemical and process provides the leading titles in energy, chemical engineering, chemical hazards, process engineering, oil and gas engineering, and environmental engineering.
Referex: Mechanical engineering and materials
Referex: Mechanical engineering and materials is a collection of handbooks, professional resources, and practical guides covering automotive, aeronautical, and marine engineering, metallurgy, tribology, maintenance, quality systems, health and safety.
Risk abstracts
Risk abstracts encompasses risk arising from industrial, technological, environmental, and other sources, with an emphasis on assessment and management of risk. The journal includes occasional articles on topics of significant interest.
Safety science & risk abstracts
Bibliographic citations and abstracts across the fields of public health, safety, and industrial hygiene. Cited studies are geared to help researchers identify, evaluate, and eliminate or control risks and hazards from environmental and occupational situations. Major areas of coverage include: ...
ScienceDirect
A web database for scientific research that contains the full text of more than 1000 Elsevier Science journals in the life, physical, medical, technical, and social sciences available throughout the Internet. Contains abstracts and articles from the core journals in major scientific disciplines.
SpringerLink
Provides online access to full text of journals from the Springer Publishing Group.
Toxicology abstracts
This database covers issues from social poisons and substance abuse to natural toxins, from legislation and recommended standards to environmental issues. Major areas of subject coverage include: pharmaceuticals, food, additives, and contaminants, agro-chemicals, cosmetics, toiletries, and other related fields.
TOXLINE
This database covers the pharmacological, biochemical, physiological, and toxicological effects on drugs and

other chemicals. Major areas of subject coverage include: air pollution, antidotes, biological and adverse effects of drugs, carcinogenesis via chemicals, and chemically-induced diseases.

TOXNET

A cluster of databases on toxicology, hazardous chemicals, and related areas.

Van Nostrand's scientific encyclopedia

Originally published in 1938, and now in its ninth print edition, Van Nostrand's scientific encyclopedia (VNSE) has long held the reputation as one of the most authoritative and accessible general scientific references available.

Water resources abstracts

The database concentrates on water supply and water treatment; major areas of subject coverage include: groundwater, lakes, estuaries, erosion and sedimentation, water supply and conservation, desalination, water yield improvement, water quantity management and control, watershed protection, and other fields of water research.

Web of science

The ISI Web of Science provides seamless access to the Science Citation Expanded®, Social Sciences Citation Index®, and Arts & Humanities Citation Index™. It enables users to search current and retrospective multidisciplinary information from approximately 8,500 of the most prestigious, highly cited journals.

Wiley Online Library

Features over 1,000 journals, major reference works, online books, Current Protocols laboratory manuals, and databases as well as a suite of professional and management resources.

Related Databases – College of Engineering, the schools of Geography, Environment and Planning and Environmental Science and Policy, as well as the Natural Sciences & Mathematics (SNSM)

Due to its highly multidisciplinary nature, the resources utilized by students and faculty in the PhD Environmental Engineering program would be closely aligned with a number of other program and subject areas. In addition to overlap with other resources provided for the College of Engineering, there would also be heavy overlap with the emerging School of Global Sustainability, Global Change Science, and other emerging initiatives. The related disciplines included in these research clusters include: Geography, Geology, Environmental Science & Policy, Engineering, Chemistry, Biology, Medicine, Public Health, and Mathematics & Statistics.

In addition to the databases in the environmental and engineering sciences, the USF Libraries support this research focus by providing access to the following premier databases and journals in related science disciplines: **BIOSIS Previews** (Biology), **SciFinder Scholar** (Chemistry), **Ecology Abstracts** (ESP), **GeoRef** (Geology,) **GEOBASE** (Geography), **MathSciNet** (Mathematics & Statistics), **Medline** (Medicine), **CINAHL** (Public Health), **IEEE Xplore** (Engineering), **ProQuest Dissertations & Theses** (full text).

Datasets, Maps & GIS

The USF Library is one of the founding partners of the Karst Information Portal (KIP), which is an open-access digital library linking scientists, managers, and explorers to a knowledge base of highly interdisciplinary research information on hydrology and karst environments. The USF Libraries have also established a central repository for unbiased information and data on the BP Deepwater Horizon oil spill in the Gulf of Mexico. The Gulf Oil Spill Information Center (GOSIC) provides access to the latest information on the Gulf oil spill, published research and grey literature on the topic. GOSIC has also laid the groundwork for formation of a repository for geospatial data associate with the oil spill. This geo-spatial portal will also provide other STEM (Science, Technology, Engineering, & Mathematics) disciplines, including topics related to environmental engineering, with a repository for the data sets needed to support their research.

Government Documents

The USF Tampa Library is a designated Federal Depository Library. The materials that are received from the Government Printing Office are selected based on the research needs of the university. The library routinely receives publications from the Department of Interior, the United States Geological Survey, the Environmental

Protection Agency and the Department of Agriculture, which include research surveys, technical reports, statistical data, and maps. In addition to recent publications, the library also maintains an historical collection of research materials in the natural sciences.

Expenditures

In any given year, the USF Libraries materials budget is pushed to its limit. The rising cost of continuing journal subscriptions, the need for new research materials, and requests for access to online data sets are part of the daily landscape. A large portion of the USF Libraries' $6.2 million budget supports the continuation of the electronic resources. The biological sciences are well represented throughout the USF Libraries electronic collections. The USF Libraries recognize the need to continue their support for research and teaching within the STEM disciplines and have included several STEM initiatives in their strategic goals. The Karst Information Portal and the Gulf Oil Spill Information Center are more outward examples of the USF Libraries' commitment to science and technology. Another primary research area that has been identified is Global Change Science. The USF Library has also included Global Change Science as one of its strategic goals and is currently working on the development of collections in marine and freshwater ecological research to provide research support for the study of the effects of climate change on plant and animal habitats. These current expenditures support a large portion of the needs of students, faculty, and other researchers of this proposed new PhD in Environmental Engineering.

Summary Statement

Recognizing the value and importance of research in environmental engineering, the USF Libraries will continue a sustained level of support for doctoral research in this field, along with allied and associated subject areas and disciplines. Within the next five years, the expectation would be for a continued level of support for this discipline. An increase in the cost of the library's journal subscriptions would be anticipated with typical annual increases of 3-6 %. The acquisition of additional resources would have to be balanced against the research needs of other academic disciplines on campus within the confines of any budgetary restraints that the university could face during the next five years.

Matt Torrence

Title: Assistant Librarian, Academic Services

Date: February 15, 2011 Email: torrence@usf.edu

Reviewed by:

Cheryl McCoy, Coordinator of Collection Development, USF Libraries

Date: Email: cmccoy@usf.edu

Approved by:

Todd Chavez, Director of Academic Resources, USF Libraries

Date: Email: tchavez@usf.edu

As of February, 2011, the collections of the USF Tampa Library and affiliates are sufficient to support a PhD Environmental Engineering program and research endeavors. Sustained annual investments to maintain the recurring elements of this collection and to purchase newly published materials are required to preserve sufficiency. With escalating costs, typical annual increases of 3-6% are likely. Strategic investments are required as new faculty are hired and areas of emphasis evolve.

Certified by:

William Garrison, Dean of USF Libraries

Date: 9/6/11 Email: wgarrison@usf.edu

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 3.

The collections of the USF Tampa Library and affiliates are sufficient to support a PhD Environmental Engineering program and research endeavors. The USF Tampa Library makes sustained annual investments to maintain the recurring elements of the collection and to purchase newly published materials required to preserve sufficiency. Strategic investments are made as new faculty are hired and areas of emphasis evolve. No additional library resources are required to implement and/or sustain the proposed program through Year 5 because the library already provides support for the MS Environmental Engineering programs and for PhD Civil Engineering students who specialize in environmental engineering.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

No new courses are being created as part of this proposal. Existing graduate courses are currently taught in buildings throughout the USF campus.

The Environmental Engineering program at USF maintains over 3,500 square feet of research laboratory space, providing state-of-the-art analytical and experimental equipment for chemical and biological research. A separate laboratory (approximately 500 square feet) is dedicated for pilot plant research. The laboratories are equipped with hoods and bench space to accommodate approximately 30 research students. This laboratory and graduate student office space will be increased by approximately 5,300 square feet as there is currently development of additional laboratory space on the first floor of the IDR building. We plan to have an open floor plan, with separate laboratories for trace water quality analysis, appropriate technology, and environmental microbiology. There is a plan to add 28 office spaces for doctoral students and postdoctoral research associates in the new Interdisciplinary Research Building (IDRB) space.

Analytical instrumentation available includes a Perkin-Elmer Clarus 500 GC with autosampler, ECD and FID, a Gow Mac 580 Gas Chromatograph with TCD, a Metrohm 850 professional AnCat IC system, a Shimadzu TOC/TON analyzer, pH, ISE and DO meters and automatic titrators. Field sampling equipment includes battery operated pumps, Van Dorn surface water sampler, Van Veen bottom grab sampler, soil corer, Quanta Hydrolab multimeter probe (pH, DO, T, TDS, Turbidity, Depth) and a variety of handheld meters.

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2. Do not include costs for new construction because that information should be provided in response to X (J) below.

None needed.

E. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

Analytical instrumentation available includes a Perkin-Elmer Clarus 500 GC with autosampler, ECD and FID, a Gow Mac 580 Gas Chromatograph with TCD, a Metrohm 850 professional AnCat IC system, a Shimadzu TOC/TON analyzer, pH, ISE and DO meters and automatic titrators. Field sampling equipment includes battery

operated pumps, Van Dorn surface water sampler, Van Veen bottom grab sampler, soil corer, Quanta Hydrolab multimeter probe (pH, DO, T, TDS, Turbidity, Depth) and a variety of handheld meters.

F. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2. N/A

None needed.

G. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2. N/A

None needed.

H. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2.

There is no plan to allocate additional resources to the department or college to support doctoral students. The College and Department will continue to make a concerted effort to locate graduate research assistantships and other forms of external support for students as was discussed earlier in this proposal. Any student enrolled in the proposed program will be considered for a teaching or research assistant appointment, regardless of the home department of their major graduate advisor(s). Each research faculty members normally supported two or more research assistants. Thus, the Department typically supported 40-80 research assistants per year. Recently, the Provost instituted an initiative to increase the number of PhD students in Engineering. Under this program, the Department brought in 23 new doctoral students to the Department in fall 2010. The support for these new PhD students is $15,000/year. Year 1 and Year 5 allocations are shown in Table 2.

I. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek more sites in Years 1 through 5.

Opportunities are available for doctoral students to conduct research and be trained at many federal laboratories; or example, Environmental Protection Agency (EPA), Department of Energy (DOE), National Oceanic & Atmospheric Administration (NOAA), and United States Geological Survey (USGS). In addition, the American Association for the Advance of Science (AAAS) provides opportunities for graduates of environmental engineering programs to be placed for fellowships with federal agencies in the Washington, D.C. area. Some federal funding is available to support students in such programs. In addition, some doctoral students will have their research occurring at local municipal water treatment, stormwater management, and wastewater treatment facilities which provides students opportunities to interact with practitioners.

The Department supports several international opportunities for its graduate students. Two programs are supported by NSF funding and allow students to travel abroad for research and training. The first program supports students to travel to the UNESCO-IHE Water Laboratory (Delft, Netherlands) to conduct research to develop technologies to meet the Millennium Development goals related to water and sanitation. The second NSF-supported program allows students to travel to Bolivia to conduct research in environmental engineering that is related to sustainable development. Our department also has a graduate partnership with the U.S. Peace Corps through the Master's international program where students spend 2+ years overseas working as a water sanitation engineer, while also conducting field research with a developing world focus. The program has been in existence

for 2.5 years and has already attracted 33 domestic graduate students, who come from 31 universities that represent 21 states. One current doctoral student is currently integrating her doctoral degree with the Peace Corps experience.

J. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

Not applicable

TABLE 1-B
PROJECTED HEADCOUNT FROM POTENTIAL SOURCES
(Graduate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/industries in your service area (e.g., older returning students)	0	0	0	0	0	0	0	0	0	0
Students who transfer from other graduate programs within the university**	25	18.75	18	13.5	15	11.25	12	9	5	3.75
Individuals who have recently graduated from preceding degree programs at this university	2	1.5	2	1.5	2	1.5	4	3	8	6
Individuals who graduated from preceding degree programs at other Florida public universities	1	0.75	5	3.75	5	3.75	5	3.75	6	4
Individuals who graduated from preceding degree programs at non-public Florida institutions	0	0	0	0	0	0	0	0	0	0
Additional in-state residents***	0	0	0	0	4	3	4	3	5	3.75
Additional out-of-state residents***	0	0	2	1.5	5	3.75	5	3.75	8	6
Additional foreign residents***	2	1.5	3	2.25	4	3	5	3.75	8	6
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**30**	**22.5**	**30**	**22.5**	**35**	**26.25**	**35**	**26.25**	**40**	**29.5**

* List projected yearly cumulative ENROLLMENTS instead of admissions
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR category in a given COLUMN.

TABLE 2
PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1						Year 5				
	Funding Source						Funding Source				
	Reallocated Base* (E&G)	Enrollment Growth (E&G)	Other New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	Subtotal E&G and C&G
Faculty Salaries and Benefits	129,767	0	0	0	0	**$129,767**	141,456		0	0	**$141,456**
A & P Salaries and Benefits	0	0	0	0	0	**$0**	0	0	0	0	**$0**
USPS Salaries and Benefits	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Other Personnel Services	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Assistantships & Fellowships	0	0	0	0	450,000	**$450,000**	0	0	0	594,000	**$594,000**
Library	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Expenses	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Operating Capital Outlay	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Special Categories	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Total Costs	**$129,767**	**$0**	**$0**	**$0**	**$450,000**	**$579,767**	**$141,456**	**$0**	**$0**	**$594,000**	**$735,456**

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "other new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions (person-years)	Year 1	Year 5
Faculty	1.1	1.16
A & P	0	0
USPS	0	0

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$129,767	$141,456
Annual Student FTE	22.5	29.5
E&G Cost per FTE	$5,767	$4,795

Worksheet Table 2 Budget

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
Total Department Costs	778,943	$129,767	$649,176
	0	0	
	0	0	
	0	0	
	0	0	
	0	0	
Totals	$778,943	$129,767	$649,176

Worksheet Table 3 Reallocation

TABLE 4
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Faculty Name or "New Hire" Highest Degree Held Academic Discipline or Speciality	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Jeffrey Cunningham Civil & Environmental Engrg	Asst. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
A	Sarina Ergas Civil & Environmental Engrg	Assoc. Prof.	Tenure	fall 2011	9	1.00	25.00	0.19	9	1.00	25.00	0.19
A	James Mihelcic Civil & Environmental Engrg	Prof.	Tenure	fall 2011	9	1.00	25.00	0.19	9	1.00	25.00	0.19
A	Peter Stroot Civil & Environmental Engrg	Asst. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
A	Amy Stuart Civil & Environmental Engrg	Asst. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
A	MayaTrotz Civil & Environmental Engrg	Assoc. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
A	Daniel Yeh Civil & Environmental Engrg	Asst. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
A	Qiong Zhang Civil & Environmental Engrg	Asst. Prof.	Tenure	fall 2011	9	1.00	16.00	0.12	9	1.00	17.50	0.13
	Total Person-Years (PY)							**1.10**				**1.16**

Faculty Code		Source of Funding	PY Workload by Budget Classsification Year 1	Year 5
A	Exisitng faculty on a regular line	Current Education & General Revenue	1.10	1.16
B	New faculty to be hired on a vacant line	Current Education & General Revenue	0.00	0.00
C	New faculty to be hired on a new line	New Education & General Revenue	0.00	0.00
D	Existing faculty hired on contracts/grants	Contracts/Grants	0.00	0.00
E	New faculty to be hired on contracts/grants	Contracts/Grants	0.00	0.00
		Overall Totals for	**Year 1 1.10**	**Year 5 1.16**

Worksheet Table 4 Faculty

Amy E. Childress, PhD
Professor and Chair
University of Nevada, Reno
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Reno, Nevada 89557
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University of Nevada, Reno

May 22, 2011

Dr. Karen D. Liller, Ph.D.
Dean of the Graduate School and Associate Vice President for Research and Innovation
University of South Florida
4202 E. Fowler Avenue
Tampa, FL 33620

Dear Dr. Liller,

In response to the request to provide an external review of the University of South Florida's (USF's) proposal to offer a PhD in Environmental Engineering, I am providing the following report. Prior to the report, I will briefly introduce myself. I am currently Professor and Chair of the Department of Civil and Environmental Engineering at the University of Nevada, Reno. From my attached CV, you will note that I am currently on the Environmental Engineering Foundation (EEF) Board of Directors and in 2007-2008 I was president of the Association of Environmental Engineering and Science Professors (AEESP). I am familiar with the University of South Florida's program and faculty through a visit two years ago and by reading the proposal provided to me. I am also familiar with the program because I have been impressed with its recent growth and notable hires.

Need for Program Nationally

Environmental engineering is a diverse profession that has historically been housed in Civil Engineering and Chemical Engineering, and also in Agricultural Engineering and Mining/Geological Engineering departments. More recently, the field of environmental engineering has become more distinct and has undergone significant growth – most likely as its focus has shifted from control of existing pollution problems to prevention of problems and addressing emerging public health concerns. Indication of this growth and projections for the future are comprehensively indicated in the proposal by the following statements:

- The U.S. Bureau of Labor Statistics predicts this field to have the highest growth of all engineering disciplines between now and 2018
- CNNMoney.com reports it as the 5th best job available out of 100 ranked (Civil Engineering was ranked 6th)

- Empower Me Magazine lists it as one of five "hottest green, environmental and infrastructure jobs for the next 10 years

Potential Student Employment

The Chronicle of Higher Education (http:/chronicle.com, July 10, 2009, v. 55(41), p.B22) reported a list of "some of the academic fields...experts believe will be "hot" over the coming decade." Among the predicted hot academic jobs are those in green chemistry, energy, gerontology, education, nanotechnology, health policy, information technology, and engineering. A total of 662,000 faculty jobs are expected to become available in these fields from 2006 to 2016 according to the U.S. Bureau of Labor Statistics. Specifically, a 25-percent growth is expected for environmental engineering faculty positions. This expected growth for academic positions mirrors the fast growth expected for the general field of environmental engineering. Over the 2010-2011 academic year, there were more than 80 open academic positions in environmental engineering. These included tenured, tenure-track, and research faculty positions in areas such as advanced disinfections processes, microbial ecology, membranes or desalination, and treatment processes. These positions exist in universities and institutions nationally and worldwide. In addition to academic faculty positions, graduates from the proposed PhD program would be well-equipped to pursue research careers at national or private laboratories and to perform specialized job functions at engineering consulting firms.

Core Courses and Capacity to Offer Courses

Clearly, an increasing number of well-prepared PhD students are needed. USF already has approximately 30 PhD students who are concentrating in environmental engineering, some of whom may go on to fill these academic positions. To provide them with a PhD specifically in environmental engineering would give greater identity to these students and to the program. It would also distinguish the USF program from the majority of other PhD programs that offer specialization in environmental engineering but not a PhD in environmental engineering specifically.

The four core courses for this program have been identified as:

- Physical and Chemical Processes
- Biological Principles
- Aquatic Chemistry
- A Sustainability Course

The first three of these courses are common to most programs in environmental engineering; however, the sustainability course is unique and serves as another distinguishing factor for this program. The three options for satisfying the sustainability component clearly reflect the competency of the environmental engineering faculty members in one of the more cutting-edge and compelling aspects of the field.

Faculty Qualifications

As mentioned in the proposal – and has been evident to the environmental engineering community – USF has invested considerable resources in hiring eight top-quality faculty members focused on environmental engineering. Clearly these faculty members are maintaining high levels of research productivity and consequently, they are mentoring relatively high numbers of PhD students. This is not only an important criteria in tenure and promotion for the individual faculty members, but also in national rankings. The high PhD productivity per faculty merits acknowledgment and to proceed with offering a PhD in Environmental Engineering would not only provide acknowledgment, but would also be an outstanding recruiting tool for future PhD candidates. Furthermore, from the grant funding described in the proposal, the faculty members are successfully pursuing federally-competitive graduate fellowship and scholarship grant programs that will further assist in recruitment of top PhD candidates. In addition to the fellowship and scholarship grant programs, the faculty have also been successful in competing for funding from numerous other granting programs/agencies.

Quality of Resources

The strength of a graduate program is a reflection of the quality of the faculty and their research programs; the overall faculty and research quality at USF is very high. The existing space, equipment, supplies, and library materials are more than adequate to support the program. Most notably, dedicated space for pilot plant research is critical given the research programs of the faculty members. Also, the plans to increase laboratory space to 5,000 sq ft with an open floor plan is advantageous for further development of the research program.

The faculty and these resources are what enabled USF to win a competitive proposal to host the Association of Environmental Engineering and Science Professors' 2011 Education and Research Conference. This Conference will give USF the opportunity to showcase their program and to gain national recognition for their unique and distinguished program in environmental engineering.

Regional Significance of Program

In addition to having the necessary resources to maintain a highly effective program, the University of South Florida is in an ideal location in terms of the regional significance of environmental engineering. The state of Florida leads the nation in desalination capacity. Population growth and the increasing demand for water, coupled with the State's vulnerability to drought events, are compelling water planners to also consider wastewater reuse. For this reason, a program addressing urban water infrastructure and environmental protection is not only a national, or international need, but a serious regional need as well.

In closing, I would like to say that this was an extremely well-written proposal that clearly documents the need for this degree program and its high level of readiness. The ability to offer a PhD in Environmental Engineering would give greater identity to this program and its graduates which would, in turn, be useful in future recruiting of high quality graduates and further gain in national rankings and visibility.

Sincerely,

Amy Childress

Amy Childress
Professor and Chair

Cc: Dr. William Carpenter, Chair of Civil and Environmental Engineering
Dr. John M. Wiencek, Dean of Engineering

UF | UNIVERSITY of FLORIDA

Office of the Provost
and Senior Vice President

235 Tigert Hall
PO Box 113175
Gainesville FL 32611-3175
352-392-2404 Tel
352-392-8735 Fax

August 1, 2011

Dr. Ralph Wilcox
Executive Vice President & Provost
University of South Florida
4202 E Fowler Avenue, CGS 401
Tampa, FL 33620

Dear Ralph,

Your graduate dean wrote asking for UF's endorsement of USF's proposal to create a doctoral degree in Environmental Engineering. We have no objection to the creation of this degree, and, in fact, we believe that it will contribute to the State's goal of increased production of STEM graduates. In particular, additional doctorally-trained engineers will improve the climate for innovation and industry in the state.

Sincerely yours,

Joseph Glover
Provost

JG/cdm

University of Central Florida

Office of the Provost and Vice President
for Academic Affairs

July 20, 2011

Dr. Ralph Wilcox
Provost and Executive Vice President
University of South Florida
Tampa, FL

Dear Provost Wilcox:

I write in support of the proposed Ph.D. program in Environmental Engineering at the University of South Florida. While the addition of this program at USF may impact enrollment in UCF's Environmental Engineering program, any impact is expected to be minor.

We wish you the best with the proposed new program and would welcome opportunities to collaborate in both instruction and research.

Sincerely,

Tony G. Waldrop, Ph.D.
Provost and Vice President for Academic Affairs
Professor of Biomedical Sciences

P.O. Box 160065 • Orlando, FL 32816-0065 • (407) 823-2302 • FAX (407) 823-5407

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Ph.D. in Biomedical Sciences (CIP 26.0102) at Florida International University

PROPOSED COMMITTEE ACTION

Consider approval of the Doctor of Philosophy (Ph.D.) in Biomedical Sciences at Florida International University, CIP Code 26.0102.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution; Board of Governors Regulation 8.011

BACKGROUND INFORMATION

Florida International University (FIU) is proposing to offer a Ph.D. degree program in Basic Biomedical Sciences. The core of the Ph.D. Graduate Program will be composed of the Basic Science Departments in the Herbert Wertheim College of Medicine (HWCOM): the Department of Human and Molecular Genetics, the Department of Molecular Microbiology and Infectious Diseases, the Department of Cellular Biology and Pharmacology and the Department of Immunology. According to the proposal, strong programs in these areas are essential to the development of research-based medical school programs and, thus, will strengthen FIU's new medical school and the overall growth of the college and university.

The total number of credit hours required for completion of the proposed program is 81, and a dissertation is required. The curriculum includes required courses fundamental for understanding biomedical and translational sciences, providing elective courses selected in consultation with the dissertation advisor and the Program Director. Letters of support for the proposed program have been provided by FSU, USF, UF, and UCF who have similar programs associated with their medical schools.

The FIU Board of Trustees approved the program on September 8, 2011. If approved by the Board of Governors, USF will implement the program in Fall 2012.

Supporting Documentation Included: Staff Analysis and Program Proposal

Facilitators/Presenters: FIU Representatives

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BOARD OF GOVERNORS
STATE UNIVERSITY SYSTEM OF FLORIDA
NEW DOCTORAL DEGREE PROPOSAL STAFF ANALYSIS

Program: Ph.D. in Basic Biomedical Sciences **CIP Code:** 26.0102

Institution: Florida International University **Proposed Implementation Date:** Fall 2012

Staffed By: Shanna Autry, Tonya Bujak **Initial Review Date:** 09/09/11 **Last Update:** 10/13/11

Estimated Costs:

	Total	% & $ Current Reallocated	% & $ New Recurring	% & $ New Non-Recurring	% & $ C&G	Cost per FTE	SUS 09-10 Average Cost per FTE
Year 1	$289,402	23% $67,665	67% $193,522	0% $0	10% $28,214	$69,650	$18,267 26 CIP
Year 5	$1,834,312	20% $373,863	30% $561,019	0% $0	50% $899,430	$49,860	

Projected FTE and Headcount are:

	Student Headcount	**Student FTE**
First Year	5	3.75
Second Year	10	7.5
Third Year	15	11.25
Fourth Year	20	15
Fifth Year	25	18.75

On March 29, 2007, the Florida Board of Governors approved BOG Regulation 8.011, which sets forth criteria for implementation and authorization of new doctorates by the Board of Governors, as well as criteria for implementation and authorization of Bachelor's, Master's and Specialist degrees by Boards of Trustees. The following staff analysis is an assessment of how well the university meets BOG Accountability and Readiness criteria for implementation of this degree program.

Proposal Page Numbers:

INTRODUCTION		**ACCOUNTABILITY**		**READINESS**				
Program Description	**System Analysis**	**Overall**	**Budget**	**Mission and Strength**	**Program Quality**	**Curriculum**	**Faculty**	**Resources**
2	2	4	5	0	6	7	7	8

A. Program Description:

Florida International University (FIU) is proposing to offer a Ph.D. degree program in Basic Biomedical Sciences. This program is designed to create a distinctive learning experience for graduate students by offering the introductory basic science portion of the medical curriculum side-by-side with medical students. The core of the Ph.D. Graduate Program will be composed of the Basic Science Departments in the Herbert Wertheim College of Medicine (HWCOM): the Department of Human and Molecular Genetics, the Department of Molecular Microbiology and Infectious Diseases, the Department of Cellular Biology and Pharmacology and the Department of Immunology. According to the proposal, strong programs in these areas are essential to the development of research-based medical school programs and, thus, will strengthen FIU's new medical school and the overall growth of the college and university.

The total number of credit hours required for completion of the proposed program is 81, and a dissertation is required. The curriculum includes required courses fundamental for understanding biomedical and translational sciences, providing elective courses selected in consultation with the dissertation advisor and the Program Director. Graduate students will take core medical courses side-by-side with the medical students, providing a background in and appreciation of biomedical sciences.

B. System-Level Analysis and Evaluation in accordance with BOG Regulation 8.011:

The FIU proposal explains that Basic Biomedical Science is the fundamental basis of preparing graduate students for academic careers in medical research and for the flourishing biotechnology industry of the Miami-Dade region and the State of Florida. In addition, it will contribute to the training of generations of young scientists in the medical features of cell biology, pharmacology, biochemistry, cancer biology, molecular biology, human genetics, pathology, immunology, neurology, medical microbiology and infectious diseases. The proposal makes the argument that the growth of biomedical research on a national level highlights the need for doctoral-level biomedical science programs.

The aim of FIU's proposed Ph.D. in Basic Biomedical Sciences program is to train future scientists who can be independent investigators in either industry or academia. According to the proposal, the doctoral program will directly support the following goals of the State University System Board of Governors Strategic Plan:

- Goal 1: Access to and production of degrees
- Goal 2: Meeting statewide professional and workforce needs
- Goal 3: Building world-class academic programs and research capacity
- Goal 4: Meeting community needs and fulfilling unique institutional responsibilities

According to the FIU proposal, there is a demand for students graduating with a Ph.D. in Basic Biomedical Sciences at the local, state, and national levels. Reporting data from the U.S. Department of Labor (Bureau of Labor Statistics, U.S. Department of Labor, ***Occupational Outlook Handbook, 2010-11 Edition***, Biological Scientists), the proposal states that projections for growth include a 29.6% growth in job openings for biological scientists by 2018 (with respect to 2008 levels). In addition, the report projected continued growth in positions for post-secondary educators in research and development in the physical, engineering and life sciences (29.6% between 2008 and 2018). Noting that many opportunities exist in academia, hospital systems, biotech and pharmaceutical industries for graduates of biomedical sciences programs in the Miami area, in Florida and in the US, the lack of educational opportunities specifically in the Miami area constitutes the need for this particular program. The proposal included letters of support from local biomedical employers that demonstrate opportunities for the graduates of the doctoral.

Addressing the issue of student demand, the FIU Office of Planning and Institutional Research conducted an internal survey in 2010. Consisting of 5 questions, the electronic survey was sent to registered FIU students in the Departments of Biological Sciences, Chemistry and Biochemistry and Biomedical Engineering. Of the 60 respondents, 78% indicated they would be interested in obtaining a Ph.D. in Basic Biomedical Sciences at FIU.

The proposal addresses the question of program duplication by identifying and comparing the proposed program to similar offerings elsewhere in the state. According to the FIU proposal, the program will be the first program of its kind in South Florida. The University of Central Florida (UCF) and Florida State University (FSU) offer a Ph.D. in Biomedical Sciences (General) under the CIP code 26.0102. The proposal includes a letter of support from FSU's Provost and Executive Vice President, Dr. Garnett S. Stokes. The University of Miami is a private institution and the only other school in the southern part of the state with a Biomedical Sciences degree offered in the School of Medicine. FIU assumes the enrollment projections would be similar to FSU and UCF's current programs. The proposal acknowledges that Florida Agricultural and Mechanical University (FAMU), Florida International University (FIU), University of Florida (UF), University of South Florida (USF), and FSU offer Ph.D. programs in Biomedical/Bioengineering under CIP code 14.0501 (as reported in the State University System Academic Degree Program Inventory). However, these programs are significantly different from the proposed program.

C. Assessment of the University Review Process in accordance with BOG Regulation 8.011:

Due to the system of stair step accountability set in place by the Board of Governors in Regulation 8.011, it is now incumbent upon University Board of Trustees to verify that all doctoral programs coming before the Board of Governors have met the requirements of the regulation. The following is an assessment of the university review process to ensure that all criteria set forth have been considered by the university prior to submission to the Board of Governors office.

ACCOUNTABILITY

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

1. *Overall –* *The proposal is in the correct format, includes all necessary signatures, and contains complete and accurate tables for enrollment projections, faculty effort, and the proposed budget.*

YES NO

☒ ☐ **The proposal has been approved by the university board of trustees and includes all required signatures.**

The Florida International University Board of Trustees approved the initial program proposal on September 8, 2011.

☒ ☐ **The university has provided a proposal written in the standard State University system format, which addresses new academic program approval criteria outlined in Board of Governors Regulation 8.011.**

The Board of Governors new degree program proposal format was used, as expressed in Board of Governors Regulation 8.011.

☒ ☐ **The university has provided complete and accurate projected enrollment, faculty effort, and budget tables that are in alignment with each other.**

The proposal provides information on each of these areas. Detailed tables are provided on projected enrollment (Tables 1-A & 1-B); on faculty effort (Table 4); and on budget (Tables 2 & 3).

The estimated cost per FTE is significantly higher than the average cost per FTE for other SUS doctoral programs within the 26 CIP code as calculated using the SUS Expenditure Analysis. There is no way to use the expenditure analysis to make a direct comparison with other biomedical science programs because it only analyzes data at the two-digit CIP level, which in this case includes all of the biological and biomedical sciences programs. Biomedical sciences programs are typically on the high end of costs within the 26 CIP because of its close affiliation with medical education.

☒ ☐ **The university has included a statement in the proposal signed by the equity officer as to how this proposal will meet the goals of the university's equity accountability plan.**

The program plan for achieving diversity was reviewed and signed by the FIU Equal Opportunity Officer on February 22, 2011.

2. Budget – *The proposal presents a complete and realistic budget for the program consistent with university and Board of Governors policy, and shows that any redirection of funding will not have an unjustified negative impact on other needed programs.*

YES NO

☒ ☐ **The University Board of Trustees has approved the most recent budget for this proposal.**

The current budget proposal has been approved by the Academic Policy and Student Affairs Committee of the FIU Board of Trustees, and by the full board on September 8, 2011.

☒ ☐ **In the event that resources within the institution are redirected to support the new program, the university has identified this redirection and determined that it will not have a negative impact on undergraduate education, or the university has provided a reasonable explanation for any impact of this redirection.**

According to the budget description and supporting tables in the FIU proposal, the new program will have no significant negative impact on the existing programs. All research assistants are expected to be funded from new research awards and not from funds redirected from existing programs.

READINESS

Check 'yes' or 'no' box, and make comments beneath criterion as appropriate.

3. Program Quality *– The proposal provides evidence that the university planning activities have been sufficient and responses to any recommendations to program reviews or accreditation activities in the discipline pertinent to the proposed program have been addressed.*

YES NO

☒ ☐ **The university has followed a collaborative planning process for the proposed program in accordance with policies and procedures adopted by the University Board of Trustees.**

As described in the proposal, the planning process began in 2009 when the HWCOM recruited basic science scientists with active research programs supported by National Institutes of Health grants. A Graduate Planning Program Committee was established and discussions were begun on the development of a curriculum, and a survey and analysis report. A feasibility study was conducted and was approved in 2011, and developed into a full proposal. The proposal was approved at all levels of university governance.

☒ ☐ **An external consultant has reviewed the proposal and supports the department's capability of successfully implementing this new program.**

Dr. Daniel A Walz, Associate Dean for Research and Graduate Programs and Professor of Physiology at Wayne State University School of Medicine, served as external consultant for the new program. Dr. Walz reviewed and analyzed the written proposal and concluded that the program includes all of the necessary elements of an acceptable PhD program in Biomedical Sciences. Dr. Walz stated that the formation of the proposed program is very well designed, is well aligned with the mission of the college and university, and will significantly benefit the students, residents and businesses of the greater Miami area as well as the State of Florida. Dr. Walz also opined that the didactic educational opportunities in the core courses will strengthen relationships and research opportunities.

☒ ☐ **The university has found the level of progress that the department has made in implementing the recommendations from program reviews or accreditation activities in the discipline pertinent to the proposed program to be satisfactory.**

The college of medicine was reviewed by LCME in February 2011 and provisional accreditation was approved for the medical school. However, reviewers recommended that FIU implement a research doctorate in association with the medical school as soon as feasible.

☒ ☐ **The university has analyzed the feasibility of providing all or a portion of the proposed program through distance learning.**

The program proposal explains that the traditional delivery system on the University's main campus will be followed for the Ph.D. in Basic Biomedical Sciences program. According to the proposal, the program does not require specialized services for delivery and it is not feasible to deliver the program in collaboration with other universities.

4. Curriculum *- The proposal provides evidence that the university has evaluated the proposed curriculum and found that it describes an appropriate and sequenced course of study, and that the university has evaluated the appropriateness of specialized accreditation for the program.*

YES NO

☒ ☐ **The university has reviewed the curriculum and found that the course of study presented is appropriate to meet specific learning outcomes and industry driven competencies discussed in the proposal.**

As presented in the proposal, the curriculum has been designed to ensure that students

gain a firm grounding in Biomedical Sciences while at the same time allowing for exposure to medical core courses side-by-side with medical students.

☒ ☐ **The university anticipates seeking accreditation for the proposed doctoral program, or provides a reasonable explanation as to why accreditation is not being sought.**

There is no accrediting agency for programs in Basic Biomedical Sciences at the doctoral level.

5. Faculty *– The proposal provides evidence that the university is prepared to ensure a critical mass of faculty will be available to initiate the program based on estimated enrollments, and that faculty in the aggregate have the necessary experience and research activity to sustain a doctoral program.*

YES NO

☒ ☐ **The university has reviewed the evidence provided and found that there is a critical mass of faculty available to initiate the program based on estimated enrollments.**

There are 11 faculty members (see Table 4 in proposal) from the College of Medicine, College of Engineering and College of Arts and Sciences who have been identified for the proposed doctoral program. At this time, there will be no adjunct faculty positions in the program. FIU anticipates hiring five more faculty members in various medical specializations.

☒ ☐ **The university has reviewed the evidence provided and found that the faculty in aggregate has the necessary experience and research activity to sustain the program.**

All 11 faculty members will hold dissertation advisor status. Of the 11 faculty, 9 are tenured and 2 are tenure-earning (see Table 4.) According to the proposal, this will provide ample faculty resources for mentoring, research, and teaching.

☒ ☐ **The university has reviewed the evidence provided and found the academic unit(s) associated with this new degree to be productive in teaching, research, and service.**

The proposal provides evidence that the three participating units have been successful in attracting external funding support.

☒ ☐ **If appropriate, the university has committed to hiring additional faculty in later years, based on estimated enrollments.**

The proposal provides a stated plan for future hiring of five additional faculty.

6. Resources *– The proposal provides evidence that the university has ensured the available library volumes and serials; classroom, teaching laboratory, research laboratory, office space, equipment, clinical and internship sites, fellowships, scholarships, and graduate assistantships will be sufficient to initiate the program, and that if applicable, funding has been secured to make more resources available as students proceed through the program..*

YES NO

☒ ☐ **The university has provided a signed statement from the Library Director verifying that the library volumes and serials available are sufficient to initiate the program.**

The proposal provides evidence that sufficient library resources are available to implement the program and no additional resources are needed at this time. A statement was signed by the FIU Library Director on February 21, 2011.

☒ ☐ **The university has ensured that the physical space necessary for the proposed program, including classrooms, laboratories and office space, is sufficient to initiate the program.**

The proposal provides evidence that there are adequate classrooms and laboratories to accommodate this program.

☒ ☐ **The university has ensured that necessary equipment is available to initiate the program.**

The proposal provides evidence that FIU currently has the specialized equipment.

☒ ☐ **The university has ensured that fellowships, scholarships, and graduate assistantships are sufficient to initiate the program.**

According to the proposal, the first year support to cover the tuition and stipends will be provided by FIU University Graduate School in the form of four GTAs per year. The second year will be provided by HWCOM funds in the form of GRAs. Core faculty members will be expected to have adequate grant support for stipends, fees and tuition for their graduate students in the remaining years of studies. HWCOM faculty members who will participate in this program are funded through extramural agencies (NIH, DoD, HRSA, EPA, private foundations, etc.) that will provide graduate student support starting

in their third year.

☒ ☐ **If applicable, the university has ensured that the department has arranged a suitable number of clinical and internship sites.**

Ph.D. programs in Biomedical Sciences do not require sites for internships or practicum experiences.

FIU
FLORIDA INTERNATIONAL UNIVERSITY
Miami's public research university

16 September 2011

Dr. Dorothy Minear
Senior Associate Vice Chancellor
Academic and Student Affairs
State University System of Florida
Board of Governors
325 West Gaines Street
Tallahassee, Florida 32399-0400

Dear Dr. Minear,

Florida International University respectfully submits to you the finalized program proposal for a PhD in Basic Biomedical Sciences, which was approved by the FIU Board of Trustees on 8 September 2011.

I appreciate that you accepted our preliminary proposal in August. The attached proposal is complete and now includes the following documents:

1) the proposal with the fully executed approval cover page/original signatures;

2) the external reviewer's report (the revised proposal incorporates the university's response to this report)

3) letters of support from other state university system institutions with similar programs.

Please advise if you or your staff have further questions before the presentation of this proposal to the Board of Governors in November.

Sincerely,

Douglas Wartzok
Provost & Executive Vice President

C: Richard Stevens, FLBOG

Florida Board of Governors
Request to Offer a New Degree Program

Florida International University
University Submitting Proposal

Fall, 2012
Proposed Implementation Date

Herbert Wertheim College of Medicine
Name of College or School

Basic Science Departments
Name of Department(s)

Biomedical Sciences

Academic Specialty or Field

Ph.D. Program in Basic Biomedical Sciences (CIP code 26.0102)
Complete Name of Degree
(Include Proposed CIP Code)

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

September 8, 2011
Date Approved by the University Board of Trustees

10/5/11
President Date

Signature of Chair, Board of Trustees

10/7/11
Date

5x11
Provost & Executive Vice President Date

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Student Enrollment (From Table 1)		Projected Program Costs (From Table 2)		
	HC	FTE	Total E&G Funding	Contract & Grants Funding	E&G Cost per FTE
Year 1	5	3.75	$261,187	$28,214	$69,650
Year 2	10	7.5			
Year 3	15	11.25			
Year 4	20	15			
Year 5	25	18.75	$934,881	$899,430	$49,860

Introduction

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

The proposed Ph.D. program in Basic Biomedical Sciences at the Florida International University (FIU) Herbert Wertheim College of Medicine (HWCOM) will be distinctive among FIU graduate programs by providing a curriculum in biomedical sciences different than other FIU colleges. A distinctive feature of the proposal for the Biomedical Sciences Graduate Program is that graduate students and medical students will sit side-by-side in the introductory basic sciences portion of the medical curriculum, providing the graduate students with an appreciation of the medical aspects of modern biosciences. This program will not only be essential for the development of the research capacity and the educational mission of FIU and the HWCOM, but also for the overall growth of the college and university. The HWCOM faculty will train biomedical scientists, preparing them for academic careers in medical research and for the flourishing biotechnology industry of the Miami-Dade region and the State of Florida. In addition, it will contribute to the training of generations of young scientists in the medical features of cell biology, pharmacology, biochemistry, molecular biology, cancer biology, human genetics, pathology, immunology, neurology, medical microbiology and infectious diseases. Thus, these FIU graduates will provide much needed trained Ph.D. biomedical scientists to supply the South Florida workforce. They will become the leaders of corporations, hospitals and research institutions state-wide and nationally. They will bring prominence to FIU and, as alumni, support the university in its future growth.

The HWCOM faculty members have expertise in the fields of cancer biology, cell biology, human genetics, pharmacology, neurosciences, immunology, biochemistry, molecular biology, medical microbiology and infectious diseases. Students in the Ph.D. program will benefit from the opportunity for research projects in basic, translational and clinical medical sciences.

The proposed Ph.D. program differentiates itself from other programs at FIU in its focus in training students in the biomedical sciences; hence, the focus of the program is specifically designed to prepare scientists in areas of biomedical research. Graduates of our program will have an exceptional ability to apply their research skills from bench to bedside, to translate fundamental discoveries into new treatments for human diseases and to improve the health of the citizens of Miami-Dade, the State of Florida and the US.

- **The HWCOM faculty will train biomedical scientists, preparing them for academic careers in medical research and for the flourishing biotechnology industry of the Miami-Dade region and the State of Florida.** The training will initially provide exposure to current areas of biomedical sciences in a medical school environment. The core of the Ph.D. Graduate Program will be composed of the Basic Science Departments in the HWCOM: the Department of Human and Molecular Genetics, the Department of Molecular Microbiology and Infectious Diseases, the Department of Cellular Biology and Pharmacology and the Department of Immunology. HWCOM faculty members participating in the Ph.D. programs are referred to as “core faculty”. Participation by faculty members with secondary appointments from the College of Arts and Science, the College of Engineering and Computing, the Robert Stempel College of Public Health and Social Work and other FIU divisions will provide additional depth to the Ph.D. program.
- Active recruitment is a vehicle for a successful graduate program. In addition to passive efforts such as construction of an effective web site and email campaigns, we will develop a multipronged approach to active recruiting:

- Job fairs at FIU and other Florida universities
- A recruiting week where interested students are brought to FIU for interviews and tours of laboratories
- Seminar trips to Florida universities subsidized by HWCOM with the expressed goal of meeting perspective graduate students
- Bringing faculty advisors from colleges and universities in Florida to meet our faculty and discover opportunities at FIU.
- Providing small but attractive competitive bonuses for recruitment of top students.

- The curriculum of the proposed Ph.D. program at the FIU HWCOM (Supplemental Table 1) is unlike those offered by other colleges at FIU or other Florida public universities. This program, in which graduate and medical students are initially educated together, will be essential for the development of the research capacity and the educational mission of HWCOM. Following are features that differentiate the proposed Ph.D. program in Biomedical Sciences at FIU's HWCOM from other graduate programs offered by other Florida public universities.
  - As noted above, the graduate students will study alongside medical students; both groups of students will attend the same basic courses lectures. No other doctoral program in Florida has these features. In addition, other courses of the HWCOM curriculum will be offered to graduate students as electives. Close collaboration with medical students and clinical faculty will help to ensure that students have not only the knowledge and skills necessary to be productive biomedical researchers but the understanding of the realities of the medical profession.
  - FIU's proposed program requires 81 post-baccalaureate credits, of which 24 hours are dissertation research.
  - The proposed program requires 11 mandatory credit hours (4 courses) in Genes, Cells and Molecules, Structure and Function, Microbiology, Infection and Immunology, and Epidemiology and Biostatistics. These courses will insure a solid basis for understanding of biomedical sciences.
  - The studies conducted in the laboratories of HWCOM are different from but complementary to existing research activities in other scientific centers in Florida. The specific skills obtained in FIU HWCOM laboratories will insure that our graduates will be competitive in the job market.
  - With the future growth of basic science faculty in the College of Medicine, we will expand the number of electives to reflect new research directions in focus areas distinctive to FIU HWCOM such as tropical medicine and molecular parasitology.
  - Students in the Ph.D. program will benefit from the opportunity for research projects in both basic and clinical medical sciences, integrating the graduate program curriculum and the medical school courses. Graduates of our program will have the ability to apply their research skills from bench to bedside, enhancing the health of our citizens.
  - Collaboration with faculty members from other FIU units including the College of Arts and Science, the College of Engineering and Computing, as well as the University of Miami will provide additional depth to the Ph.D. program in the form of course offerings and research interests. The number of collaborations between HWCOM faculty, those in other FIU colleges and other Florida universities, institutions and hospitals is growing daily. A few examples are:
    - Joe Leigh Simpson and Helen Tempest in HWCOM have a funded collaboration with Anthony McGoron and Chenzhong Li in the Department of Biomedical Engineering, College of Engineering and Computing. The project, entitled "*Biosensors to detect non-specific toxicant exposures*", is to develop novel biosensors able to detect real-time, non-specific, exposures to biological weapons and toxins. The goal is a portable device equal in sensitivity to current cytogenetic – technology, the latter

performed in a gold-standard cytogenetic lab constructed at FIU HWCOM. Their joint studies are funded by a $1,401,000 grant from the Department of Defense entitled *Mass Scale Biosensor Threat Diagnostic In-Theater Defense Utilization*.

- Barry P. Rosen in HWCOM and Yong Cai in the Department of Chemistry and Biochemistry, College of Arts and Sciences, have an active collaborative project on the identification of genes involved in degradation of herbicides used on Florida golf courses. This joint study resulted in a recent publication entitled "*Demethylation of methylarsonic acid by a microbial community*" in the journal Environmental Microbiology in May, 2011.
- Barry P. Rosen in HWCOM and Sylvia Daunert, Chair of the Department of Biochemistry and Molecular Biology at the University of Miami Miller School of Medicine, have an active research collaboration on the construction of biosensors to detect toxic heavy metals that has resulted in the publication of a number of joint publications.
- Kalai Mathee in HWCOM and Giri Narasimhan, School of Computing and Information Science in the College of Engineering and Computing have an active research collaboration with Adam Wanner, Division of Pulmonary and Critical Care Medicine, University of Miami, Miami, Florida, USA. In a project funded by the James Esther Foundation, they study the airway microbiome in chronic obstructive pulmonary disease (COPD), one of the most common lung diseases.

- Career development is an essential component of graduate education. Traditionally faculty advisors play a major role in mentoring the students on postdoctoral opportunities. In addition, a career office for graduation students will be established that will provide guidance and information about postdoctoral opportunities and career paths outside of academia. The office will sponsor workshops and job fairs, send students to meetings that offer job placement, and sponsor seminars by successful biomedical scientists. Finally, academic institutions in the Miami-Dade area and in the State of Florida provide numerous opportunities for postdoctoral training in the area of biomedical research for the graduates of HWCOM Ph.D. Program. This includes both public universities, the University of Miami Miller School of Medicine, UM Sylvester Comprehensive Cancer Center, Max Planck Florida Institute and the Scripps Research Institute Florida. Collaborative projects between HWCOM faculty and outside researchers, the requirements for peer-reviewed publications, and the requirement for non-FIU reviewers of the dissertation will promote the visibility of FIU graduates and facilitate their placement for postdoctoral training.

B. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which goals the program will directly support and which goals the program will indirectly support. (See the SUS Strategic Plan at http://www.flbog.org/about/strategicplan/)

- **The proposed graduate program is a response to the State University Strategic Plan and Guidance of 2005.** The Board of Governors encourages the advancement or establishment of world-class doctoral/research programs (p. 6). The new HWCOM Ph.D. graduate program will address the stated need of "**Meeting statewide professional and workforce needs (I.B. p.4, Appendix)"** and specifically in "**Critical needs: health care I.B.2."** In addition, programs in Biomedical Sciences have been identified as a goal of the SUS Strategic Plan on p. A8: 2. Set goals differently for different types of doctoral programs. a. Emerging Technologies Doctoral Degrees. iv. Give special emphasis to biological/biomedical sciences
- In the February, 2011 accreditation visit by **the Liaison Committee on Medical Education (LCME), the reviewers emphasized the requirement for a HWCOM graduate program in**

HWCOM to allow interaction between graduate and medical students and to fulfill our obligation for the research training of the medical students.

- **The proposed Ph.D. program is a response to one of the key strategic themes in the development of the University's educational and research program – the Health theme.** The program is directly aligned with goals of FIU's 5-year plan through fulfillment of its mission by imparting knowledge through excellent teaching, promoting public service, discovering new knowledge, solving problems through research, and fostering creativity. The impetus to become a tier-one research university while retaining its urban mission has made FIU an attractive center of learning for students at the state, national and international level. The HWCOM has raised the visibility and research potential of FIU by the successful recruitment of a number of outstanding educators and biomedical scientists committed to training students to the benefit of the South Florida community.
- Graduates of this program will fill a serious shortage of high-level biomedical scientists in the State of Florida. Their value to universities, hospital systems and to the local biotech and pharmaceutical industries is documented in letters of support (see appendix):
    - Raul Herrera, M.D., Chief Research Officer, Miami Children's Hospital, wrote "*Over the next decade we will have considerable growth and would anticipate employment opportunities for graduates of your program. We look forward to being able to recruit these students who are already long-term residents of southern Florida and are committed to enhancing the scientific prominence of the State*."
    - Joseph D. Rosenblatt, M.D., Interim Director, Sylvester Comprehensive Cancer Center, emphasized in his letter "*I believe that (your program) will become an excellent source of biomedical scientists who will contribute to the research and clinical programs in academia and clinical laboratories in South Florida… we anticipate filling at least 50-100 positions for research scientists with doctoral degrees. These would be best filled by individuals with strong ties to the Miami-Dade area such as FIU graduates* ".
    - Robert C. Goldszer, M.D., Senior Vice President and Chief Medical Officer of Mount Sinai Medical Center emphasized that "*There is a tremendous need for biomedical scientists in most regions of the U.S., especially in Florida. As you plan to recruit long-term residents of South Florida into your program, we can anticipate that many of your graduates will pursue careers in the Miami-Dade area. The collaboration with researchers at FIU and having Ph.D. students participate with our researchers should benefit our community, students and researchers*".
    - Russell Allen, President and CEO, BioFlorida, says "*We are confident that further expansion of this industry is forthcoming and these companies will be looking for qualified senior researchers and scientists such as will be coming from this program. We can also anticipate that with the growth of the FIU program, companies will find Florida even more attractive as a home for future bioscience research*.
    - Jeffrey Wolf, CEO, Heat Biologics, Inc. states "*This innovative curriculum will be an important source of biomedical scientists …. Since these students are already long-term residents of South Florida, we look forward to being able to recruit them* …"
    - Frank R. Nero, President and CEO of the Beacon Council wrote "… *this curriculum … will help attract new industry to the South Florida area … we are pleased to have FIU take the initiative on such a relevant and much needed effort*."
    - Yamilet Ceballo, Director of College Relations, Beckman Coulter said that "*Your new program would be a welcome source of biomedical scientists who could contribute to our research and clinical laboratories at Beckman Coulter. Our current supply of local applicants is not sufficient for staffing our Florida operations, and we are very supportive of your initiative to increase and improve the pool of Ph.D. scientists that will comprise the future workforce in South Florida*."

INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

Need for Ph.D. Program in Basic Biomedical Sciences in South Florida

The need for a Ph.D. Program in Basic Biomedical Sciences at the Herbert Wertheim College of Medicine is clear. First, it is a vital component of the FIU Strategic Plan, which states "*To leverage FIU's strength in health care instruction and research, FIU will make strategic investments in the following initiatives: 1) Create new degree programs to attract new students and ensure competitiveness of graduates in health fields. 2) enhance both the amount and visibility of health-related research and 3) strengthen partnerships with local and global community and governmental agencies, public entities, hospitals, and health care and social service agencies/providers."*

Second, it will supply much-needed biomedical scientists to the Florida workforce. According to the U.S. Department of Labor, employment opportunities for biological scientists will continue to grow in the 2008-2018 decade by 21 percent, a rate much faster than average (Bureau of Labor Statistics, U.S. Department of Labor, ***Occupational Outlook Handbook, 2010-11 Edition***, Biological Scientists, on the Internet at **http://www.bls.gov/oco/ocos047.htm** (visited ***February 10, 2010***). This report attributed the rapid rise in biological scientist jobs in part to the growth of the biotechnology industry. In addition, the report projected continued growth in positions for post-secondary educators in research and development in the physical, engineering and life sciences (29.6% between 2008 and 2018). While many opportunities exist in academia, hospital systems, biotech and pharmaceutical industries for graduates of biomedical sciences programs in the Miami area, in Florida and in the US, the lack of educational opportunities in the Miami area underscores the need for the proposed Ph.D. program. Letters of support from local biomedical employers for the proposed program demonstrating opportunities for the graduates of the HWCOM doctoral program are included as supplemental material in the Appendix. Moreover, the program has a different focus and will produce a different product than other programs at FIU. Finally, nationally there are many more applicants for programs in biomedical sciences than are available at public universities.

The FIU University Graduate School provided information on the 2009-2010 enrollment of Ph.D. programs in the Department of Biological Sciences (38 applied, 13 admitted, 12 enrolled), Department of Chemistry and Biochemistry (59 applied, 16 admitted, 16 enrolled), and the Department of Biomedical Engineering (36 applied, 20 admitted, 13 enrolled). Overall, this represents 30% of the applicants and 84% of the accepted students attending FIU programs. Even recognizing that not all applicants are qualified, these data plainly demonstrate that the applicant pool is more than sufficient to justify a new graduate program without competition for students with other current FIU programs. While that the Department of Chemistry and Biochemistry has initiated a new program in biochemistry that will admit students for the 2011-2012 academic year, this biochemistry program cannot serve the needs of the medical school, where the majority of existing HWCOM faculty and future recruits will be training students in medically-related areas other than biochemistry such as human genetics, immunology, neurology, cell biology, cancer biology,

infectious diseases, medical microbiology, pharmacology and physiology. Most HWCOM faculty would not qualify for appointment to the biochemistry program, and many of the student applicants to the HWCOM program would not have prerequisites for the biochemistry program such as a course in physical chemistry. Letters of support from the Deans of the College of Engineering and Computing, the College of Arts and Sciences, and the Robert Stempel College of Public Health and Social Work are attached.

Two U.S. medical schools that have biomedical Ph.D. programs that are larger but otherwise similar to the proposed HWCOM program are the Ohio State University and the University of New Mexico. From 2002 – 2009, the Biomedical Sciences Program at Ohio State University School of Medicine had 1321 applicants, admitted 521 and enrolled 237 (18% of applicants). From 2004 to 2008, the Biomedical Sciences Graduate Program at the University of New Mexico had 402 applicants, admitted 203 and enrolled 92 (23% of applicants). If the numbers of applicants to other biomedical doctoral programs are similar nationally, it would indicate that there are approximately five times as many potential students with a desire for a career in biomedical sciences than there are available places in Ph.D. graduate programs in U.S. medical schools.

In conclusion, these data demonstrate that there are many more applicants than public universities in the Florida or elsewhere in the U.S. can accommodate and signify an unmistakable need for a Ph.D. Program in Biomedical Sciences at FIU HWCOM.

B. Demand: Describe data that support the assumption that students will enroll in the proposed program. Include descriptions of surveys or other communications with prospective students.

Demand for Ph.D. Program in Basic Biomedical Sciences at the Herbert Wertheim College of Medicine

Surveys were conducted during the summer and fall of 2010 (see Appendix). An internal FIU survey was carried out by the FIU Office of Planning and Institutional Research. The survey was sent electronically to registered FIU students in the Departments of Biological Sciences, Chemistry and Biochemistry and Biomedical Engineering. The survey consisted of 5 questions, and 60 students responded:

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine? 78% replied *Yes*.
2. What is you current major/undergraduate degree? 53% Biology; 18% Chemistry; 17% Biomedical Engineering.
3. Where are you receiving your undergraduate education? 88% FIU
4. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

a.	Curriculum	Very important 81%; Important 17%
b.	The faculty	Very important 61%; Important 33%
c.	Research programs	Very important 70%; Important 20%
d.	Opportunity to learn with medical students	Very important 48%; Important 22%
e.	Opportunities for translational research	Very important 65%; Important 22%
f.	Future employment in the biomedical field	Very important 85%; Important 11%

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another university?

a.	Miami location	Very important 46%; Important 22%
b.	Curriculum	Very important 74%; Important 22%
c.	The faculty	Very important 59%; Important 35%
d.	Research programs	Very important 69%; Important 17%
e.	Opportunity to learn with medical students	Very important 52%; Important 19%
f.	Opportunities for translational research	Very important 63%; Important 22%
g.	Future employment in the biomedical field	Very important 85%; Important 9%

The FIU Office of Planning and Institutional Research conducted a second survey to which 24 students responded. In addition, two surveys were solicited from the outside company Survey Monkey. The survey was sent out to multiple lists, both inside and outside of FIU, and 24 individuals responded in one survey and 14 in the other. The questions for all surveys were the same, as were the responses. The large majority of respondents indicated a need for a graduate program that would provide opportunities for translational research leading to employment in the biomedical field.

Analysis: There is a clear demand by undergraduate science students for a Biomedical Sciences Program in the HWCOM. They are especially attracted by opportunities for translational research and future employment in the biomedical field, which are offered only in a limited basis by other FIU departments. Thus, this program is not only needed but will complement and not compete with other units in FIU (see letters in Appendix from the deans of other FIU colleges). The Miami location is also an attraction for many students, something that more distant Florida public universities cannot offer.

C. If similar programs (either private or public) exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of any communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). Provide data that support the need for an additional program.

The proposed doctoral program, if approved, will become the first public university Biomedical Science Ph.D. program in South Florida. There are 11 universities in the Florida State System. Of these, six, Florida International University, Florida State University, University of Central Florida, University of Florida, University of South Florida and Florida Atlantic University currently have medical schools. The Coral Gables campus of the University of Miami also offers a separate Ph.D. in Biomedical Sciences. The following table lists number of graduates programs in public universities that offer doctoral degrees in the related area:

University	**Doctoral Programs**
Florida International University	*Five programs*: Biological Sciences, Chemistry, Biochemistry, Biomedical Engineering, Physics
Florida Atlantic University	*Two programs*: Complex Systems and Brain Sciences; Integrative Biology
Florida State University	*Six programs*: Biological Sciences; Biomedical Engineering; Biomedical Sciences; Biostatistics; Molecular Biophysics; Neuroscience
University of Central Florida	*Two programs*: Biomedical Sciences; Chemistry

University of Florida	*Six programs*: Anatomy and Cell Biology; Biochemistry and Molecular Biology; Molecular Genetics and Microbiology; Microbiology and Cell Science; Pathology, Immunology and Lab Medicine; Biomedical Engineering
University of South Florida	*Ten programs*: Biology; Biochemistry; Biomedical Sciences and Biotechnology; Biomedical Engineering; Biostatistics; Cancer Biology; Cell and Molecular Biology; Chemistry; Neurocommunicative Sciences; Medical Sciences with various concentrations (Anatomy; Allergy, Immunology and Infectious Disease; Biochemistry and Molecular Biology; Molecular Medicine; Molecular Pharmacology and Physiology; Cognitive and Neural Sciences; Clinical and Translational Research; Microbiology and Immunology; Neuroscience; Pharmacology and Therapeutics; Pathology and Laboratory Medicine; Pathology and Cell Biology)

We requested information about the Ph.D. programs in biomedical sciences from the University of Florida, Florida State University and the University of Central Florida. Only the latter two responded. In 2009 FSU had 58 applicants, of which 14 were Florida residents, 21 were U.S. residents, and the remainder was international students. Of those, FSU accepted 9 (7 Florida residents), and 7 (6 Florida residents) matriculated (12% of applicants). During the period 2001- 2009, UCF had 250 applicants (an average of 31 per year), of which 155 were Florida residents, 66 U.S. residents and 184 international students. UCF accepted 126 (89 Florida residents), and 75 matriculated (66 Florida residents) – an average of 9 students per year (30% of applicants). We assume that the University of Florida statistics would be similar. Clearly there is need for additional capacity in the training of biomedical scientists in the State of Florida.

D. Use Table 1 (A for undergraduate and B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 40 credit hours per year and graduate FTE will be calculated as 32 credit hours per year. Describe the rationale underlying enrollment projections. If, initially, students within the institution are expected to change majors to enroll in the proposed program, describe the shifts from disciplines that will likely occur.

The program will begin with five students, will have 25 students in the 5th year. The program may become larger in the future with growth of the number of participating faculty and availability of funding, e.g., an NIH training grant by the 6th year.

E. Indicate what steps will be taken to achieve a diverse student body in this program, and identify any minority groups that will be favorably or unfavorably impacted. <u>The university's Equal Opportunity Officer should read this section and then sign and date in the area below.</u>

Highly qualified students, both domestic and international, will be recruited into the program. A Graduate Recruiting Committee will be established consisting of five faculty member, one elected from each basic science department. The committee members will serve a five-year term. To allow for continuity of the committee, after the first year, four members will be reappointed, and one new member appointed each subsequent year. Active recruiting initiatives will include:

- Members of the committee will operate a table at the FIU Fall Graduate Open House.
- Members of the committee will visit local colleges/universities. They will offer to present a seminar and request to be allowed to discuss the HWCOM graduate program with interested students. Expenses for these visits will be paid by the HWCOM.
- Student advisors and faculty from local universities will be invited to visit FIU HWCOM to be informed about the graduate program.
- A Graduate Program web page has been added to the FIU COM web site, with content to be added. This site will contain information about the COM graduate program, its faculty and resources, as well as links to the UGS and application material.
- Information about the graduate program and application material will be mailed or emailed to graduate advisors/faculty at local colleges and universities, as well as nationally and internationally.
- The committee will arrange for an interview with applicants who meet all requirements. Whenever possible the on-site interviews will be conducted. Telephone or Skype interviews will also be used.
- A summer research program for 4 to 6 local undergraduates in their sophomore or junior years. Each student will be given a stipend of $4000, half of which will be provided by COM and the other half from faculty grants. Faculty members are limited to two summer students. The program will be advertised by mailing/emailing brochures and application material to local universities. Qualified local applicants will be invited for interviews.
- Special attention will be devoted to assure the diversity of the student body. The Basic Biomedical Sciences Program will work with The FIU Minority Biomedical Research Support (MBRS) Office to provide the opportunities to minority students including MBRS RISE, MBRS SCORE and MARC U-STAR and McNair Programs. The FIU MORE Program will be used by participating faculty to secure funding for minority students.
- Students from historically black colleges and universities in the US http://www.univsource.com/hbcu.htm will be actively recruited. For example, in Miami is Florida Memorial University http://www.fmuniv.edu/, and in Daytona is Bethune-Cookman University http://www.cookman.edu/. The committee will visit those universities for recruiting trips. Faculty members from science departments will be invited to HWCOM, as will students in their biology and chemistry clubs.
- For many years FIU has been a leader in educating Hispanic students. The creation of biomedical science Ph.D. program in South Florida would provide the opportunity for minority doctorial students.

(signed statement in Appendix)

_____ _____

Shirlyon McWhorter, Director — Date
Equal Opportunity Programs and Diversity

III. Budget

A. Use Table 2 to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the

proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

First year students will participate in existing medical student courses which requires minimal additional effort on the part of existing faculty. This is reflected by E&G faculty salary and benefit costs of $73,666 and an E&G total program cost of $261,187 (Table 2). By the 5th year, E&G faculty salary and benefit costs will be $397,865 and an E&G total program cost of $934,881. A portion of these faculty costs in all years will be supported through contract and grants for the proportion of time the students are partnered with the faculty on their research projects.

In the 1st year, 10% of an A&P staff, for administrative assistance, and 10% of an USPS person, clerical assistance will be required to support the program. In subsequent years, this effort will increase by 10% per year to a rate of 50% for each in the 5th year (along with an annual increase of 1.5%).

For student expenses, the HWCOM is assuming that for the 1st year, five students will receive a stipend from the UGS as Graduate Teaching Assistants (GTA) (2012-13 estimate from UGS is $22,665 based on a 1.5% annual increase) and in-state graduate school tuition (2012-13 estimate from UGS at $9,833 based on a 15% annual increase). In the 2nd year, five returning students will receive stipends from the HWCOM as Graduate Research Assistants (GRA) and in-state tuition. In the 3rd year, returning students will be funded for both stipend and tuition from extramural research grants.

GTAs will support the COM faculty as follows:

a. Perform literature search and summarize the specific research topics.
b. Assist teaching faculty with technical aspects of PowerPoint and other presentations for lectures and seminars;
c. Assist faculty with other logistical and organizational matters.

Each GTA will work closely with one or more of the faculty members to help in preparation, presentation and discussion of the teaching material. HWCOM courses have small group discussion sections, where medical students discuss clinical or basic science topics that are often not covered in depth during the lectures. Preliminary research of these topics for faculty review will be immensely beneficial. Since small group sessions are not included in the graduate curriculum (see Supplementary Table I), no GTA will be involved in direct instruction or grading of medical students, with whom they share the core courses, preventing any conflict of interest. In subsequent years two factors will impact the duties of the GTA. First, the class size will increase from 80 to 120 medical students in 2012-2013. Second, the clinical faculty may have even greater need for graduate student assistance to include in their lectures new basic science topics, and, in turn, the education of the graduate students will be greatly enhanced by their assisting in the teaching of translational and clinical biosciences.

The College of Medicine considers the Ph.D. program in Biomedical Science to be one of its top priorities. The HWCOM will provide GRAs to all students in their second year, has committed to the allocation of assistantships from its OPS budget and to augment the number of faculty lines through future allocations. Requests for additional support will be considered on a case-by-case basis. Most of the courses and faculty are drawn from the existing programs, so the proposed program requires minimum additional allocation for initiation. Since the HWCOM is new, budgetary items for graduate education will be built into the budget without a need to shift funds from other programs. After the first year, the financial contribution by the HWCOM will exceed the funds requested from UGS, demonstrating the financial commitment of the HWCOM to this program.

B. If other programs will be impacted by a reallocation of resources for the proposed program, identify the program and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

There will be minimal reallocation of resources as shown in Table 3, but no new resources will be required. No undergraduate programs are involved.

C. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

- There are no related programs at FIU. The HWCOM graduate program will serve the needs of students who wish to pursue careers in the biomedical sciences such as medical school faculty, hospital laboratories, biotechnology and health services industries, as opposed to the traditional areas served by the FIU science departments. It will draw from a different pool of students and will be complementary, not competitive, with programs in other FIU colleges such as the new Biochemistry Program offered by the Department of Chemistry. The programs in FIU science departments cannot serve the needs of the medical school. The majority of existing HWCOM faculty and future recruits will have research expertise in medically-related areas not represented in other FIU departments. They are human geneticists, immunologists, neurologists, cell biologists, infectious disease and medical microbiologists, pharmacologists and physiologists, and will provide education in areas otherwise not represented at FIU. Letters of support from the College of Engineering and Computing and Robert Stempel College of Public Health and Social Work are attached.

D. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

- The HWCOM Research Office is in close contact with extramural funding agencies, both public and private, and helps and encourages faculty members to apply for funding. HWCOM is a member of BioFlorida, the voice of Florida's bioscience industry, attending meetings and giving presentations on faculty research and commercialization efforts. HWCOM is in contact with South Florida hospital systems and industries and has been establishing collaborative programs. For example, once HWCOM is allowed to establish a doctoral program in basic biomedical sciences, Mount Sinai Medical Center in Miami has expressed its intention to cooperate on establishing an MD-PhD program. In addition, all HWCOM basic science faculty members have had or currently have extramural funding from NIH and other sources, as presented in Supplemental Table 2.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Table 1, Table 2, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The proposed Ph.D. program at the FIU HWCOM will not only be essential for the development of the research capacity and the educational mission of FIU and the HWCOM, but also for the overall growth of the college and university. As mentioned above, it is in concert with FIU's strategic plan to create new degree programs to attract new students and ensure competitiveness of graduates in health fields, to enhance both the amount and visibility of health-related research and to strengthen partnerships with local and global community and governmental agencies, public entities, hospitals, and health care and social service agencies/providers. The HWCOM faculty will train biomedical scientists, preparing them for academic careers in medical research and for the flourishing biotechnology industry of the Miami-Dade region and the State of Florida. In addition, it will contribute to the training of generations of young scientists in the medical features of cell biology, pharmacology, biochemistry, cancer biology, molecular biology, human genetics, pathology, immunology, neurology, medical microbiology and infectious diseases. Thus, these FIU graduates will provide much needed trained Ph.D. biomedical scientists to supply the South Florida workforce. They will become the leaders of corporations, hospitals and research institutions state-wide and nationally. They will bring prominence to FIU and, as alumni, support the university in its future growth.

The need for a Ph.D. Program in Basic Biomedical Sciences at the HWCOM is clear. According to the U.S. Department of Labor, employment opportunities for biological scientists will continue to grow in the 2008-2018 decade by 21 percent, a rate much faster than average because of the growth of the biotechnology industry. While many opportunities exist in academia, hospital systems, biotech and pharmaceutical industries for graduates of biomedical sciences programs in the Miami area, in Florida and in the US, the lack of educational opportunities in the Miami area underscores the need for the proposed Ph.D. program. In 2009-2010 approximately 30% of applicants to doctoral programs were accepted, and only 84% of the accepted students matriculated. Even recognizing that not all applicants are qualified, these data plainly demonstrate that the applicant pool is more than sufficient to justify a new graduate program. Nationally there are many more applicants for programs in biomedical sciences than are available at public universities. For example, at two U.S. medical schools that have biomedical Ph.D. programs similar to the proposed HWCOM program are the Ohio State University and the University of New Mexico. Between 2002 and 2009, only 18-23% of the several thousand applicants matriculated. These data suggest that there are approximately five times as many potential students with a desire for a career in biomedical sciences than there are available places in Ph.D. graduate programs in U.S. medical schools. In addition, it will fulfill a requirement of the Liaison Committee on Medical Education (LCME), the national accrediting authority for medical schools, for medical students to have opportunities to learn in academic environments that permit interaction with students enrolled in other health professions, graduate, and professional degree programs.

To evaluate the demand for a Ph.D. Program in Basic Biomedical Sciences at the HWCOM, four surveys of undergraduates at FIU and elsewhere were conducted during the summer and fall of 2010 (the results are included in the Appendix). An internal FIU survey was carried out by the FIU Office of Planning and Institutional Research. Of the 122 respondents, the vast majority expressed a need for a graduate program that would provide opportunities for translational research leading to

employment in the biomedical field.

V. Access and Articulation – Bachelor's Degrees Only

Not applicable.

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan.

The proposed Ph.D. program is a response to one of the key strategic themes in the development of FIU's educational and research program – the Health theme. The Program is directly aligned with goals of the 5-year plan through fulfillment of its mission by imparting knowledge through excellent teaching, promoting public service, discovering new knowledge, solving health problems through research, and fostering creativity. The impetus to become a tier-one research university while retaining its urban mission has made FIU an attractive center of learning for students at the state, national and international level. The HWCOM has raised the visibility and research potential of FIU by the successful recruitment of a number of outstanding educators and biomedical scientists committed to training students to the benefit of the South Florida community. The proposed graduate program is a response to the State University Strategic Plan and Guidance of 2005. Programs in Biomedical Sciences have been identified as a goal of the SUS Strategic Plan (p. A8 - give special emphasis to biomedical sciences).

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

The HWCOM is a new and dynamic unit of FIU. HWCOM has recruited a core of basic science scientists with active research programs supported by grants from National Institutes of Health and other outside agencies (Supplemental Table 2). These research programs will provide a robust educational environment for graduate students. The proposed graduate program will provide a supply of dedicated and intellectually curious students who will become the biomedical workforce of tomorrow. The proposed program is essential to the success of the College, its research efforts and its ability to attract, recruit and retain first-rate faculty.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology (table) of activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

In 2006 the Board of Governors approved an establishment of a public College of Medicine in Miami at Florida International University under the leadership of Dean John A. Rock, M.D., who was recruited in 2007. In 2008 the college received preliminary accreditation from the Liaison Committee on Medical Education (LCME), which allowed the school to accept the first class of future doctors in the fall of 2009, and received provisional accreditation in 2011. In 2008-2009 the HWCOM recruited basic science scientists with active research programs supported by grants from National Institutes

of Health (Supplemental Table 2). The proposed Ph.D. Program in Basic Biomedical Sciences is a culmination of an effort that was initiated by a group of faculty in the Basic Sciences Department at HWCOM under the leadership of Barry P. Rosen, Ph.D., Associate Dean for Basic Research and Graduate Programs and Joe Leigh Simpson, M.D., Executive Associate Dean for Academic Affairs. The Graduate Program planning committee includes Alexander Agoulnik, Ph.D. (Feasibility Report Chair); Madhavan Nair, Ph.D.; Hiranmoy Bhattacharjee, Ph.D.; Lisa Schneper, Ph.D.; Ch Rao, Ph.D.(Curriculum Development Chair); Rita Mukhopadhyay, Ph.D.; Rene Herrera, Ph.D.; Kalai Mathee, Ph.D.; Helen Tempest, Ph.D., Jonathan Sussman, MSEE, MBA. The Curriculum Committee for graduate education is composed of Alexander Agoulnik, Ph.D., Chair, with Madhavan Nair, Ph.D. representing the Department of Immunology; Kalai Mathee, Ph.D. representing the Department of Molecular Microbiology and Infectious Diseases; Helen Tempest, Ph.D. representing the Department of Genetics, and Irina Agoulnik, Ph.D. representing the Department of Cellular Biology and Pharmacology.

Timetable:

Summer-Fall 2009	Initial planning of the proposed program
Fall-Winter 2009-2011	Development of curriculum, Assessment of need and demand survey and analysis, Preparation of the Feasibility Report
Spring 2011	Submission and approval of the Feasibility Report
Spring 2011	Submission of proposal to College Curriculum Committee
Spring 2011	Submission of proposal to University Curriculum Committee and Graduate Council
Spring 2011	Submission of the proposal to Faculty Senate
Fall 2011	Submission of proposal to the Provost and the President
Fall 2011	Submission of proposal to FIU Board of Trustees
Fall –Winter 2011/12	Submission of proposal to Florida Board of Governors
Spring 2012	Preparation for the recruitment and admission of students
Spring 2012	Students admitted to the program for the Fall 2012 term

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

- In February, 2011 the LCME reviewers emphasized the requirement for a HWCOM graduate program in HWCOM. They stressed the importance of interactions between graduate and medical students and the need research training of medical students. The LCME approved provisional accreditation for the college in July 2011. It would be supportive for accreditation if the HWCOM had a program in place for the October 2012 LCME assessment.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

The proposed curriculum at HWCOM is designed to provide a broad and interdisciplinary education in biomedical and translational sciences utilizing the expertise of HWCOM faculty, who are immunologists, neurologists, cell biologists, cancer biologists, human geneticists, pharmacologists, physiologists, biochemists, medical and infectious disease microbiologists. The students will benefit from access to this diverse faculty of well-funded biomedical scientists, and the HWCOM faculty will benefit by having bright and energetic graduate students who will provide the effort to maintain research programs and bring in new grants. The curriculum differentiates itself from other graduate programs at FIU by offering students a dedicated biomedical curriculum focusing on training researchers to conduct independent and original research in the areas of biomedical sciences. The program requirements are designed to ensure a strong record of active participation in research seminars, meetings, conferences, active lectureship, publications in peer-review journals and preparation of research proposals. The duration of the studies is expected to be 5 years. The proposed sequence of study is delineated in the attached Appendix as Supplemental Table 1. The proposed program requires 81 post-baccalaureate credits, of which at least 24 hours are dissertation research. During the first year students will attend required and elective courses, participate in seminars, conduct research laboratory rotations and select the research advisor. At the end of the first year the Dissertation Committee will be formed and the students will submit preliminary research proposal. The students should demonstrate knowledge of the subject matter, problem solving ability, critical thinking, an ability to formulate scientific hypothesis and communication skills. The students will be engaged in a clearly defined hypothesis-driven and full-time research project in the dissertation advisor's laboratory. At the end of the second year students should complete all required and elective courses. Students should pass the Qualifying Examination, submit a NIH style pre-proposal and defend it in an open seminar before Dissertation Committee. Upon completion of dissertation research, the student will submit a written dissertation, present an open lecture to the university community and orally defend the dissertation in a private meeting with the dissertation committee.

B. Describe the admission standards and graduation requirements for the program.

ADMISSION STANDARDS: The HWCOM Graduate Program adheres to the general admission procedures as outlined by the FIU University Graduate School (UGS). Completed applications will be evaluated by an Admissions Committee designated by a Program Director appointed by the Dean.

- GPA/GRE: The minimum requirement is either a 3.0 GPA (on a 4 point scale) in the last 60 credits of an accredited undergraduate degree or an earned graduate degree. However, a GPA of 3.5 in either an undergraduate or graduate degree is typically expected for favorable consideration. Applicants should take general aptitude tests of the Graduate Record Exams. A minimum GRE score at the 70th percentile (1150) is expected for acceptance to the program. Optional submission of scores from the advanced test in Biology, Chemistry, or Cell and Molecular Biology will strengthen the application. International graduate student applicants whose native language is not English are required to submit a score for the Test of English as a Foreign Language (TOEFL) or for the International English Language Testing System (IELTS). A total score of 80 on the TOEFL iBT or 6.5 overall on the IELTS is required.
- Letters of recommendation: A minimum of three letters of recommendation should be submitted from undergraduate or research sponsors. Strong unequivocal letters attesting to the applicant's educational background, motivation, analytical skills, and promise as a research scientist are important considerations.
- Statement of purpose and curriculum vitae: The application should include curriculum vitae and a statement of purpose and future goals after obtaining the Ph.D.

GRADUATION REQUIREMENTS: Students must demonstrate graduate knowledge acquisition in four incremental stages in order to be awarded a Ph.D. in Biomedical Sciences:

1. Qualifying Examination. Students will be evaluated on the successfully passing a Qualifying Examination taken during the second academic year and no later than the end of that year. The exam is designed to test the student's knowledge of biomedical research, as well as assess creativity and rationality of research design. The exam is composed of two parts:
   a. An oral portion with questions based on coursework from the two years and reading assignments in areas selected by participating faculty members.
   b. The written examination will be prepared and graded by selected faculty members.
2. Doctoral Dissertation Proposal. After completion of the Qualifying Examination student must prepare a formal research proposal of the Ph.D. studies in the style of an NIH R01 investigator-initiated project.
3. Dissertation Proposal Seminar based on student proposal will be presented and graded by the Dissertation Committee.

The formal admission to Ph.D. candidacy occurs when the student successfully completes required courses and passes the Qualifying Exam, prepares a formal dissertation proposal, and successfully defends the content of the proposal before his/her advisory committee. Immediately following the proposal defense, the student's dissertation committee will vote to admit the student to candidacy, to have the student resubmit the proposal within six months, or to dismiss the student from the Ph.D. program. A student can only resubmit his/her proposal once. The dissertation committee should be comprised of at least five members, at least three of whom should be HWCOM graduate program faculty and at least one member who is not a member of the HWCOM faculty and who holds a Graduate Faculty appointment.

4. The dissertation and dissertation defense. The Dissertation Advisory Committee (DAC) will approve the major goals of the research project, monitor progress of student performance and approve a target date for the dissertation defense. A prerequisite for the dissertation defense is publication or submission of peer-reviewed papers. It is expected that the student will be first or senior author on at least one of the peer-reviewed publications. The format of the dissertation should follow UGS guidelines. The dissertation defense will take place after the dissertation is submitted in a final form and approved by the DAC. Changes recommended at the time of the defense may be incorporated subsequently. The dissertation should be submitted to the DAC at least four weeks prior to the expected defense date to permit the members adequate opportunity for review. Review of the dissertation by an outside reviewer is encouraged. The defense of the dissertation is governed by the regulations established by the UGS. The dissertation defense includes a public seminar followed by defense of the dissertation to the DAC in closed session. Following the examination, the DAC evaluates the performance in the candidate's absence and votes to pass or fail the candidate. The record of the vote is recorded on FIU University Graduate School Form Defense of Dissertation Results and submitted to the University Graduate School Office.

a. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

The curriculum includes required courses fundamental for understanding biomedical and translational sciences, providing elective courses selected in consultation with the dissertation advisor and the Program Director. The program of study will require completion of required core and elective courses in the curriculum, for a total of 81 credits, as described in Supplemental Table I. Graduate students will take core medical courses side-by-side with the medical students, providing

a background in and appreciation of biomedical sciences not available in other FIU colleges.

- Laboratory research rotations

Newly matriculating students will perform research rotations in a minimum of three different faculty laboratories for four to six weeks each. Students will choose faculty laboratories with the consent of those faculty members. The purpose of the rotations is three-fold. First, each rotation period provides the student with an opportunity to evaluate the faculty member and laboratory. Second, the rotation provides the faculty member with an opportunity to evaluate the student. Third, rotations in diverse laboratories expose the student to a variety of methodologies and concepts. The rotation experience will be an approved course with credit, and students will receive a pass or fail grade based on an average of the evaluations of the three participating faculty members. Before beginning a rotation, students should discuss with the faculty member the expectations of the rotation and evaluation procedures. Rotations are available only in the laboratories of funded or new faculty members. In the event that the student cannot make a decision on a major advisor after three rotations, a fourth rotation will be allowed. If a student is initially supported on a research grant rather than FIU or HWCOM funds, the student can petition for a reduction in the number of required rotations by written request to the Program Director.

- Seminars and retreats
  - Faculty research presentations: In the first term, faculty members will describe their research interests to the students in a series of short presentations. Although there is no credit for attending these presentations, it is an integral part of the training program and provides information about faculty research activities that will aid the students in selection of rotations and dissertation advisors.
  - HWCOM seminars and conferences (1 credit): Participation in and attendance at the weekly HWCOM seminars are an important part of graduate training. Student attendance is mandatory throughout their term as graduate students.
  - Student journal club and research presentations: Annually each student will give a presentation to the students and faculty. Initially students will give literature presentations, but, once they have sufficient research results, they can present their own research.
  - HWCOM retreats: Students will be encouraged to give poster presentations on their research at an annual HWCOM retreat.
  - In addition to HWCOM seminars, other colleges sponsor seminars that would be of interest and educational value to the students. They will be notified by email, on the COM web site and by printed notices of seminars within the college. The FIU web site includes notices of all seminars and other educational opportunities within the university. Since the information is already available, the students will be provided with training in how to access the information. In addition, a web site specifically for graduate students will be constructed where course information, seminars and other information will be updated daily.

b. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program. The sequence of courses is given in Supplemental Table I.

c. Provide a one- or two-sentence description of each required or elective course. A brief description of each course is provided in Supplemental Table I.

d. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and identify if any industry advisory council exists to provide input for curriculum development and student assessment.

We consulted a number of hospital systems and biotechnology companies in South Florida. These organizations have advised us that there is a serious shortage of high-level biomedical scientists, both in the Miami-Dade area and in the State of Florida (see letters in the appendix). Our program was written in response to this demonstrated need for graduates of a program that specifically educates and trains students who will fill the workforce in local industries and medical centers. The creation of this FIU HWCOM graduate program will make South Florida even more attractive as a home for future biomedical and bioscience businesses.

e. **For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.** Not applicable.

f. **For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?** Not applicable.

g. **Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or internships.**

The program will entail traditional delivery on the FIU Modesto A. Maidique Campus. All proposed required and elective courses are based in FIU HWCOM and other FIU colleges. All research activities, such as laboratory rotations, seminars, preparation of dissertation proposal and all research activities will be conducted in the research laboratories of the HWCOM. There are no specialized services or necessity to involve other universities.

c. Faculty Participation

a. **Use Table 4 to identify existing and anticipated ranked (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).**

The teaching faculty in the Ph.D. program will be comprised of HWCOM faculty and faculty members from affiliated departments with secondary appointments in HWCOM basic science departments. Table 4 lists the participating faculty in basic science departments of the College of Medicine. Secondary appointments in HWCOM basic science departments have been or soon will be granted to faculty from the College of Arts and Sciences and the College of Engineering and Computing (identified in Supplemental Table 2), and more secondary appointments will be made in the future. These faculty members will be eligible to teach in the graduate program. Faculty members eligible to serve as dissertation advisors must be tenured or on the tenure track with an

appointment (primary, joint or secondary) in a basic science HWCOM department and must receive dissertation advisor status from the UGS. Faculty members from HWCOM and other colleges with graduate faculty status from UGS but without dissertation advisor status, including non-tenure and clinical faculty, will be permitted to serve as members of the student's Dissertation Advisory Committee (DAC).

It should be noted that the student-to-faculty ratio does not take into account the mentoring contributions by faculty from other colleges with secondary appointments. In addition, HWCOM faculty were recruited primarily as researchers and have considerably more time to mentor students than do most faculty in other colleges. As a new college, HWCOM was able to recruit funded basic science faculty, which means more available student support per faculty member than in other colleges. This method will be used in future faculty recruiting.

b. Use Table 2 to display the costs and associated funding resources for existing and anticipated ranked faculty (as identified in Table 4). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

One additional HWCOM basic science faculty member will be recruited prior to initiation of the program, at which point the basic science departments will have adequate numbers of faculty to provide a curriculum developed around their strengths. The first two years of coursework is comprised of basic medical courses, a feature of this graduate program that distinguishes it from other FIU programs. This allows HWCOM graduate students and medical students to learn side-by-side, providing a distinctive educational opportunity for both. Both graduate and medical students will attend many of the same pre-clinical courses, as listed in curriculum in Supplemental Table 1. Since the basic medical sciences courses are already being offered to the medical class, additional faculty will be added only as the medical class size increases. In addition to the substantial cadre of non-tenure track educators, HWCOM is recruiting seven more teaching faculty in 2011, so the teaching staff will be adequate for both medical and graduate courses at the initiation of the program. Some of these new faculty members will have appointments in basic science departments and an opportunity to participate in the graduate program. The HWCOM will generate a list of course offerings one year in advance. Teaching assignments to core and courtesy faculty members will be made by the chair of the appropriate HWCOM basic science department in consultation with the faculty and Program Director. The core courses in the HWCOM medical curriculum are already in place. **The planned expansion of the HWCOM and basic science departments will be an attraction to the recruitment of new research-active and funded faculty who will participate in the program as major advisors and DAC members.** The projected growth of the HWCOM faculty is shown in Table 4.

c. Provide the number of master's theses and/or doctoral dissertations directed, and the number and type of professional publications for each existing faculty member (do not include information for visiting or adjunct faculty).

Faculty Name	Theses	Dissertations	Professional Publications
Acuna, Juan	21	2	58
Agoulnik, Alexander	3	1	96
Agoulnik, Irina	0	0	32
Herrera, Rene	40	12	150
Mathee, Kalai	10	3	61
Mukhopadhyay, Rita	0	1	46
Nair, Madhavan	14	8	130
Rosen, Barry	3	20	281

Simpson, Joe Leigh	0	2	740
Tempest, Helen	0	0	25

d. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.

As the HWCOM is a new academic unit, there are limited data available for teaching activities. The research funding and productivity is shown in Supplemental Table 2.

d. Non-Faculty Resources

a. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved for all doctoral level proposals.

Medical Library – Herbert Wertheim College of Medicine

The Medical Library opened in July, 2009. Its purpose is to support the programs of the Herbert Wertheim College of Medicine with a primary objective of providing collections and services for the developing medical curriculum. It has 4.0 FTE professional librarians and 5.5 FTE support staff and student assistants. It is located on the third floor of the Green Library on the Modesto Madique Campus.

- *Books.* The Medical Library acquires one print copy of all curriculum-required textbooks. The library also acquires one copy of any recommended textbook that is not available electronically.. A nationally recognized 'core list' of books for medical libraries is used as a foundation tool to ensure broad subject coverage (Doody's Core Titles[1]). Each year, the Medical Library acquires new and updated editions to this core titles list. Beyond the core, medical librarians supplement the collection with additional titles to provide depth (e.g., *Thieme* online anatomy atlases). As of November 2010, the Medical Library held 1,025 books, including 532 in print and 493 electronic.
- *Journals.* To build a foundation journal collection, the Medical Library has ensured access to the top 500 medical journals. This target was comprised of the unique titles between the Abridged Index Medicus list, which represents the foremost medical journals in English in the PubMed database, and core journals for the post-print medical library as analyzed and reported in the literature by Shearer.[2] Of the top 500 titles, 404 were already available through the subscription programs of either the University Libraries or the Florida Center for Library Automation (FCLA). The Medical Library acquired the remaining 96. An additional 110 journals were acquired based on requests from faculty members, interlibrary loan request analyses, or by

1 "Doody's Core Titles" is the nationally recognized successor to the "Brandon-Hill selected list of print books and journals for the small medical library." URL: http://www.doody.com/dct/

2 Shearer BS, Nagy SP. Developing an academic medical library core journal collection in the (almost) post-print era: the Florida State University College of Medicine Medical Library experience. *JMLA* 2003;91:292-302.

their inclusion in vendor package. The combined subscriptions of the Medical Library, the University Libraries and FCLA, provide access to over 4,000 electronic journals in the biomedical and health sciences.

- *Databases.* Databases were selected for their coverage of medical knowledge resources and their provision of clinical tools commonly used by medical students. Further criteria included accessibility from both on and off campus locations, the vendor's reputation, and platform functionality and stability. The Medical Library subscribes to 16 medical databases. Besides these, access is available to an additional 83 biomedical/health science databases through the University Libraries and the FCLA. The list includes important databases such as *The Cochrane Library* and *PsychInfo*.
- *Self-instructional materials.* Library self-instructional materials are available electronically. They cover a broad array of information management skills on medical topics. They include tutorials on searching medical literature databases, finding and evaluating evidence-based medicine resources, copyright applications, and how to use clinical databases.

(signature provided in Appendix)

David W. Boilard, AMLS, MPH
Founding Director of the College of Medicine Library Date

b. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 3.

Required journals will be added when necessary. No other additional library resources will be needed to implement or sustain the program.

c. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

The HWCOM has two lecture rooms, one of which holds 85 students and the other 135 students in which graduate students and medical students will take the core courses side-by-side. A third lecture room for 140 students will be available in 2013, when the new Science Classroom Complex is completed. The Ph.D. program is based on the research studies conducted by students in the laboratories of academic advisors. All advisors are required to have active extramurally funded research programs. The participating faculty members in the basic science departments of the HWCOM and the other colleges all have fully furnished laboratories that contain all the basic equipment necessary to carry out biochemical and molecular cell biology research.

d. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2. Do not include costs for new construction because that information should be provided in response to X (J) below.

No additional classroom or teaching laboratories will be required. New faculty will be allocated

adequate office and laboratory space. Each current core faculty member has excellent laboratory space with room for several students each. There is ample laboratory space in AHC3 to accommodate projected new faculty hires in years 1 and 2. In year 2 the new Science/Classroom building will be completed, providing laboratory and office space for faculty recruits through year 5.

e. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

Each participating faculty member has a well-equipped laboratory. FIU HWCOM has a number of core research facilities that will be available for students. In addition, major equipment and core facilities are also available in the School of Computing and Information Sciences and the Department of Biomedical Engineering in the College of Engineering and Computing.

(1) **FIU HERBERT WERTHEIM COLLEGE OF MEDICINE FACILITIES**

- Histology laboratory for both paraformaldehyde-fixed and frozen tissue acquisition, processing and section preparation facility. Immunohistochemistry services will be provided for both animal and patient clinical samples.
- Microscopy room with an epifluorescence microscope to augment the FIU confocal facility.
- A transgenic core that can provide assistance in the design and production of genetically modified mice. This core will provide consultation and services to the FIU research community. After completion of the animal facility in the new Science Classroom Complex, this core will perform pronuclear microinjections, embryonic stem (ES) cell gene targeting, and targeted ES cell microinjections to produce transgenic and knockout mice.
- Cell Culture Facility will provide investigators with a diverse array of pathogen-free cell lines.
- HPLC-ICP-MS facility for trace metal analysis.
- Structural Proteomics Crystallization Facility for training students and other personnel in the art of crystallizing proteins for X-ray crystallography and structure determination.

(2) **FIU COLLEGE OF ENGINEERING AND COMPUTING FACILITIES**

- Bioinformatics Research Group
- Biosensors Center
- Center for Advanced Distributed System Engineering
- CREST Center of Emerging Technologies for Advanced Information Processing and High-Confidence Systems
- Distributed Multimedia Information Systems Laboratory
- High Performance Database Research Center
- Nanomaterials Center

(3) **FIU COLLEGE OF ARTS AND SCIENCES**

- Imaging Facility including confocal and atomic force microscopes, micro-PET/CT, fluorescence imaging, and proteomics/mass spectrometry
- Electron microscopy facility
- Small animal facility
- NMR facility
- DNA sequencing facility

f. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2. Not applicable**.**

g. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2. Not applicable.

h. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2.

The HWCOM has received generous funding from various sectors of the society. The first year support to cover the tuition and stipends will be provided by FIU University Graduate School in the form of five Graduate Teaching Assistantships per year. The second year will be provided for Graduate Research Assistantships by HWCOM funds. It is anticipated that core faculty members will have adequate grant support for stipends, fees and tuition for supported graduate students in the remaining years of studies. HWCOM faculty members who will participate in this program are funded through extramural agencies (NIH, DoD, HRSA, EPA, private foundations, etc.) that may provide graduate student support starting in their third year. A list of current faculty grants is provided in the Appendix as Supplemental Table 2. New faculty recruited in subsequent years will be expected to have or obtain extramural grants that can support students. After the fifth year of this program, it is anticipated that training grants will be submitted based on a successful track record of this curriculum. In addition, as this program evolves, collaborative partnerships will be created with local biomedical companies, institutes and hospital systems, who anticipate collaborating with our faculty and employing our graduates (see letters of support included in the Appendix). These organizations may also consider funding opportunities for research projects as well as training students as interns, research associates and eventually employing them. Thus the HWCOM Graduate Program will provide highly trained biomedical Ph.D. scientists to the South Florida workforce.

i. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5. Not applicable**.**

j. **If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.** Not applicable.

Appendix

- Required Tables 1-4
- Signed Diversity Statement
- Signed Library Assessment
- Supplemental Table 1. List of courses
- Supplemental Table 2. Extramural grant support in the HWCOM
- Assessment of Technology Capacity
- External Reviewer's Report
- Letters of support from Florida State University System institutions
    - Garnett Stokes, Ph.D., Provost and Executive Vice President for Academic Affairs, Florida State University
    - Ralph Wilcox, Ph.D., Provost and Executive Vice President, University of South Florida
    - Joseph Glover, Ph.D., Provost and Senior Vice President for Academic Affairs, University of Florida
    - Tony Waldrop, Ph.D., Provost and Vice President for Academic Affairs, University of Central Florida
- Letters of support from FIU colleges
    - Michele Ciccazzo, Ph.D., R.D., Interim Dean, Robert Stempel College of Public Health and Social Work
    - Kenneth Furton, Ph.D., Dean, College of Arts and Sciences
    - Amir Mirmiran, Ph.D., P.E., FASCE, FACI, Dean, College of Engineering and Computing
- Letters of support from South Florida biomedical organizations
    - Raul Herrera, M.D., Chief Research Officer, Miami Children's Hospital
    - Joseph D. Rosenblatt, M.D., Interim Director, Sylvester Comprehensive Cancer Center
    - Robert C. Goldszer, M.D., Senior Vice President and Chief Medical Officer of Mount Sinai Medical Center
    - Russell Allen, President and CEO, BioFlorida
    - Jeffrey Wolf, CEO, Heat Biologics, Inc.
    - Frank. R. Nero, President and CEO of the Beacon Council
    - Yamilet Ceballo, Director of College Relations, Beckman Coulter
- Supporting Information/Surveys of Need and Demand
- *Curriculum vitae* of participating faculty

TABLE 1-B
PROJECTED HEADCOUNT FROM POTENTIAL SOURCES
(Graduate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/industries in your service area (e.g., older returning students)	0	0	0	0	0	0	0	0	0	0
Students who transfer from other graduate programs within the university**	0	0	0	0	0	0	0	0	0	0
Individuals who have recently graduated from preceding degree programs at this university	2	1.5	3	2.25	4	3	6	4.5	8	6
Individuals who graduated from preceding degree programs at other Florida public universities	0	0	1	0.75	2	1.5	3	2.25	4	3
Individuals who graduated from preceding degree programs at non-public Florida institutions	0	0	0	0	0	0	0	0	0	0
Additional in-state residents***	2	1.5	5	3.75	8	6	10	7.5	11	8.25
Additional out-of-state residents***	0	0	0	0	0	0	0	0	0	0
Additional foreign residents***	1	0.75	1	0.75	1	0.75	1	0.75	2	1.5
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**5**	**3.75**	**10**	**7.5**	**15**	**11.25**	**20**	**15**	**25**	**18.75**

* List projected yearly cumulative ENROLLMENTS instead of admissions
** If numbers appear in this category, they should go DOWN in later years.
*** Do not include individuals counted in any PRIOR category in a given COLUMN.
** FTHC are students takng 9 credits per term (excluding summer); PTHC are students taking about half the number of credits taken
**** Students in program take 24 credits which relate to 24/32=0.75 FTE

TABLE 2
PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1						Year 5				
	Funding Source						Funding Source				
	Reallocated Base* (E&G)	Enrollment Growth (E&G)	Other New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	**Subtotal E&G and C&G**	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	**Subtotal E&G and C&G**
Faculty Salaries and Benefits	67,665	6,001	0	0	28,214	**$101,880**	373,863	24,002		280,630	**$678,495**
A & P Salaries and Benefits	0	6,594	0	0	0	**$6,594**	0	34,984	0	0	**$34,984**
USPS Salaries and Benefits	0	4,439	0	0	0	**$4,439**	0	23,499	0	0	**$23,499**
Other Personnel Services	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Assistantships & Fellowships	0	113,325	0	0	0	**$113,325**	0	240,558	0	360,836	**$601,394**
Library	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Expenses	0	14,000	0	0	0	**$14,000**	0	66,000	0	0	**$66,000**
Operating Capital Outlay	0	0	0	0	0	**$0**	0	0	0	0	**$0**
Graduate Asst Waivers	0	49,164		0	0	**$49,164**	0	171,976		257,964	**$429,940**
Total Costs	**$67,665**	**$193,522**	**$0**	**$0**	**$28,214**	**$289,402**	**$373,863**	**$561,019**	**$0**	**$899,430**	**$1,834,312**

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "other new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions (person-years)	Year 1	Year 5
Faculty	0.45	2.85
A & P	0.1	0.5
USPS	0.1	0.5

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$261,187	$934,881
Annual Student FTE	3.75	18.75
E&G Cost per FTE	$69,650	$49,860

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
555-555 World exploration fund (example)	0	0	**$0**
COM E&G Current	26,100,000	67,665	**$26,032,335**
	0	0	**$0**
	0	0	**$0**
	0	0	**$0**
	0	0	
Totals	$26,100,000	$67,665	**$26,032,335**

TABLE 4
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Faculty Name or "New Hire" Highest Degree Held Academic Discipline or Speciality	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Juan Acuna ,M.D. Genetics	Assoc. Prof	Tenured	Fall 2012	12	1.00	0.00	0.00	12	1.00	0.20	0.20
A	Alexander I. Agoulnik, Ph.D Genetics	Professor	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Irina Agoulnik, Ph.D. Cell Biology	Assoc. Prof	Ten Track	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Rene J. Herrera, Ph.D. Genetics	Professor	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Kalai Mathee, Ph.D. Microbiology	Professor	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Rita Mukhopadhyay, Ph.D. Microbiology	Assoc. Prof	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Madhavan Nair, Ph.D. Immunology	Professor	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Barry P. Rosen, Ph.D Biochemistry	Professor	Tenured	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
A	Joe Leigh Simpson, M.D. Genetics	Professor	Tenured	Fall 2012	12	1.00	0.00	0.00	12	1.00	0.05	0.05
A	Helen Tempest, Ph.D. Genetics	Asst. Prof.	Ten Track	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
B	New Hire, Ph.D. or M.D. Infectious Disease	Open	Ten Track	Fall 2012	12	1.00	0.10	0.05	12	1.00	0.20	0.20
B	New Hire, Ph.D. or M.D. Enviromental Toxicology	Open	Ten Track	Fall 2013	0	0.00	0.00	0.00	12	1.00	0.20	0.20
B	New Hire, Ph.D. or M.D. Reproductive Biology	Open	Ten Track	Fall 2014	0	0.00	0.00	0.00	12	1.00	0.20	0.20
B	New Hire, Ph.D. or M.D. Human Genetics	Open	Ten Track	Fall 2015	0	0.00	0.00	0.00	12	1.00	0.20	0.20
B	New Hire, Ph.D. or M.D. Immunology	Open	Ten Track	Fall 2016	0	0.00	0.00	0.00	12	1.00	0.20	0.20
	Total Person-Years (PY)							**0.45**				**2.85**

Faculty Code		Source of Funding	PY Workload by Budget Classsification Year 1		Year 5
A	Exisitng faculty on a regular line	Current Education & General Revenue	0.40		2.65
B	New faculty to be hired on a vacant line	Current Education & General Revenue	0.05		0.20
C	New faculty to be hired on a new line	New Education & General Revenue	0.00		0.00
D	Existing faculty hired on contracts/grants	Contracts/Grants	0.00		0.00
E	New faculty to be hired on contracts/grants	Contracts/Grants	0.00		0.00
		Overall Totals for	**Year 1** **0.45**		**Year 5** **2.85**

A. Indicate what steps will be taken to achieve a diverse student body in this program, and identify any minority groups that will be favorably or unfavorably impacted. The university's Equal Opportunity Officer should read this section and then sign and date in the area below.

Highly qualified students, both domestic and international, will be recruited into the program. A Graduate Recruiting Committee will be established consisting of five faculty member, one elected from each basic science department. The committee members will serve a five-year term. To allow for continuity of the committee, after the first year, four members will be reappointed, and one new member appointed, and a new member appointed each subsequent year. Active recruiting initiatives will include:

- Members of the committee will operate a table at the FIU Fall Graduate Open House.
- Members of the committee will visit local colleges/universities. They will offer to present a seminar and request to be allowed to discuss the HWCOM graduate program with interested students. Expenses for these visits will be paid by the HWCOM and are included in Table 2.
- Student advisors and faculty from local universities will be invited to visit FIU HWCOM to be informed about the graduate program.
- A Graduate Program web page has been added to the FIU COM web site, with content to be added. This site will contain information about the COM graduate program, its faculty and resources, as well as links to the UGS and application material.
- Information about the graduate program and application material will be mailed or emailed to graduate advisors/faculty at local colleges and universities, as well as nationally and internationally.
- The committee will arrange for an interview with applicants who meet all requirements. Whenever possible the on-site interviews will be conducted. Telephone or Skype interviews will also be used.
- A summer research program for 4 to 6 local undergraduates in their sophomore or junior years. Each student will be given a stipend of $4000, half of which will be provided by COM and the other half from faculty grants (Supplemental Table 2). Faculty members are limited to two summer students. The program will be advertised by mailing/emailing brochures and application material to local universities. Qualified local applicants will be invited for interviews.
- Special attention will be devoted to assure the diversity of the student body. The Basic Biomedical Sciences Program will work with The FIU Minority Biomedical Research Support (MBRS) Office to provide the opportunities to minority students including MBRS RISE, MBRS SCORE and MARC U-STAR and McNair Programs. The FIU MORE Program will be used by participating faculty to secure funding for minority students.
- Students from Historically Black Colleges and Universities (HBCU) in the US http://www.univsource.com/hbcu.htm will be actively recruited. For example, in Miami is Florida Memorial University http://www.fmuniv.edu/, and in Daytona is Bethune-Cookman University. The committee will visit those universities for recruitment trips. Faculty members from science departments will be invited to HWCOM as will students in their biology and chemistry clubs.

- For many years FIU has been a leader in educating Hispanic students. The creation of biomedical science Ph.D. program in South Florida would provide the opportunity for minority doctorial students.

Shirlyon J. McWhorter, Director
Equal Opportunity Programs and Diversity

2/22/11
Date

A. Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved for all doctoral level proposals.

Medical Library – Herbert Wertheim College of Medicine

The Medical Library opened in July, 2009. Its purpose is to support the programs of the Herbert Wertheim College of Medicine with a primary objective of providing collections and services for the developing medical curriculum. It has 4.0 FTE professional librarians and 5.5 FTE support staff and student assistants. It is located on the third floor of the Green Library on the Modesto Madique Campus.

- *Books.* The Medical Library acquires one print copy of all curriculum-required textbooks. The library also acquires one copy of any recommended textbook that is not available electronically.. A nationally recognized 'core list' of books for medical libraries is used as a foundation tool to ensure broad subject coverage (Doody's Core Titles[1]). Each year, the Medical Library acquires new and updated editions to this core titles list. Beyond the core, medical librarians acquire supplements the collection with additional titles to provide depth (e.g., *Thieme* online anatomy atlases). As of November 2010, the Medical Library held 1,025 books, including 532 in print and 493 electronic.

- *Journals.* To build a foundation journal collection, the Medical Library has ensured access to the top 500 medical journals. This target was comprised of the unique titles between the Abridged Index Medicus list, which represents the foremost medical journals in English in the PubMed database, and core journals for the post-print medical library as analyzed and reported in the literature by Shearer.[2] Of the top 500 titles, 404 were already available through the subscription programs of either the University Libraries or the Florida Center for Library Automation (FCLA). The Medical Library acquired the remaining 96. An additional 110 journals were acquired based on requests from faculty members, interlibrary loan request analyses, or by their inclusion in vendor package. The combined subscriptions of the Medical Library, the University Libraries and FCLA, provide access to over 4,000 electronic journals in the biomedical and health sciences.

- *Databases.* Databases were selected for their coverage of medical knowledge resources and their provision of clinical tools commonly used by medical students. Further criteria included accessibility from both on and off campus locations, the vendor's reputation, and platform functionality and stability. The Medical Library subscribes to 16 medical databases. Besides these, access is available to an additional 83 biomedical/health science databases through the University Libraries and the FCLA. The list includes important databases such as *The Cochrane Library* and *PsychInfo*.

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[1] "Doody's Core Titles" is the nationally recognized successor to the "Brandon-Hill selected list of print books and journals for the small medical library." URL: http://www.doody.com/dct/

[2] Shearer BS, Nagy SP. Developing an academic medical library core journal collection in the (almost) post-print era: the Florida State University College of Medicine Medical Library experience. *JMLA* 2003;91:292-302.

- *Self-instructional materials.* Library self-instructional materials are available electronically. They cover a broad array of information management skills on medical topics. They include tutorials on searching medical literature databases, finding and evaluating evidence-based medicine resources, copyright applications, and how to use clinical databases.

David W. Boilard, AMLS, MPH
Founding Director of the College of Medicine Library

2/21/11
Date

Supplemental Table 1. HWCOM Curriculum. Part I: mandatory courses

Year	Semester	Ph.D. Schedule/Courses	Credits	HWCOM Courses	GS Forms
1	Fall	Genes, Cells and Molecules	4	BMS6001	
		Structure and Function	4	BMS6002	
		Microbiology, Infection and Immunology	2	BMS6300	
		Lab Rotation	1	BMS6XXX	
	Spring	Graduate Seminar	1	BMS6XXX	
		Epidemiology and Biostatistics	1	BMS6880	
		Lab Rotation	1	BMS6XXX	
		Supervised Teaching	1	BMS6XXX	
		Electives (see part II)	5		
	Summer	Formation of Committee: Appointment of Dissertation Committee: Preliminary proposal	1	BMS6XXX	D-1
		Research Credits	5	BMS6XXX	
2	Fall	Introduction to Scientific Writing	3	BMS6XXX	
		Graduate Seminar	1	BMS6XXX	
		Research Credits	6	BMS6XXX	
		Electives (see part II)	5		
	Spring	Research Credit	6	BMS6XXX	
		Graduate Seminar	1	BMS6XXX	
		Elective (Optional)			
	Summer	Elective (Optional)			
		Research Credit	6	BMS6XXX	
3	Fall	Qualifying Examination	5	BMS6XXX	
		Program for Doctoral Degree and Application for Candidacy			D-2

		Doctoral Dissertation Proposal (Formal Proposal NIH style)	3	BMS6XXX	D-3
		Dissertation Proposal Seminar	1	BMS6XXX	
		Research Credit	6	BMS7XXX	
		Dissertation Research Credits (total required: 24)	24	BMS7XXX	
Final		Dissertation Committee Report of Annual Dissertation Progress Conference			D-4
		Preliminary Approval of Dissertation and Request for Oral Defense			D-5
		Dissertation Defense Seminar	1	BMS7XXX	D-6
		Final Approval of Dissertation			D-7
		Total credits to graduate	**81**		

Course Descriptions: A unique feature of the Biomedical Sciences Graduate Program is that graduate students and medical students will sit side-by-side in the introductory basic sciences portion of the medical curriculum, as described below.

BMS6001 (Genes, Molecules and cells): This course covers fundamental principles of cell and molecular biology and human genetics and their role in clinical medicine as they relate to health and disease.

BMS6002 (Human Structure and function): This is an introduction to essential concepts of human structure and function with integration of the anatomical and physiological basis of several important clinical skills and procedures.

BMS6300 (Microbiology, Infection and Immunology): This course introduces the general principles of infections, host responses and pathogens evasive maneuvers relevant for a foundation in clinical medicine and important to human disease.

BMS6880 (Epidemiology and Biostatistics): This course introduces students to the study of biostatistics and descriptive epidemiology in order to prepare these students to give a scholarly analysis of medical and public health literature. Prerequisite: currently enrolled in the HWCOM Ph.D. program

Note: Graduate students will not attend small group discussion sessions with medical students. Instead they will utilize this time for working in the labs of faculty members or working on extra assignments given by the course directors.

BMS6XXX (Lab Rotation): 4 week rotation per lab. It will be for pass/fail. The course will be under the aegis of the graduate program director. Prerequisite: currently enrolled in the HWCOM Ph.D. program.

BMS6XXX (Supervised Teaching): Students will assist the faculty members who teach either graduate or medical students. Prerequisite: currently enrolled in HWCOM Ph.D. program.

BMS6XXX (Graduate Seminar): A weekly seminar/discussion course consisting of research presentations by students, faculty and visiting scientists in the area of biomedical sciences will form part of a recurring credit. The students have to register Fall and Spring semesters, present once per year and attend every seminar.

BMS6XXX (Formation of Committee, Proposal): This activity will be the appointment of the dissertation committee. Advisor: After a rotation by agreement between advisor and student with approval of graduate program director. Committee: Five committee members, three from HWCOM and two outside HWCOM. It is advised that one committee member should be from outside FIU. The choice of committee members is the decision of the Advisor and student. The HWCOM graduate committee can weigh in on the suitability of the outside members. Subsequently, the outside member will apply for graduate faculty status. The student submits 4-5 page proposal approved by her committee after his/her first committee meeting to the UGS.

BMS7XXX (Research Credits): Advanced research credits under supervision of advisor.

BMS6XXX (Introduction to Scientific Writing): The course will teach the principles of scientific writing, presentation and organization of scientific presentations. The students will analyze assigned papers. The students will be taught the basics of grantsmanship; they will write a NIH-style proposal.

BMS6XXX (Qualifying Examination): This will be a final exam in the spring of the second year after all the mandatory courses are completed. The overall theoretical knowledge of the student will be tested orally and written examinations. Prerequisite: currently enrolled in the HWCOM Ph.D. program and at least overall 70% score in all mandatory courses.

BMS6XXX (Doctoral Dissertation Proposal): A NIH style 12-page proposal will be submitted to the Dissertation Committee. Prerequisite: currently enrolled in the HWCOM Ph.D. program and permission of major professor.

BMS7XXX (Dissertation Proposal Seminar): The doctoral proposal will be presented by the candidate in the form of a public presentation to the Committee Members and all interested parties at FIU. Prerequisite: currently enrolled in the HWCOM Ph.D. program, completion of comprehensive examination and permission of major professor.

BMS7XXX (Dissertation Credits): Advanced research credits under the supervision of the dissertation advisor. Prerequisite: currently enrolled in the HWCOM Ph.D. program and admission to candidacy and permission of major professor.

BMS7XXX (Dissertation Defense Seminar): Presentation of doctoral defense seminar. Prerequisite: currently enrolled in the HWCOM Ph.D. program with admission to candidacy and permission of major professor and graduate committee.

Note: Exams for graduate students will be separate and given either at the end of the course or the semester.

Table 1. HWCOM Curriculum. Part II: elective courses

HWCOM		
Cellular and General Pathology	5	BMS6600
Pharmacology	3	BMS6400
Graduate Internship (1-9)	1-9	BMS7XXX

Course Descriptions

Electives from HWCOM

BMS6600 (Cellular & General Pathology): Cellular and General Pathology is designed for first year medical students as an introductory course in the study of disease emphasizing the general pathologic concepts and vocabulary.

BMS6400 (Pharmacology): This course introduces students to the basic principles of pharmacology and to the primary classes of drug therapy including the prototypic agents.

BMS7XXX (Graduate Internship): An internship in a laboratory/program outside FIU can be arranged under the supervision of host scientist and FIU faculty member. Prerequisite: currently enrolled in the HWCOM Ph.D. program with admission to candidacy and permission of major professor.

Potential Electives from Other FIU Departments (http://catalog.fiu.edu/index.php?id=769).

Prerequisites for any of the courses taken outside HWCOM: Approvals of the HWCOM Graduate Program Director, Host Department and the course instructor.

Department of Biological Sciences

MCB6935 (**Advanced Topics in Microbiology)**: An intensive study of particular microbiological topics not otherwise offered in the curriculum.

PCB6566 (Chromosome Structure and Function): Structural organization and function of the prokaryotic and eukaryotic chromosome: euchromatin/ heterochromatin, replication, repair, DNA sequence organization and changes during differentiation and development.

PCB6935 (Advanced Topics in Genetics): An intensive study of particular genetic topics not otherwise offered in the curriculum.

PCB7235 (Reproductive Immunology): Molecular and cellular interactions in early development, ontogenetics, and mother and fetus.

Department of Chemistry and Biochemistry

CHM5305 (Graduate Biological Chemistry). Structures of biological molecules; Biochemical reaction mechanisms; Enzyme kinetics; Biomolecular thermodynamics; Biomolecular spectroscopy.

CHM6382 (Advanced Biological Chemistry): In depth exploration of one or more biological chemistry areas, for example, use of multinuclear NMR in examining nuclear acids and proteins; biosynthesis of toxins, roles of porphyrins. Topics covered vary with instructor.

Department of Biomedical Engineering

BME5573 (Nanomedicine): This course was designed for the advanced undergraduate & graduate students at FIU. The course was developed and delivered for the first time in Spring 2008. The aim of the course is to acquire basic knowledge about nanomedicine in general, and about its applications in particular. Emphasis will be on the applications of nanotechnology in measurements and biosensors, therapy and diagnosis, surface biofunctionalisation, biocomponent assembly, drug design and drug deliveries, BioMEMS/NEMS, nanotoxicity, tissue engineering, medical imaging, entrepreneurship and environmental health.

BME6532 (Molecular Imaging): Production of PET and SPECT isotopes and radiopharmaceuticals, pharmacokinetics and experimental models of nuclear medicine tracer kinetics, imaging of molecular processes and function

BME6564 (Optical Imaging Biomedicine): Optical techniques for imaging the structure and function of biological tissues. Modeling of light transport in tissue (forward problem) and image reconstruction (inverse problem). The basic physics and engineering of each optical based imaging technique will be covered.

BME6565 (Quantitative Microscopy and Visualization): Practical and useful projects in optical, confocal, near field, scanning probe and other advanced microscopy and cytometry. Spatial and spectral quantitation of physiologic measures in living tissue.

BME6990/6545: (Biosensers&Nanobioelectronics): This course is meant to provide an overview of the field of Bioelectronics with a focus on the development of electrical biosensors. It covers the principles, technologies, methods and applications of biosensors and bioelectronics. After taking the course, the students are expected to understand the fundamentals of bioelectrochemistry, nanotechnology, biological recognition mechanism, principles of biosensors, and their application in medical applications.

Department of Computer Science

CGS5166 (Introduction to Bioinformatics Tools): Introduction to bioinformatics; analytical and predictive tools; practical use of tools for sequence alignments, phylogeny, visualizations, pattern discovery, gene expression analysis, and protein structure.

STA6176 (Biostatistics) Statistical analysis of data encountered in medical sciences. Analysis of count data, Kaplan-Meier survival analysis, Cox proportional hazards model, analysis of covariance, logistic regression, etc.

Supplemental Table 2: Extramural grant support in the HWCOM.

Faculty	Department	Open Grants	Award Amount	Duration	12 month annualized	Annualized Total		Peer Reviewed Articles
Joe Leigh Simpson	Genetics	C76HF14595	$235,620	7/09-6/11	$117,810			3
		W81XWH-10-1-0732	$1,401,000	9/10-9/12	$700,000	$817,810		
Barry P. Rosen	Biochemistry	R37GM055425	$5,000,000	9/10-8/15	$1,000,000	$1,000,000		9
Alexander I. Agoulnik	Genetics	R21HD059951	$404,220	2/9-12/11	$138,590			9
		R21HL093605	$178,500	8/09-6/12	$61,200			
		R03MH085705	$25,000	9/09-8/11	$12,500	$212,290		
Irina Agoulnik	Cell Biology	R21CA129265	$379,913	3/10-9/11	$182,358			3
		W81XWH-10-1-1022	$108,750	9/10-9/11	$108,750	$291,108		
Rene J. Herrera	Genetics	SC1GM083685	$1,400,095	5/08-3/12	$373,359	$373,359		12
Kalai Mathee	Microbiology	SC1AI081376	$1,376,800	8/08-7/12	$344,200			5
		M156626	$205,676	5/10-12/11	$137,117	$481,317		
Madhavan Nair	Immunology	R01MH085259	$1,687,310	7/10-2/15	$361,566			5
		R01DA021537	$1,734,382	9/06-8/12	$346,876			
		R37DA025576	$1,657,440	9/08-8/13	$331,488			
		R01DA027049	$3,300,000	8/09-5/14	$660,000	$1,699,931		
			$19,094,706			$4,875,815		46

Assessment of Technology Capacity

The Division of Information Technology provides and maintains a highly redundant and resilient network to allow users access to university resources and the Internet. The network supports 6,000 Voice over Internet Protocol (VoIP) phones, 25,000 end stations, the e-library, as well as all the student housing complexes. The Division provides detailed configuration information for connecting students' computers to the university's network. As a research university, FIU is a member of the high-speed network Internet2 and National Lambda Rail (NLR), an integration of Layer 3 Internet services that provides powerful research, financial support, and performance benefits. The Division provides a free high-speed wireless network to the university community from a variety of locations on campus, including common usage areas and all general-purpose classrooms. The wireless network allows students, faculty, and staff to gain access to the Internet without having to physically connect their computers with a network cable. The wireless capability in the classroom facilitates and enhances the faculty's use of technology in teaching.

The Division provides central resources, training, and services to support faculty, staff, and student access to technology and in the use of technology. Services are available through multiple channels including online, telephone, and in-person. The open and instructional labs provide access and support to students and faculty on specific and major computer applications. The Division provides instruction, consultation, and support in the use of multimedia equipment to faculty and students. Services include delivery of equipment to classrooms, labs and conference rooms; technical and set-up support for multimedia equipment use in classrooms and special events or presentations; short term loan of equipment for faculty and students; and project planning for multimedia equipment installations. The Division's Training Center offers training sessions and workshops that focus on the skills required to make the most effective and efficient use of computing resources and desktop applications. These courses improve the office automation skills and job performance of university personnel as well as enhance the instructional mission of the university by training the faculty in the use of technology in the classroom. The Division's Support Center provides online, telephone, and walk-in support to all faculty, staff, and students. Support to the desktop is available through the Division's Call Center. Students and faculty can either call, walk-in or send email at any time during business hours.

Proposed Ph.D. Program in Basic Biomedical Sciences in the

The Herbert Wertheim College of Medicine at

Florida International University

Consulting Report Date: August 9, 2011

Report Submitted By: Daniel A. Walz, Ph.D.

Associate Dean for Research and Graduate Programs and Professor of Physiology

Wayne State University School of Medicine

Detroit, MI 48201

Campus Visit: August 8-9, 2011

Summary: The College of Medicine proposes to establish a Ph.D. program in Basic Biomedical Sciences at Florida International University that will be multidisciplinary in nature and is designed to successfully recruit four highly qualified students per year over a five year period so that this doctoral program reaches a steady state of approximately 20-25 students. This program is designed to fulfill several critical needs of the College of Medicine including but not restricted to the essential need for the training of medical students with an exposure and functional experience in biomedical research as well as the ability to attract, sustain and retain biomedical research faculty to the College of Medicine. To fulfill these essential objectives Florida International University and its College of Medicine have promised financial assistance for each of these pre-doctoral students in the form of a combination of institutional, college and research investigator financial support for each student's tuition and stipend assistance that is offered at a regionally competitive level. The pre-doctoral students will receive their initial year of didactic education in a side-by-side relationship with the medical students to better introduce the pre-doctoral students to the basic medical sciences from a medical perspective and to promote the co-mingling of medical students with research students so that each student population can better learn with one another. The current faculty members of the College of Medicine each has an extramurally funded research program and, as such, has the capability of supporting individual students. The proposed program integrates well with offerings in the College of Arts and Sciences as well as the College of Engineering and Computing so that students from

each of these colleges can and likely will share didactic courses and research opportunities.

The proposed program is very well designed, is well aligned with the mission of the college and university, and will significantly benefit the students, residents and businesses of the greater Miami area as well as the State of Florida. **It is thus without reservation that I strongly recommend the implementation of the proposal to establish a Ph.D. program in Basic Biomedical Sciences in the College of Medicine at Florida International University.**

This report has been crafted to emphasize the strengths and weaknesses, opportunities and threats (SWOT) of this proposed program

Strengths: As with any doctoral program, the strength resides in the faculty. In this proposed program that is equally true. Having spent two full days in meeting with a spectrum of constituents who will be a part of this program I have been impressed with the uniformity of enthusiasm for the program and the understanding of how the proposed program will enhance their own programs and interests. The faculty within the College of Medicine each brings a solid background of funded research to the program and an awareness of the importance of graduate students to the vitality and vibrancy of research. The College faculty also embraced the opportunity to have students discovering science as it has an impact on the human condition in a well-controlled laboratory environment. The research faculty members have very solid records of publication in peer-reviewed journals and the proposed curriculum is designed to require students to have at least three such publications completed prior to or immediately upon completion of their training. Such students will have a substantially enhanced attractiveness to employers. Highly trained students will similarly increase the likelihood that the faculty will retain a competitive advantage for continuous extramural support of their research, thereby enhancing the economic value of Florida International University to the region and the state. This program also integrates well with the university's mission to expand its research portfolio by increasing the role of the College of Medicine to represent at least 50% of the institution's overall funded research programs. In order to achieve this level of expectation the College of Medicine must have a graduate research program in addition to its medical education program.

There are well designed plans for a new research building adjacent to the research laboratories shared with the College of Arts and Sciences and the College of Public Health and Social Work. As described throughout the program visit, recruitment offers have already been extended to several faculty candidates and new, unassigned laboratory space is already in place for these recruitments. Thus present and future

capacity exists to accommodate the placement of four doctoral students in each of the next five years.

An additional strength resides in the rich and diverse population of potential students who reside in the greater Miami area as well as throughout the State of Florida. The area is especially fortunate to have immediate access to a numerically large and highly baccalaureate-educated population of Hispanic students. Florida International University has a well-established record of providing educational opportunities to many first-generation in college students and the opportunity will now exist to attract the best of these students into biomedical research careers at Florida International University while concurrently retaining their close proximity to home and family. This is an extraordinary and unique asset to the region and state.

Weaknesses: There are but a few weaknesses in the program. Since the program has yet to receive approval not all of the didactic courses to be offered have been fully developed. This will change as additional students are recruited. A well-articulated recruitment plan is not fully developed so that prospective students throughout the state and region become aware of this program. The proposal correctly places a significant emphasis on the value of these Ph.D. students to the local economy. However, career development in the life sciences most often is extended into at least one period of post-doctoral training and the proposal is silent on this topic. It should be noted that placement of Ph.D. students into post-doctoral positions has the added value of introducing the institutions of post-doctoral placement to Florida International University and is an additional recruitment opportunity for new Ph.D. applicants to locate in the Miami and Florida area.

As the program grows and is successful the university and its colleges will need to develop a robust mechanism to inform faculty and students from all of the life science programs as to seminars and other one-time educational offerings. The students indicated that they rarely learn of seminars in other colleges unless a colleague brings it to their attention.

The proposed didactic curriculum should consider adding a requirement that every student in the proposed program must take a course in computing and informatics, an offering sometimes referred to as bioinformatics. The complexity of gene and protein expression patterns, as but one example, requires very sophisticated computation analyses. Such a course will allow the student to read and interpret the scientific literature as well as to understand the body of data that is generated within their own research studies.

The proposal will benefit from several explicit examples of existing collaborations between faculty in the College of Medicine and other colleges within the university.

Opportunities: The greatest opportunity in this proposal lies in the ability to create a new and unique doctoral research program that transcends traditional departments and encompasses open-ended and highly adaptable research training for tomorrow's research investigators. Life science research is rapidly transitioning from a single investigator undertaking to one where collaboration and teams of experts come together to focus a problem that has a direct relationship to human health. This program fulfills such a need. By bringing faculty members and students of the Biomedical Engineering program with an interest in sensors together with faculty and students with expertise in computational science into a research relationship with faculty and students in the basic biomedical sciences complex problems can be better addressed and more quickly resolved by such a team.

As mentioned in the strengths section, the rich and diverse student population in the State of Florida represents an opportunity unavailable to many institutions anywhere else in the country. There are several NIH and NSF training programs that will be uniquely available to support the proposed program, especially if such applications focus on the recruitment and retention of Hispanic students into basic biomedical and bioengineering programs. Special consideration might also be given to the recruitment of female students since, among many diverse populations, females are significantly fewer in number in these programs.

The training of students seeking a combined M.D./Ph.D. degree, a high priority of the NIH, is completely dependent upon the establishment of this Ph.D. program in the basic biomedical sciences. Thus, as the college looks forward to attracting such students there first needs to be evidence of a solid and successful Ph.D. program. This proposal fulfills such a requirement.

Threats: No one has the ability to predict the future funding status of any researcher and this is particularly true in today's NIH environment. What can be stated with near-certainty is that without doctoral graduate students participating in these funded research programs such funded research is a significant risk. There is also the possibility that there will be a temporary interruption in a faculty member's funding; however the College of Medicine has provided written assurance within this proposal that every student will be financially supported throughout their training program.

Every institution faces the possibility that individual faculty members might be recruited to another institution and might also offer the opportunity for graduate students in the research-intensive phase of their training to accompany them. While this is a legitimate threat, it is balanced by the knowledge that newly recruited faculty will probably bring additional graduate students with them as they re-locate to Florida International University. The absence of a doctoral program would be a serious constraint on the recruitment of well-funded researchers who already have graduate students working and studying with them. So will it might be a threat when viewed from within, it is also an opportunity when perceived as a chance to recruit additional investigators.

Respectfully submitted,

Daniel A. Walz

August 9, 2011

FLORIDA STATE UNIVERSITY | OFFICE *of the* PROVOST

September 1, 2011

Dr. Douglas Wartzok
Florida International University
University Park
Miami, Florida 33199

Dear Doug:

I apologize for the lateness of this letter, but your request came just before I arrived at Florida State University and it has just come to my attention today.

Based on the information we have been provided, your proposal makes sense for a new medical school to develop a biomedical science research program. This program will provide the academic and research back drop for the medical school, to allow medical students to participate in basic science research as students and to have a place for their basic science faculty to grow their own careers.

I do not see any conflict and am supportive of Dean Rock's proposal. While FSU has a strong PhD program that is growing, we do not anticipate developing an MD / PhD track as described in the attachment. It is not consistent with our mission and it is not in our strategic plans.

Regards,

Garnett S. Stokes
Provost and Executive Vice President
for Academic Affairs

xc: Dorothy Minear
Richard Stevens

212 Westcott Building, Florida State University, Tallahassee, Florida 32306-1310
Telephone 850.644.1816, Fax 850.644.0172 • http://provost.fsu.edu/

USF
UNIVERSITY OF
SOUTH FLORIDA

August 30, 2011

Douglas Wartzok, PhD
Provost and Executive Vice President
Florida International University
Modesto A. Maidique Campus, PC 526
Miami, Florida 33199

Dear Provost Wartzok:

We are in receipt of the proposal for your new PhD program in Basic Biomedical Sciences through the Herbert Wertheim College of Medicine and pleased to inform you that we believe this degree program has the potential to make important contributions to the SUS and to the State of Florida.

The proposal has been shared with our Graduate School and the USF College of Medicine who report that this proposal demonstrates a quality program with a new approach to training doctoral students in the basic medical sciences through a "bench to bedside" focus. This will be effectively accomplished by training doctoral students alongside medical students and could lead to an enhanced team approach, integrating the basic and clinical sciences in terms of research and education.

We believe that this program will help meet important workforce needs of the State in terms of developing a cadre of high quality life science researchers for both academe and industry. This additional doctoral program will further strengthen the State's reputation in the medical sciences and is a valuable complement to existing doctoral programs at other state institutions. At this time we know of no conflict with the USF Ph.D. in Medical Sciences and look forward to future opportunities for collaboration.

We wish you the best of luck in your new endeavor, and if we can be of assistance, please feel free to contact me.

Sincerely,

Ralph C. Wilcox, Ph.D.
Provost and Executive Vice President

Office of the Provost and Executive Vice President
University of South Florida · 4202 East Fowler Avenue, CGS 401 · Tampa, Florida 33620-6100
(813) 974-2154 · FAX (813) 974-5093

UF UNIVERSITY of FLORIDA

Office of the Provost
and Senior Vice President

235 Tigert Hall
PO Box 113175
Gainesville FL 32611-3175
352-392-2404 Tel
352-392-8735 Fax

August 4, 2011

Douglas Wartzok, Ph.D.
Provost and Executive Vice President
Chief Operating Officer
Florida International University
Modesto A. Maidique Campus, PC 526
Miami, FL 33199

Dear Doug:

I am writing in response to your letter dated July 27, 2011 regarding FIU's proposed PhD in Basic Biomedical Sciences.

We do not see any conflict with UF graduate programs. Since we believe your program will further the state's goals to grow a STEM workforce with advanced training and to enhance an atmosphere attractive to high-tech industry, we endorse the creation of this new doctoral program.

Sincerely yours,

Joseph Glover
Provost

xc: Dean Michael Good

University of Central Florida

Office of the Provost and Vice President
for Academic Affairs

August 2, 2011

Dr. Douglas Wartzok
Provost and Executive Vice President
Florida International University
Office of the Provost
University Park
Miami, FL 33199

Dear Doug:

I shared your proposal to start a Ph.D. program in Basic Biomedical Sciences at Florida International University with Dr. Deborah German, Dean of our College of Medicine, and Dr. P. E. Kolattukudy, Director of the Burnett School of Biomedical Sciences in the College of Medicine. Both of them feel the addition of this program is appropriate for the Herbert Wertheim College of Medicine and that any impact on enrollment in UCF's Ph.D. program in Biomedical Sciences would be minimal. I concur with their assessment.

Best of luck with this new program. Please do not hesitate to contact me if we can help in any way.

Regards,

Tony G. Waldrop, Ph.D.
Provost and Vice President for Academic Affairs
Professor of Biomedical Sciences

c: Vice President and Dean Deborah German
Dr. P. E. Kolattukudy

FIU | FLORIDA INTERNATIONAL UNIVERSITY

February 9, 2011

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Barry:

I am very pleased that the Herbert Wertheim College of Medicine at Florida International University is planning to create a new doctoral program in biomedical sciences. The Robert Stempel School of Public Health and Social Work strongly supports your proposal. Such a program will serve a great need in the Miami area for biomedical scientists and will complement our graduate programs in Environmental and Occupational Health, Epidemiology and Dietetics and Nutrition.

I wish your program great success.

Sincerely,

Michele Ciccazzo, PhD, RD
Interim Dean

ROBERT STEMPEL COLLEGE OF PUBLIC HEALTH AND SOCIAL WORK
OFFICE OF THE DEAN
Dietetics & Nutrition • Epidemiology & Biostatistics • Environmental & Occupational Health • Health Policy & Management
Health Promotion & Disease Prevention • School of Social Work
11200 S.W. 8 Street, HLS II 390W2, Miami, FL 33199 • Tel: 305.348.4903 • Fax: 305.348.7782 • www.fiu.edu

FIU | FLORIDA INTERNATIONAL UNIVERSITY

2 August 2011

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Studies
Herbert Wertheim College of Medicine
AHC2, 673A
Florida International University

Dear Dr. Rosen:

The College of Arts and Sciences (CAS) and the School of Integrated Science & Humanity (SISH) look forward to working with the Herbert Wertheim College of Medicine (COM) faculty to educate students enrolled in the Ph.D. in Biomedical Sciences.

The Biomedical Science Ph.D. will present opportunities to enhance the collaboration between Arts & Sciences and Medicine in research and graduate education. Faculty in the COM are collaborators in the proposed CAS Institute of Biomolecular and Biomedical Sciences (IBBS).

Core facilities of the IBBS including an Imaging Facility (Confocal microscope, atomic force microscope, near infrared fluorescence imaging, micro-PET/CT) and a Proteomics/Mass Spectrometry Facility (ultra high speed centrifuge, mass spectrometer, HPLC) will be available for students in the Biomedical Sciences Ph.D. program. Core Facilities of the Biochemistry doctoral program that will be shared with the Biomedical Sciences Ph.D. program include Electron Microscope facilities (one in Biological Sciences and one in Earth Sciences); a DNA Sequencing facility: a Small Animal facility (Biological Sciences);and an NMR facility (Chemistry).

We look forward to working with the College of Medicine's proposed Biomedical Sciences Ph.D. program to our mutual benefit regarding doctoral student production and research collaboration.

Sincerely,

Kenneth G. Furton, Ph.D.
Dean

Suzanna Rose

Suzanna Rose, Ph.D.
Director, SISH

Office of the Dean
College of Arts and Sciences
11200 S.W. 8th Street, ECS 450 • Miami, FL 33199 • Tel: (305) 348-2864 • Fax: (305) 348-4172
Florida International University is an Equal Opportunity Employer and Institution - TDD via FRS 1-800-955-8771

FIU | FLORIDA INTERNATIONAL UNIVERSITY

February 17, 2011

Barry P. Rosen, PhD
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Barry,

I am very pleased that the Herbert Wertheim College of Medicine at Florida International University is planning to establish a new doctoral program in biomedical sciences. The College of Engineering and Computing strongly supports your proposal. Such a program will serve a great need in the Miami area for biomedical scientists and will complement our program in Biomedical Engineering.

I wish your program great success, and look forward to the opportunity to work together on this and future initiatives.

Sincerely,

Amir Mirmiran, PhD, PE, FASCE, FACI
Professor and Dean

CC: Douglas Wartzok, Executive Vice President and Provost
John Rock, Founding Dean, College of Medicine, and Senior VP for Medical Affairs
Ranu Jung, Chair, Department of Biomedical Engineering

OFFICE OF THE DEAN
COLLEGE OF ENGINEERING AND COMPUTING
10555 W. Flagler Street, EC 2430 Miami, FL 33174 • Tel: 305-348-2522 • Fax: 305-348-1401 • www.eng.fiu.edu

Raul Herrera, MD
Chief Research Officer
3100 SW 62nd Ave
Miami, FL 33155
Phone: 305-663-8542
Fax: 786-268-1801

January 11, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

The Miami Children's Hospital Research Institute is pleased to support your proposal for a new graduate program in biomedical sciences at Florida International University Herbert Wertheim College of Medicine.

Your new program would be a welcome source of biomedical scientists who could contribute to our research and clinical laboratories at Miami Children's Hospital.

Over the next decade we will have considerable growth and would anticipate employment opportunities for graduates of your program. We look forward to being able to recruit these students who are already long-term residents of southern Florida and are committed to enhancing the scientific prominence of the State.

Please count on our support for the proposal.

Sincerely,

Raul Herrera MD.

Raul Herrera, M.D.
Chief Research Officer
Miami Children's Hospital

SYLVESTER COMPREHENSIVE CANCER CENTER
UNIVERSITY OF MIAMI HEALTH SYSTEM
MILLER SCHOOL OF MEDICINE
UNIVERSITY OF MIAMI

Joseph D. Rosenblatt, M.D.
Professor of Medicine, Microbiology and Immunology
William J. Harrington Chair in Hematology
Chief, Hematology-Oncology Division
Associate Director for Clinical and Translational Research, SCCC

February 15, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

I am very pleased that the Herbert Wertheim College of Medicine at Florida International University is planning to create a new doctoral program in biomedical sciences. Such a program will serve a great need in the Miami area for biomedical scientists.

The Sylvester Comprehensive Cancer Center strongly supports your new graduate program proposal.

I believe that this will become an excellent source of biomedical scientists who will contribute to the research and clinical programs in academia and clinical laboratories in South Florida. The Sylvester Cancer Center would be very interested in recruiting future graduates of your program. Over the next decade I anticipate substantial growth in the Sylvester Cancer Center. Over the next five years we anticipate filling at least 50-100 positions for research scientists with doctoral degrees. These employment opportunities would be best filled by individuals with strong ties to the Miami-Dade area such as FIU graduates.

I wish your program great success.

Sincerely yours,

Joseph D. Rosenblatt, M.D.
Interim Director, Sylvester Comprehensive Cancer Center

Division of Hematology-Oncology
1475 NW 12th Avenue (D8-4), Suite 3300 | Miami, FL 33136
Phone: (305) 243-4860 | Fax: (305) 243-9161
jrosenblatt@med.miami.edu

Mount Sinai
MEDICAL CENTER

May 14, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

I am writing this letter on behalf of Mount Sinai Medical Center to offer our enthusiastic support for the creation for a new graduate program in biomedical sciences at Florida International University Herbert Wertheim College of Medicine. Your innovative curriculum is distinctive in training research students side-by-side with medical students under the guidance of research physicians. There is a tremendous need for biomedical scientists in most regions of the U.S., especially in Florida. As you plan to recruit long-term residents of South Florida into your program, we can anticipate that many of your graduates will pursue careers in the Miami-Dade area.

At Mount Sinai our mission is to provide excellent care to our community, educate the next generation of physicians and do research to help solve problems. Our collaboration with FIU provides opportunities for us to further our academic mission. Our researchers are currently focused on cardiac, neurologic, oncology, and pulmonary disease. The collaboration with researchers of FIU and having Ph.D. students participate with our researchers should benefit our community, students, and researchers.

We believe an M.D./Ph.D. initiative will have a positive impact on the training of future physician scientists for the State of Florida. We look forward to working with you and meeting the increased demand for biomedical and physician scientists.

Sincerely yours,

Robert C. Goldszer, MD, MBA
Senior VP, Chief Medical Officer
Mount Sinai Medical Center

BIOFLORIDA

Advancing Bioscience in Florida

January 26, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

BioFlorida is very excited that the Florida International University Herbert Wertheim College of Medicine is in the process of establishing a new doctoral program in biomedical sciences. We believe that this program should satisfy an important requirement for biomedical and life science companies not only in the South Florida area but for the state as a whole.

As the statewide trade association for the bioscience industry, BioFlorida was formed to advance Florida's life sciences cluster, and represents approximately 230 member companies, institutes and supporting organizations in the state of Florida.

We are confident that further expansion of this industry is forthcoming and these companies will be looking for qualified senior researchers and scientists such as will be coming from this program. We can also anticipate that with the growth of the FIU program, companies will find Florida even more attractive as a home for future bioscience research.

Again, we welcome the Herbert Wertheim College of Medicine biomedical science PhD program into the State of Florida and look forward to your graduates in our industry.

Sincerely yours,

C. Russell Allen
President and CEO

525 Okeechobee Blvd., Suite 1500, West Palm Beach, Florida 33401
Tel: (561) 653-3839 | Fax: (561) 653-3840 | www.bioflorida.com

Heat Biologics

January 27, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

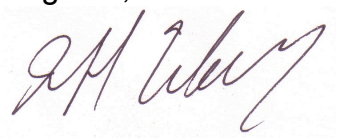
Heat Biologics is writing in support of the creation for a new graduate program in biomedical sciences at Florida International University Herbert Wertheim College of Medicine. We believe this initiative will have a large impact on sustaining the State's investment in Biomedical Technology.

This innovative curriculum will be an important source of biomedical scientists who could prosper in our research and clinical laboratories at Heat Biologics, a Miami-based biomedical spin-out from the University of Miami focused the development of immunotherapies for the treatment of a wide range of diseases..

We anticipate that over the next 5 to10 years, our business will have considerable growth and we expect employment opportunities for at least several graduates of your program. Since these students are already long-term residents of South Florida, we look forward to being able to recruit them in that they are already committed to enhancing the scientific prominence of the State.

Again, we look forward to joining with FIU on this effort and continuing our research collaborations.

Regards,



Jeffrey Wolf
CEO
Heat Biologics, Inc.

THE BEACON COUNCIL

Miami-Dade County's Official Economic Development Partnership

80 Southwest Eighth Street
Suite 2400
Miami, Florida
33130
Telephone: 305.579.1323
Facsimile: 305.375.0475
www.beacon council.com
E-mail: fnero@beacon council.com

Frank R. Nero
President & Chief Executive Officer

April 5, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

As Miami-Dade County's official economic development partnership, the Beacon Council is charged with bringing new, job-generated investments to the community, while assisting existing businesses in their efforts to expand By doing this, The Beacon Council facilitates the creation of quality jobs for each and every resident of Miami-Dade County.

Miami-Dade County is home to approximately 1,600 Life Sciences companies. These companies employ about 15,000 workers and generate more than $1.2 billion in total annual revenue. Florida International University (FIU) has been an excellent economic development partner, offering an urban, multi-campus, research university serving South Florida, the state, the nation and the international community. It fulfills its mission by imparting knowledge through excellent teaching, promoting public service, discovering new knowledge, solving problems through research, and fostering creativity.

This letter confirms our support for the proposed Ph.D. program in Biomedical Sciences at the FIU Herbert Wertheim College of Medicine. The Beacon Council is prepared to work closely with FIU in promoting this curriculum which will help attract new industry to the South Florida area as well as expanding the current workforce base. We are confident about the potential impact of this program on the local economy and on the Life Science industry in general, and we are pleased to have FIU take the initiative on such a relevant and much needed effort.

Sincerely,

Frank R. Nero
President & CEO, The Beacon Council

FRN/jd/ge

BECKMAN COULTER

April 30, 2010

Barry P. Rosen, Ph.D.
Associate Dean for Basic Research and Graduate Programs
Herbert Wertheim College of Medicine
Florida International University
11200 S.W. 8th Street, HLS 673
Miami, FL 33199

Dear Professor Rosen:

Beckman Coulter is pleased to support your proposal for a new graduate program in biomedical sciences at Florida International University Herbert Wertheim College of Medicine.

Your new program would be a welcome source of biomedical scientists who could contribute to our research and clinical laboratories at Beckman Coulter. Our current supply of local applicants is not sufficient for staffing our Florida operations, and we are very supportive of your initiative to increase and improve the pool of Ph.D. scientists that will comprise the future workforce in South Florida.

The Miami campus of Beckman Coulter develops and manufactures medical diagnostic and research products for Cellular analysis. Our portfolio comprises hematology analyzers, particle analyzers, flow cytometers and flow sorter instrumentation, along with the reagents and chemistry needed for their operation, including high volume buffers, stabilized cell controls, fluorescent beads, antibodies coupled to fluorescent dyes, and sample preparation technologies. Our equipment and reagents support many diverse fields of research and medicine, including hematology, hemostasis, immunology, cell signaling, molecular biology, biopharma, cell biology, cancer biology, stem cell biology, regenerative medicine, and cell therapy. We are actively expanding our R&D capabilities in all of these areas and recruiting talented and motivated young scientists, and supporting their education and training to become world class scientists and clinicians is very important to us.

Over the next decade we will have considerable growth and would anticipate employment opportunities for at least 20 graduates of your program. We look forward to being able to recruit students who are already long-term residents of South Florida and are committed to enhancing the scientific prominence in the local area and in the State of Florida. In addition, we believe these students would also be attracted to other company-wide job positions here locally, as well as other locations within Florida and throughout the country.

Beckman Coulter , Inc.
11800 S.W. 147th Avenue
Miami, FL 33196-2500

Mailing Address:
11800 S.W. 147th Avenue
P.O. Box 169015
Miami, FL 33116-9015

Customer Service: (800) 526-7694
Product Information: (800) 526-6932
(800) 327-6531 (305) 380-3800
Internet: www.beckmancoulter.com

BECKMAN COULTER

Again, we look forward to partnering with FIU on this endeavor and continuing our research collaborations.

Regards,

Michael R. Reed, PhD

Director, Scientific Affairs
Cellular Analysis Business Group
Beckman Coulter Inc
11800 SW 147th Ave, M/S 32-C05
PO Box 169015
Miami, FL, 33196-2500

Office: +1 305 380 4072
Mobile: +1 305 401 5008
Email: mreed@beckman.com

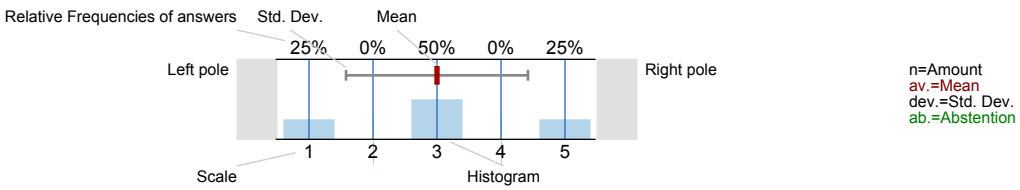
IR Survey Program Survey() No. of responses = 60

Overall indicators

Survey Results

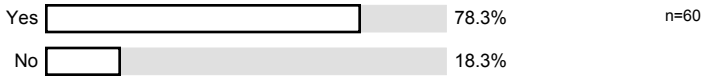
Legend

Question text



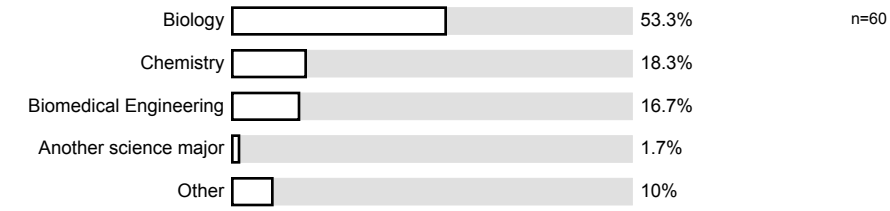
1. Please answer the following questions

1.1) 1. Would you be interested obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

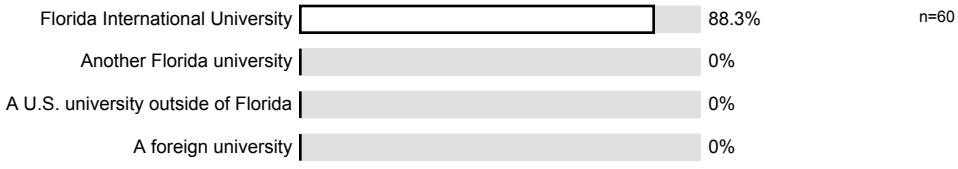


2. If you answered yes to the question above, please answer the rest of the questions.

2.1) 2. What is your current major/under graduate degree?

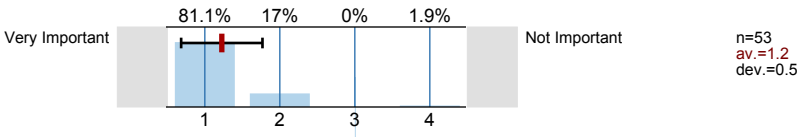


2.3) 3. Where are you receiving your undergraduate education?

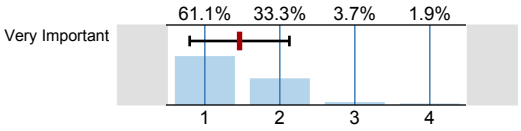


3. 4. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

3.1) Curriculum



3.2) The faculty



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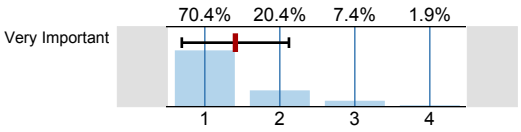
3.3) Research programs



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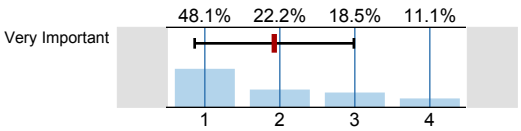
3.4) The opportunity to learn with medical students



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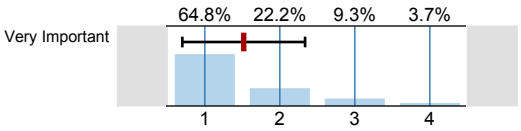
3.5) Opportunities for translational medical research



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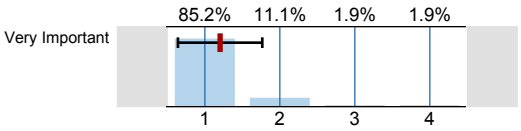
3.6) Future employment in the biomedical field



n=54
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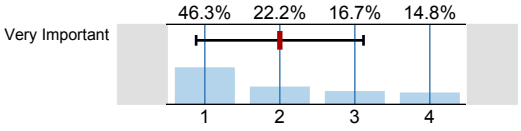
4. 5. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

4.1) Miami location



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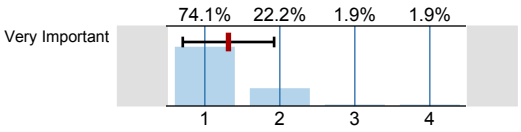
4.2) Curriculum



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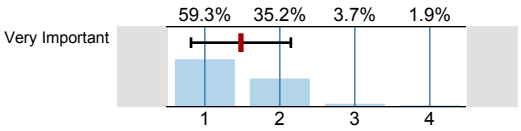
4.3) The faculty



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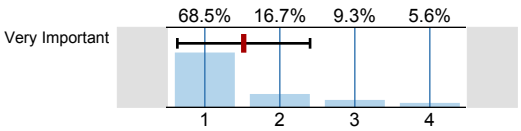
4.4) Research programs



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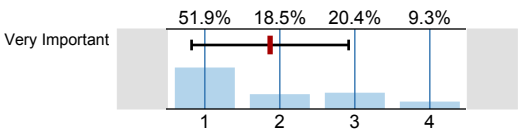
4.5) The opportunity to learn with medical students



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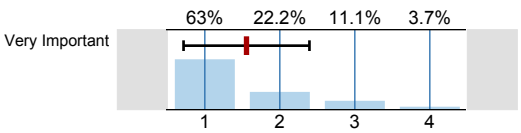
4.6) Opportunities for translational medical research



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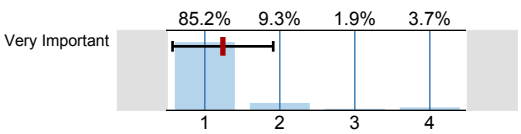
4.7) Future employment in the biomedical field



n=54
av.=1.2
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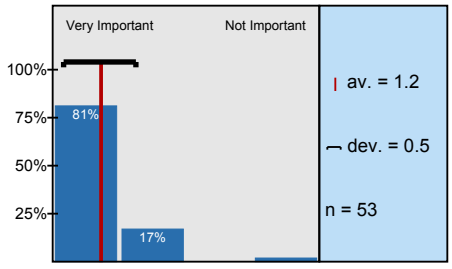
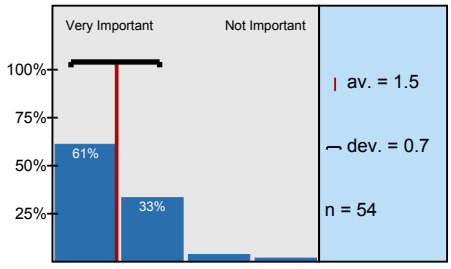
Histogram for scaled questions

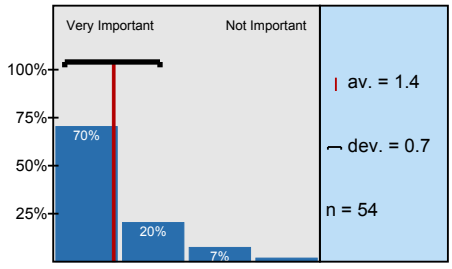
Curriculum



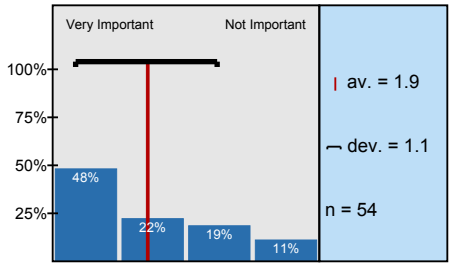
The faculty



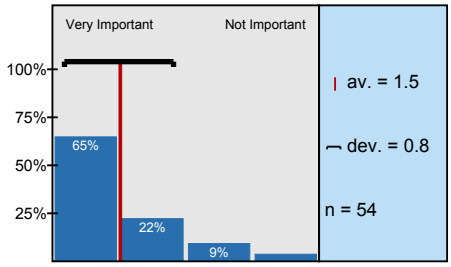
Research programs



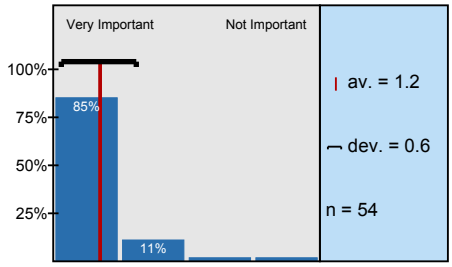
The opportunity to learn with medical students



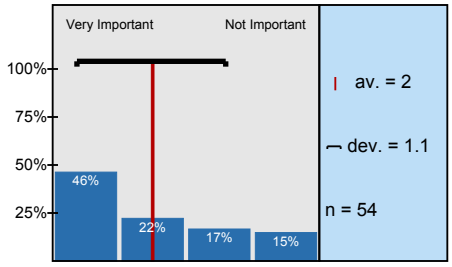
Opportunities for translational medical research



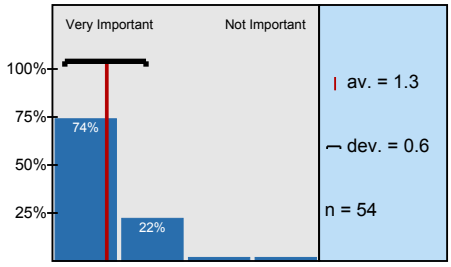
Future employment in the biomedical field



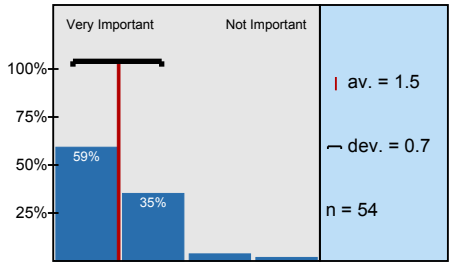
Miami location



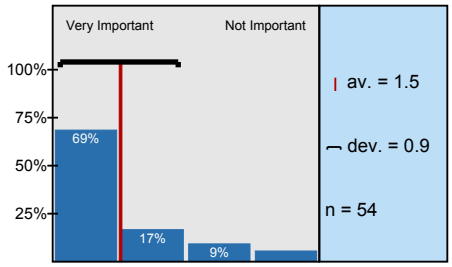
Curriculum



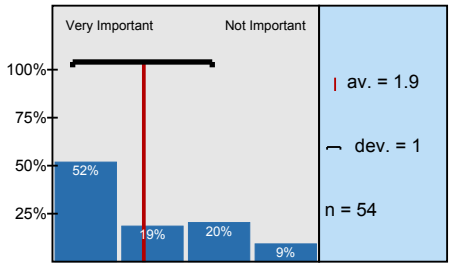
The faculty



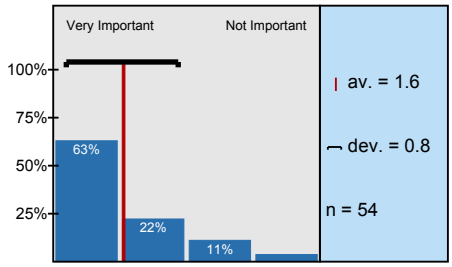
Research programs



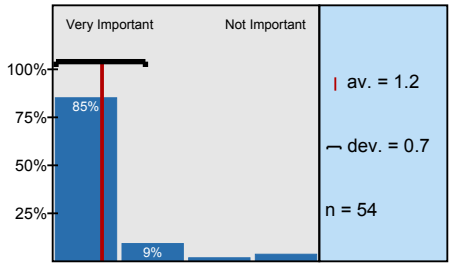
The opportunity to learn with medical students



Opportunities for translational medical research

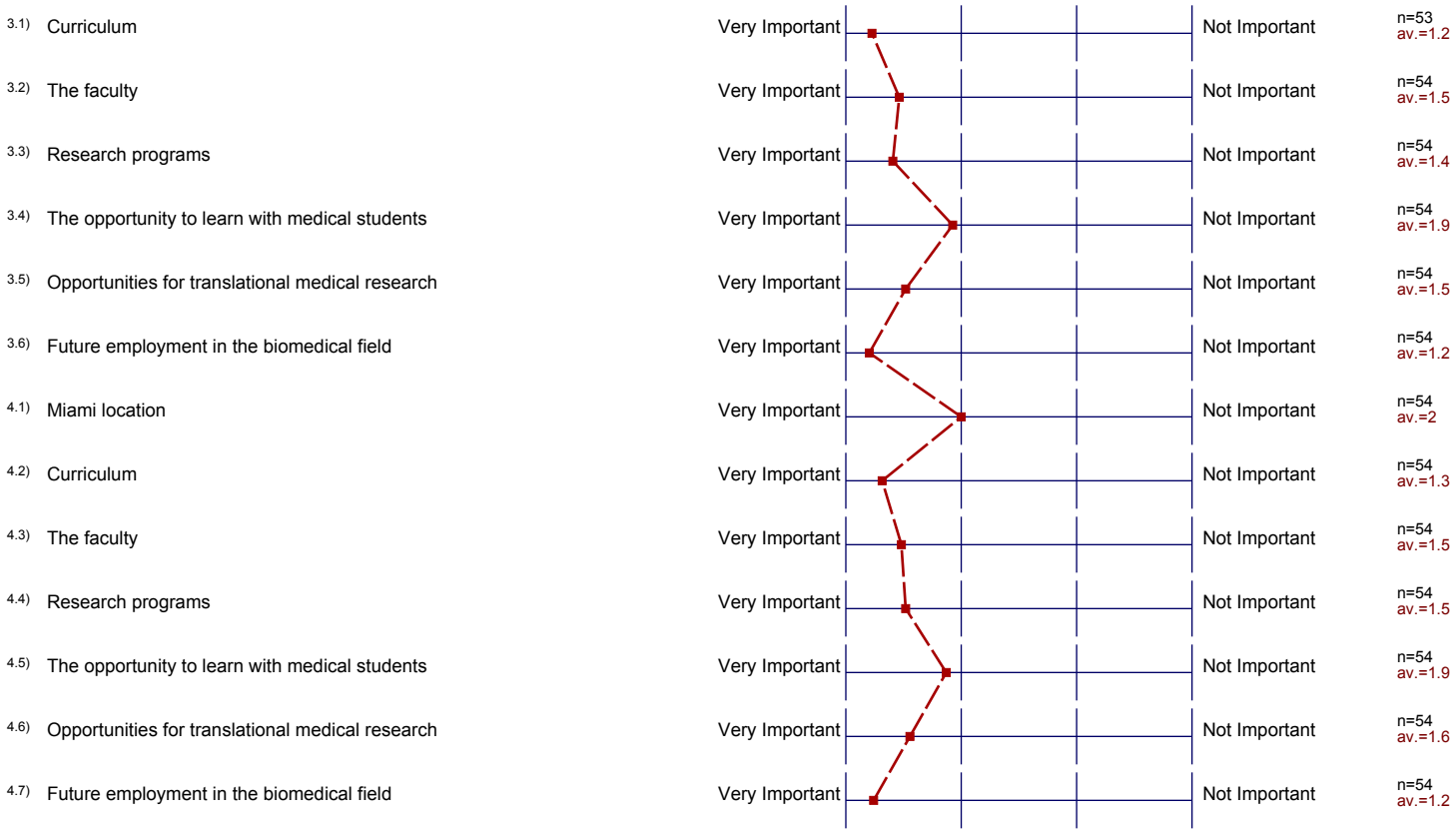


Future employment in the biomedical field



Profile

Subunit: IR Surveys
Name of the instructor: IR Survey
Name of the course: (Name of the survey) Program Survey



Presentation template

Program Survey
IR Survey
No. of responses = 60

Comments Report

2. If you answered yes to the question above, please answer the rest of the questions.

2.2) If "other" was selected, please specify:

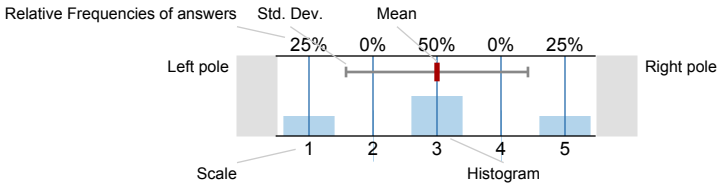
- Environmental Studies
- Health Sciences major with Chemistry minor
- Information Technology
- International Relations minor in Biology
- Psychology (2 Counts)
- test

IR Survey Program_Survey() No. of responses = 24

Survey Results

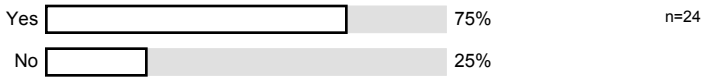
Legend

Question text

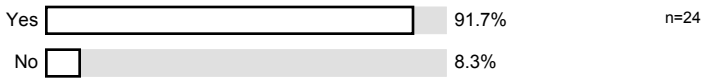


1. Please answer the following questions:

1.1) Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

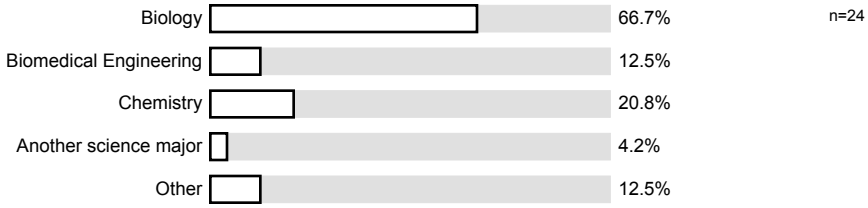


1.2) Would you be interested in obtaining a joint M.D./Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

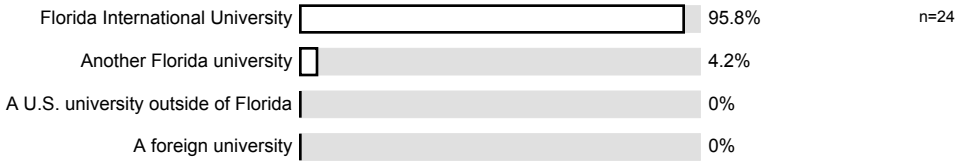


2. If you answered yes to the question above, please answer the rest of the questions:

2.1) What is your current major/undergradute degree?

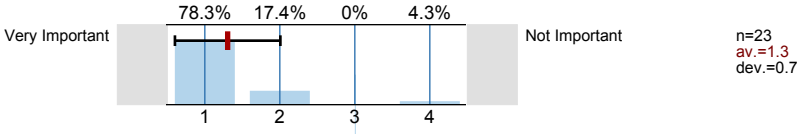


2.3) Where are you receiving your undergraduate education?

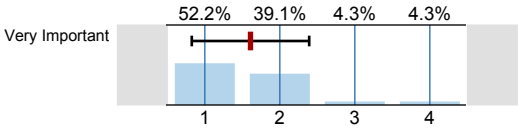


3. How important are the following factors in influencing your choice of Biomedical Sciences program in the HWCOM versus a graduate program in another FIU college?

3.1) Curriculum



3.2) The Faculty



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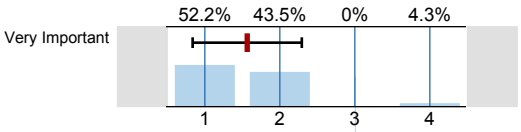
3.3) Research programs



n=23
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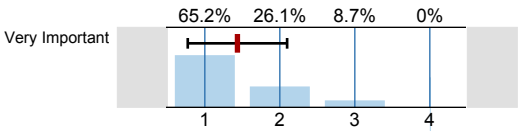
3.4) The opportunity to learn with medical students



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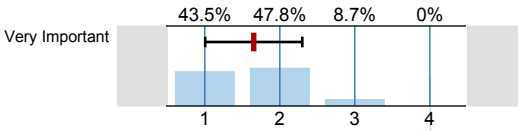
3.5) Opportunities for translational medical research



n=23
av.=1.7
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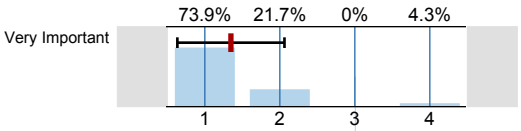
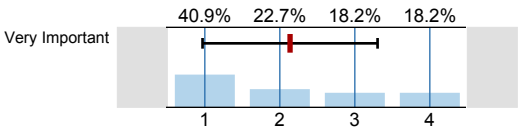
3.6) Future employment in the biomedical field



n=23
av.=1.3
dev.=0.7

4. How important are the following factors influencing your choice of the FIU HWCOM Biomedical sciences degree program versus a program at another university?

4.1) Miami location



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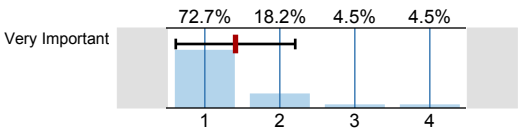
4.2) Curriculum



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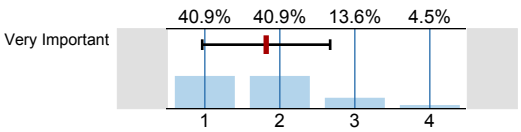
4.3) The Faculty



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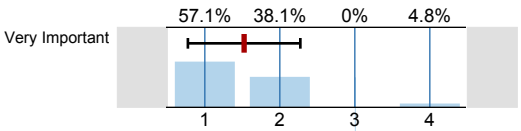
4.4) Research programs



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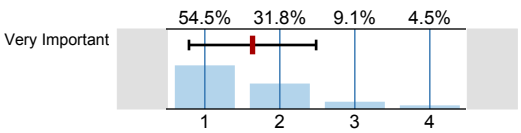
4.5) The opportunity to learn with medical students



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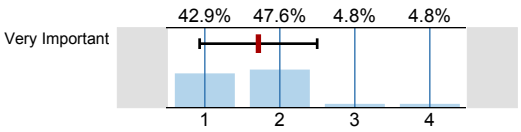
4.6) Opportunities for translational medical research



n=21
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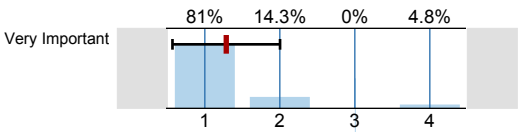
4.7) Future employment in the biomedical field



n=21
av.=1.3
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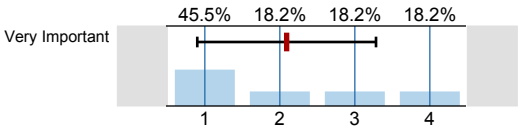
5. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

5.1) Miami location



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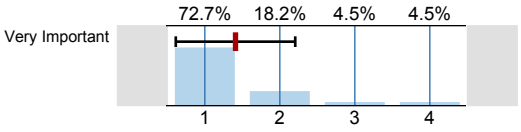
5.2) Curriculum



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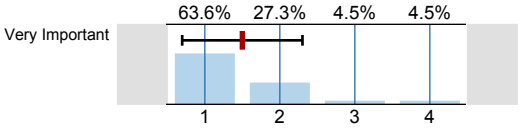
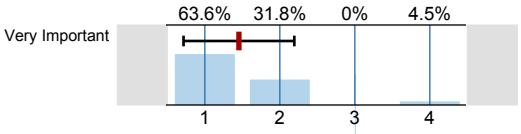
5.3) Research Programs



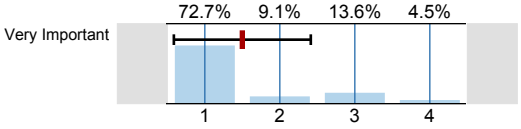
n=22
av.=1.5
dev.=0.8

5.4) Opportunities to do clinical/translational research with FIU HWCOM faculty



n=22
av.=1.5
dev.=0.7

5.5) Future employment as a physician scientist



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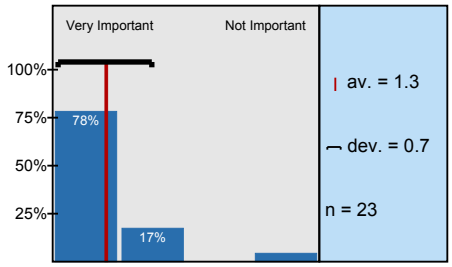
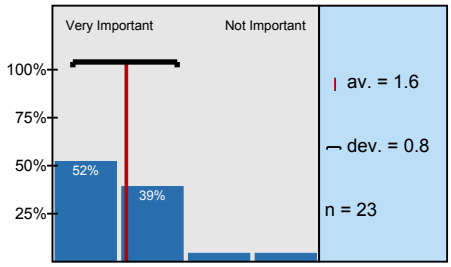
av.=1.5
dev.=0.9

Histogram for scaled questions

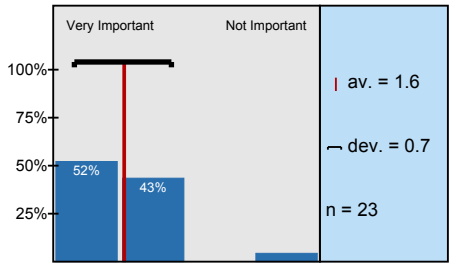
Curriculum



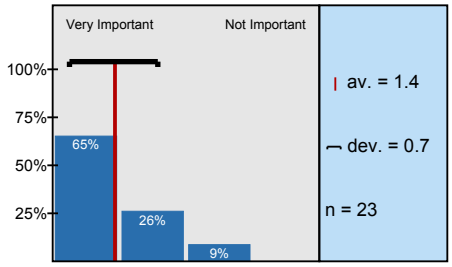
The Faculty



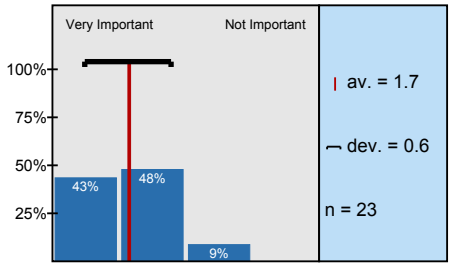
Research programs



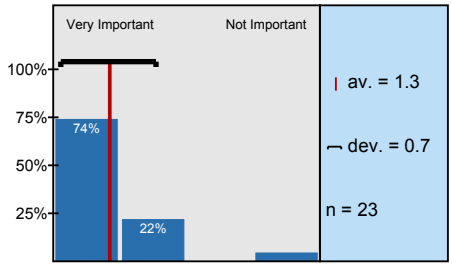
The opportunity to learn with medical students



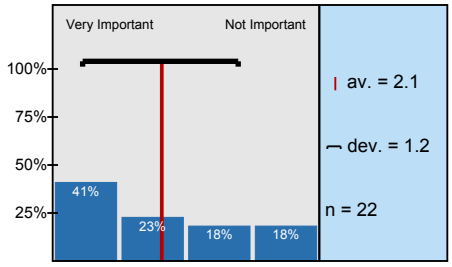
Opportunities for translational medical research



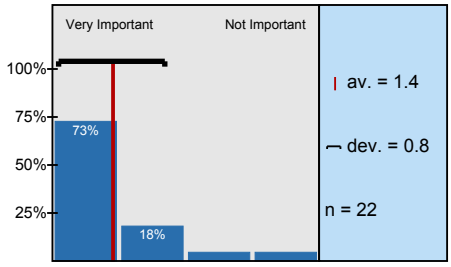
Future employment in the biomedical field



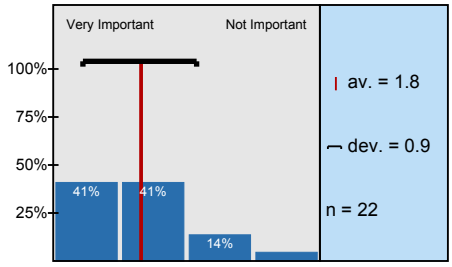
Miami location



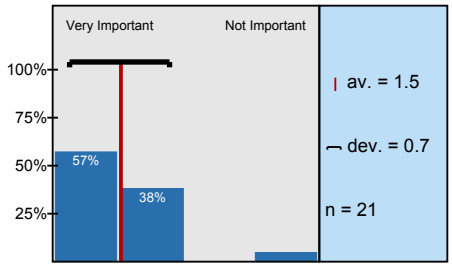
Curriculum



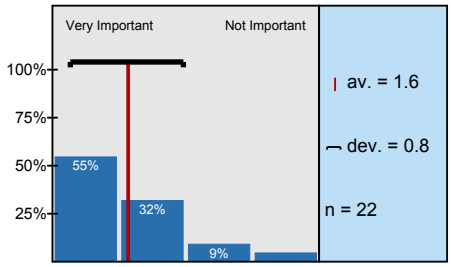
The Faculty



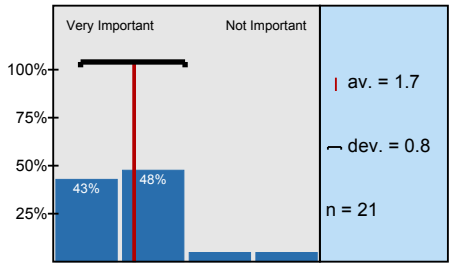
Research programs



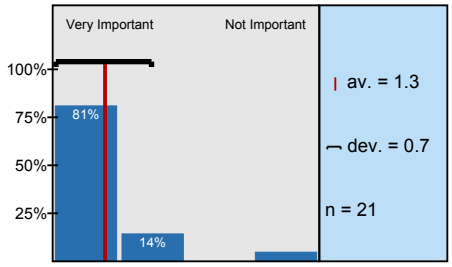
The opportunity to learn with medical students



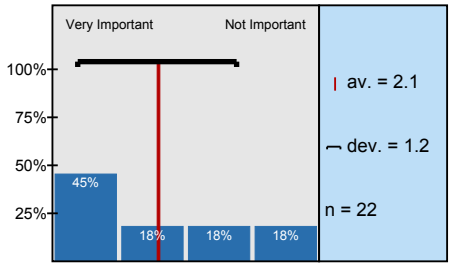
Opportunities for translational medical research



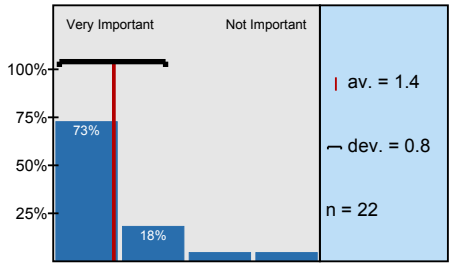
Future employment in the biomedical field



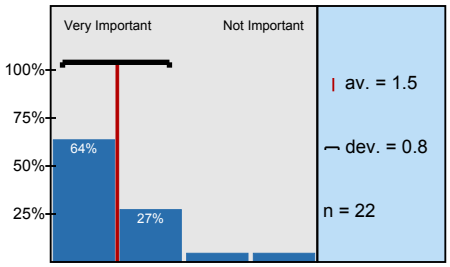
Miami location



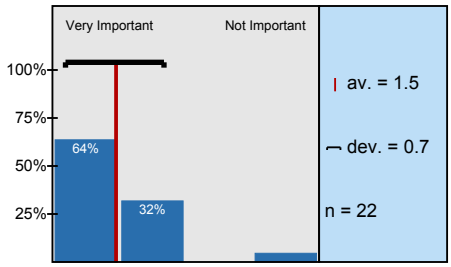
Curriculum



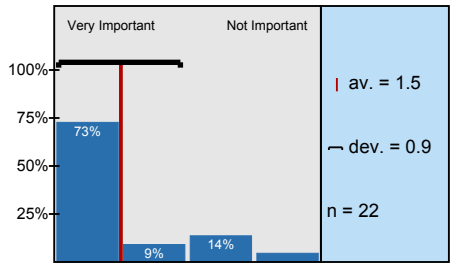
Research Programs



Opportunities to do clinical/translational research with FIU HWCOM faculty

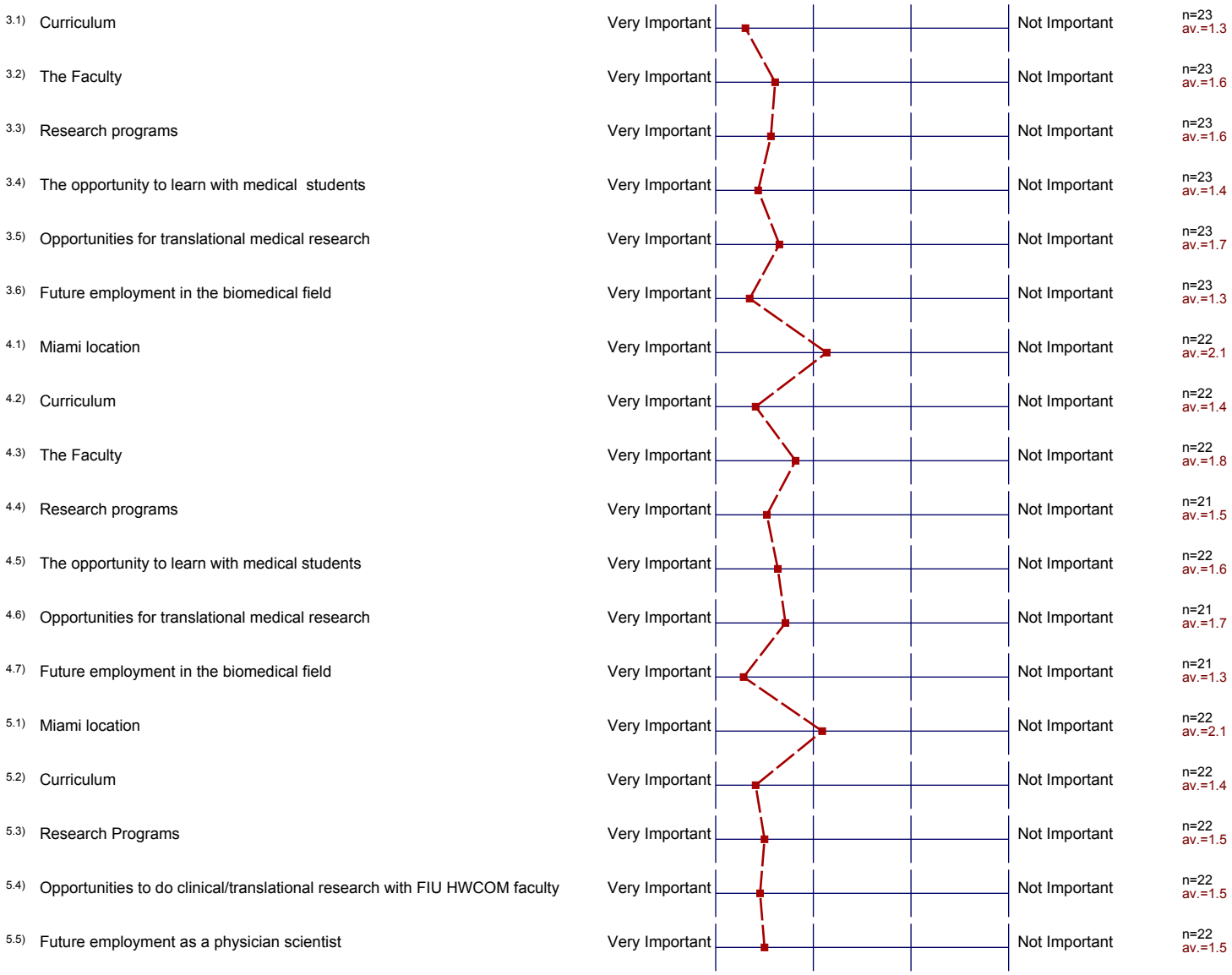


Future employment as a physician scientist



Profile

Subunit: IR Surveys
Name of the instructor: IR Survey
Name of the course: (Name of the survey) Program_Survey



Comments Report

2. If you answered yes to the question above, please answer the rest of the questions:

2.2) If 'Other" was selected, please specify:

- English, but it will probably change back to science soon.
- Pre-Med
- Psychology (2 Counts)

Default Report

Displaying **1** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.34.24

Response Started:
Wednesday, September 1, 2010 9:18:41 AM

Response Modified:
Wednesday, September 1, 2010 9:20:15 AM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

research programs

the faculty

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students		X		
Opportunities for translational medical research	X			
Future employment in the biomedical field		X		

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)

Miami location	X		
Curriculum	X		
The faculty	X		
Research programs	X		
The opportunity to learn with medical students			X
Opportunities for translational medical research		X	
Future employment in the biomedical field		X	

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **2** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.193.229

Response Started:
Wednesday, September 1, 2010 11:35:00 AM

Response Modified:
Wednesday, September 1, 2010 11:36:24 AM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

research programs

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty		X		
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		

Curriculum	X
The faculty	X
Research programs	X
The opportunity to learn with medical students	X
Opportunities for translational medical research	X
Future employment in the biomedical field	X

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **3** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.22.46

Response Started:
Wednesday, September 1, 2010 2:30:07 PM

Response Modified:
Wednesday, September 1, 2010 2:32:12 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **4** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
99.35.175.62

Response Started:
Monday, September 13, 2010 2:37:06 PM

Response Modified:
Monday, September 13, 2010 2:39:51 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
The faculty	X			
Research programs		X		
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
Research Programs		X		
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **5** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
75.74.182.57

Response Started:
Monday, September 13, 2010 3:02:51 PM

Response Modified:
Monday, September 13, 2010 3:04:43 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students		X		
Opportunities for translational medical research			X	
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **6** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.186.10

Response Started:
Monday, September 13, 2010 3:04:29 PM

Response Modified:
Monday, September 13, 2010 3:06:05 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

research programs

the faculty

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum		X		
The faculty		X		
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location				X

Curriculum		X		
The faculty		X		
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location				X
Curriculum		X		
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **7** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.186.20

Response Started:
Monday, September 13, 2010 3:09:05 PM

Response Modified:
Monday, September 13, 2010 3:15:16 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

No

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

research programs

obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum		X		
The faculty			X	
Research programs	X			
The opportunity to learn with medical students				X
Opportunities for translational medical research		X		
Future employment in the biomedical field		X		

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)

Miami location		X			
Curriculum		X			
The faculty			X		
Research programs	X				
The opportunity to learn with medical students					X
Opportunities for translational medical research		X			
Future employment in the biomedical field		X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum		X		
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **8** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.31.223

Response Started:
Monday, September 13, 2010 3:38:56 PM

Response Modified:
Monday, September 13, 2010 3:40:19 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field		X		

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field		X		

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum		X		
Research Programs		X		
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist		X		

Default Report

Displaying **9** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
76.108.13.92

Response Started:
Monday, September 13, 2010 3:43:57 PM

Response Modified:
Monday, September 13, 2010 3:45:58 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

research programs

the faculty

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum		X		
The faculty	X			
Research programs	X			
The opportunity to learn with medical students		X		
Opportunities for translational medical research		X		
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)

Miami location		X		
Curriculum		X		
The faculty	X			
Research programs	X			
The opportunity to learn with medical students		X		
Opportunities for translational medical research		X		
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum		X		
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty		X		
Future employment as a physician scientist			X	

Default Report

Displaying **10** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
99.112.92.44

Response Started:
Monday, September 13, 2010 4:26:54 PM

Response Modified:
Monday, September 13, 2010 4:28:53 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

other
Biology and Chemistry

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical

Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **11** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.55.35

Response Started:
Monday, September 13, 2010 5:25:01 PM

Response Modified:
Monday, September 13, 2010 5:27:30 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist	X			

Default Report

Displaying **12** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
75.74.101.201

Response Started:
Monday, September 13, 2010 5:32:19 PM

Response Modified:
Monday, September 13, 2010 5:33:57 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum
research programs
the faculty
obtaining a degree in biomedical sciences

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum		X		
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum		X		
The faculty	X			
Research programs	X			
The opportunity to learn with medical students	X			
Opportunities for translational medical research	X			
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

Yes

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location		X		
Curriculum		X		
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty	X			
Future employment as a physician scientist		X		

Default Report

Displaying **13** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
65.34.156.10

Response Started:
Wednesday, September 15, 2010 4:16:07 AM

Response Modified:
Wednesday, September 15, 2010 4:18:03 AM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

No

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum	X			
The faculty		X		
Research programs			X	
The opportunity to learn with medical students		X		
Opportunities for translational medical research			X	
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			

The faculty		X		
Research programs			X	
The opportunity to learn with medical students		X		
Opportunities for translational medical research			X	
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

No

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location	X			
Curriculum	X			
Research Programs			X	
Opportunities to do clinical/translational research with FIU HWCOM faculty		X		
Future employment as a physician scientist	X			

Default Report

Displaying **14** of **14** respondents

Response Type:
Normal Response

Collector:
New Link
(Web Link)

Custom Value:
empty

IP Address:
131.94.186.10

Response Started:
Friday, September 17, 2010 12:43:24 PM

Response Modified:
Friday, September 17, 2010 12:45:53 PM

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

No

2. What is your major/undergraduate degree?

Biology

3. Where are you receiving your undergraduate education?

Florida International University

4. What criteria are important for your choice? Check all that apply.

curriculum

research programs

the faculty

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Curriculum		X		
The faculty	X			
Research programs	X			
The opportunity to learn with medical students				X
Opportunities for translational medical research				X
Future employment in the biomedical field	X			

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)

Miami location				X
Curriculum	X			
The faculty	X			
Research programs	X			
The opportunity to learn with medical students				X
Opportunities for translational medical research				X
Future employment in the biomedical field	X			

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

No

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important (1)	Important (2)	Somewhat Important (3)	Not Important (4)
Miami location				X
Curriculum		X		
Research Programs	X			
Opportunities to do clinical/translational research with FIU HWCOM faculty				X
Future employment as a physician scientist				X

SurveyMonkey

Ph.D. in Biomedical Sciences Edit

Default Report + Add Report

Response Summary

Active Crosstab: New Crosstab

Total: 14 Edit

Crosstabbed: 14 Unapply

PAGE: HERBERT WERTHEIM COLLEGE OF MEDICINE GRADUATE PROGRAM SURVEY

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)? Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Yes	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	**78.6% (11)**
No	23.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	21.4% (3)
answered question	13	0	0	0	1	**14**
					skipped question	**0**

2. What is your major/undergraduate degree? Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Biology	**100.0% (13)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	**92.9% (13)**
Chemistry	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Biomedical engineering	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
another Science major	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
other	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	7.1% (1)
Other (please specify)	0 replies	0 replies	0 replies	0 replies	1 reply	1

answered question	13	0	0	0	1	**14**
					skipped question	**0**

3. Where are you receiving your undergraduate education? Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Florida International University	**100.0% (13)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	**100.0% (14)**
Another Florida university	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
A U.S. university outside of Florida	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
A foreign university / other	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)
Other (please specify)	0 replies	0 replies	0 replies	0 replies	0 replies	0
answered question	13	0	0	0	1	**14**
					skipped question	**0**

4. What criteria are important for your choice? Check all that apply. Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
curriculum	**92.3% (12)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	**92.9% (13)**
research programs	**92.3% (12)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	**92.9% (13)**
the faculty	76.9% (10)	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	78.6% (11)
obtaining a degree in biomedical sciences	53.8% (7)	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	57.1% (8)
answered question	13	0	0	0	1	**14**
					skipped question	**0**

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college? Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Curriculum	**61.5%**	0.0%	0.0%	0.0%	**100.0%**	

	Very Important	**(8)**	(0)	(0)	(0)	**(1)**	
	Important	38.5% (5)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.38 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.36 (14)
The faculty	**Very Important**	**69.2% (9)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	23.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.38 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.36 (14)
Research programs	**Very Important**	**92.3% (12)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.15 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.14 (14)
The opportunity to learn with medical students	**Very Important**	**53.8% (7)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	30.8% (4)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.77 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.71 (14)
Opportunities for translational medical research	**Very Important**	**61.5% (8)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
		7.7%	0.0%	0.0%	0.0%	0.0%	

	Not Important	(1)	(0)	(0)	(0)	(0)	
	rating average	1.69 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.64 (14)
Future employment in the biomedical field	**Very Important**	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	23.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.23 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.21 (14)
	answered question	13	0	0	0	1	**14**
						skipped question	**0**

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university? Create Chart Download

		What is your major/undergraduate degree?					
		Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Miami location	**Very Important**	30.8% (4)	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	**53.8% (7)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	2.00 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.93 (14)
Curriculum	**Very Important**	**69.2% (9)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	30.8% (4)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.31 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.29 (14)
The faculty	**Very Important**	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	

	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.31 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.29 (14)
Research programs	**Very Important**	**84.6% (11)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.23 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.21 (14)
The opportunity to learn with medical students	**Very Important**	**61.5% (8)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.77 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.71 (14)
Opportunities for translational medical research	**Very Important**	**61.5% (8)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	23.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.62 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.57 (14)
Future employment in the biomedical field	**Very Important**	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	23.1% (3)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.23 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.21 (14)

answered question	13	0	0	0	1	**14**
					skipped question	**0**

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)? Create Chart Download

	What is your major/undergraduate degree?					
	Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Yes	**84.6% (11)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	**85.7% (12)**
No	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	14.3% (2)
answered question	13	0	0	0	1	**14**
					skipped question	**0**

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university? Create Chart Download

		What is your major/undergraduate degree?					
		Biology	**Chemistry**	**Biomedical engineering**	**another Science major**	**other**	**Response Totals**
Miami location	**Very Important**	38.5% (5)	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	**46.2% (6)**	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.92 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.86 (14)
Curriculum	**Very Important**	**53.8% (7)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	46.2% (6)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.46 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.43 (14)
Research Programs	**Very Important**	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	

	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.31 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.29 (14)
Opportunities to do clinical/translational research with FIU HWCOM faculty	**Very Important**	**76.9% (10)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.38 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.36 (14)
Future employment as a physician scientist	**Very Important**	**69.2% (9)**	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (1)**	
	Important	15.4% (2)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Somewhat Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	Not Important	7.7% (1)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	rating average	1.54 (13)	0.00 (0)	0.00 (0)	0.00 (0)	1.00 (1)	1.50 (14)
	answered question	13	0	0	0	1	**14**
						skipped question	**0**

SurveyMonkey

Ph.D. in Biomedical Sciences Edit

Default Report + Add Report

Response Summary

Total Started Survey: 14
Total Completed Survey: 14 (100%)

PAGE: HERBERT WERTHEIM COLLEGE OF MEDICINE GRADUATE PROGRAM SURVEY

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)? Create Chart Download

	Response Percent	Response Count
Yes	78.6%	11
No	21.4%	3
answered question		14
skipped question		0

2. What is your major/undergraduate degree? Create Chart Download

	Response Percent	Response Count
Biology	92.9%	13
Chemistry	0.0%	0
Biomedical engineering	0.0%	0
another Science major	0.0%	0
other	7.1%	1
Show replies Other (please specify)		1
answered question		14
skipped question		0

3. Where are you receiving your undergraduate education? Create Chart Download

	Response Percent	Response Count
Florida International University	100.0%	14
Another Florida university	0.0%	0
A U.S. university outside of Florida	0.0%	0
A foreign university / other	0.0%	0
Other (please specify)		0
answered question		14
skipped question		0

4. What criteria are important for your choice? Check all that apply. Create Chart Download

	Response Percent	Response Count
curriculum	**92.9%**	**13**
research programs	**92.9%**	**13**
the faculty	78.6%	11
obtaining a degree in biomedical sciences	57.1%	8
answered question		**14**
skipped question		**0**

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college? Create Chart Download

	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Curriculum	**64.3% (9)**	35.7% (5)	0.0% (0)	0.0% (0)	1.36	14
The faculty	**71.4% (10)**	21.4% (3)	7.1% (1)	0.0% (0)	1.36	14
Research programs	**92.9% (13)**	0.0% (0)	7.1% (1)	0.0% (0)	1.14	14
The opportunity to learn with medical students	**57.1% (8)**	28.6% (4)	0.0% (0)	14.3% (2)	1.71	14
Opportunities for translational medical research	**64.3% (9)**	14.3% (2)	14.3% (2)	7.1% (1)	1.64	14
Future employment in the biomedical field	**78.6% (11)**	21.4% (3)	0.0% (0)	0.0% (0)	1.21	14
answered question						**14**
skipped question						**0**

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university? Create Chart Download

	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Miami location	35.7% (5)	**50.0% (7)**	0.0% (0)	14.3% (2)	1.93	14
Curriculum	**71.4% (10)**	28.6% (4)	0.0% (0)	0.0% (0)	1.29	14
The faculty	**78.6% (11)**	14.3% (2)	7.1% (1)	0.0% (0)	1.29	14
Research programs	**85.7% (12)**	7.1% (1)	7.1% (1)	0.0% (0)	1.21	14
The opportunity to learn with medical students	**64.3% (9)**	14.3% (2)	7.1% (1)	14.3% (2)	1.71	14
Opportunities for translational medical research	**64.3% (9)**	21.4% (3)	7.1% (1)	7.1% (1)	1.57	14
Future employment in the biomedical field	**78.6% (11)**	21.4% (3)	0.0% (0)	0.0% (0)	1.21	14
answered question						**14**
skipped question						**0**

7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)? Create Chart Download

	Response Percent	Response Count
Yes	85.7%	12
No	14.3%	2
answered question		14
skipped question		0

8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university? Create Chart Download

	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Miami location	42.9% (6)	42.9% (6)	0.0% (0)	14.3% (2)	1.86	14
Curriculum	57.1% (8)	42.9% (6)	0.0% (0)	0.0% (0)	1.43	14
Research Programs	78.6% (11)	14.3% (2)	7.1% (1)	0.0% (0)	1.29	14
Opportunities to do clinical/translational research with FIU HWCOM faculty	78.6% (11)	14.3% (2)	0.0% (0)	7.1% (1)	1.36	14
Future employment as a physician scientist	71.4% (10)	14.3% (2)	7.1% (1)	7.1% (1)	1.50	14
answered question						14
skipped question						0

1. Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

	Response Percent	Response Count
Yes	**78.6%**	**11**
No	21.4%	3
answered question		**14**
skipped question		**0**

2. What is your major/undergraduate degree?

	Response Percent	Response Count
Biology	**92.9%**	**13**
Chemistry	0.0%	0
Biomedical engineering	0.0%	0
another Science major	0.0%	0
other	7.1%	1
Other (please specify)		1
answered question		**14**
skipped question		**0**

3. Where are you receiving your undergraduate education?

	Response Percent	Response Count
Florida International University	**100.0%**	**14**
Another Florida university	0.0%	0
A U.S. university outside of Florida	0.0%	0
A foreign university / other	0.0%	0
Other (please specify)		0
answered question		**14**
skipped question		**0**

4. What criteria are important for your choice? Check all that apply.

	Response Percent	Response Count
curriculum	**92.9%**	**13**
research programs	**92.9%**	**13**
the faculty	78.6%	11
obtaining a degree in biomedical sciences	57.1%	8
answered question		**14**
skipped question		**0**

5. How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?

	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Curriculum	**64.3% (9)**	35.7% (5)	0.0% (0)	0.0% (0)	1.36	14
The faculty	**71.4% (10)**	21.4% (3)	7.1% (1)	0.0% (0)	1.36	14
Research programs	**92.9% (13)**	0.0% (0)	7.1% (1)	0.0% (0)	1.14	14
The opportunity to learn with medical students	**57.1% (8)**	28.6% (4)	0.0% (0)	14.3% (2)	1.71	14
Opportunities for translational medical research	**64.3% (9)**	14.3% (2)	14.3% (2)	7.1% (1)	1.64	14
Future employment in the biomedical field	**78.6% (11)**	21.4% (3)	0.0% (0)	0.0% (0)	1.21	14
				answered question		**14**
				skipped question		**0**

6. How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?

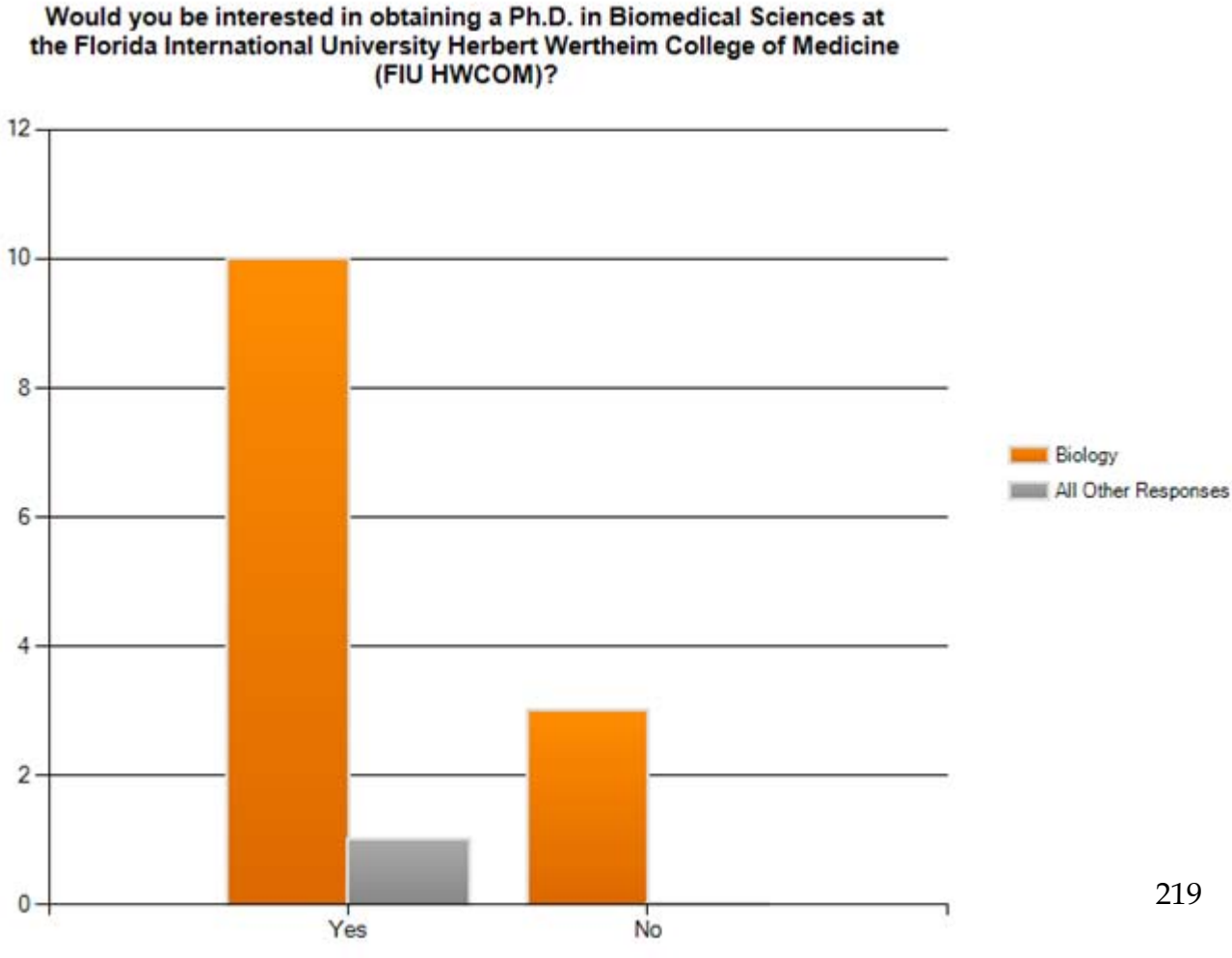
	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Miami location	35.7% (5)	**50.0% (7)**	0.0% (0)	14.3% (2)	1.93	14
Curriculum	**71.4% (10)**	28.6% (4)	0.0% (0)	0.0% (0)	1.29	14
The faculty	**78.6% (11)**	14.3% (2)	7.1% (1)	0.0% (0)	1.29	14
Research programs	**85.7% (12)**	7.1% (1)	7.1% (1)	0.0% (0)	1.21	14
The opportunity to learn with medical students	**64.3% (9)**	14.3% (2)	7.1% (1)	14.3% (2)	1.71	14
Opportunities for translational medical research	**64.3% (9)**	21.4% (3)	7.1% (1)	7.1% (1)	1.57	14
Future employment in the biomedical field	**78.6% (11)**	21.4% (3)	0.0% (0)	0.0% (0)	1.21	14
				answered question		**14**
				skipped question		**0**

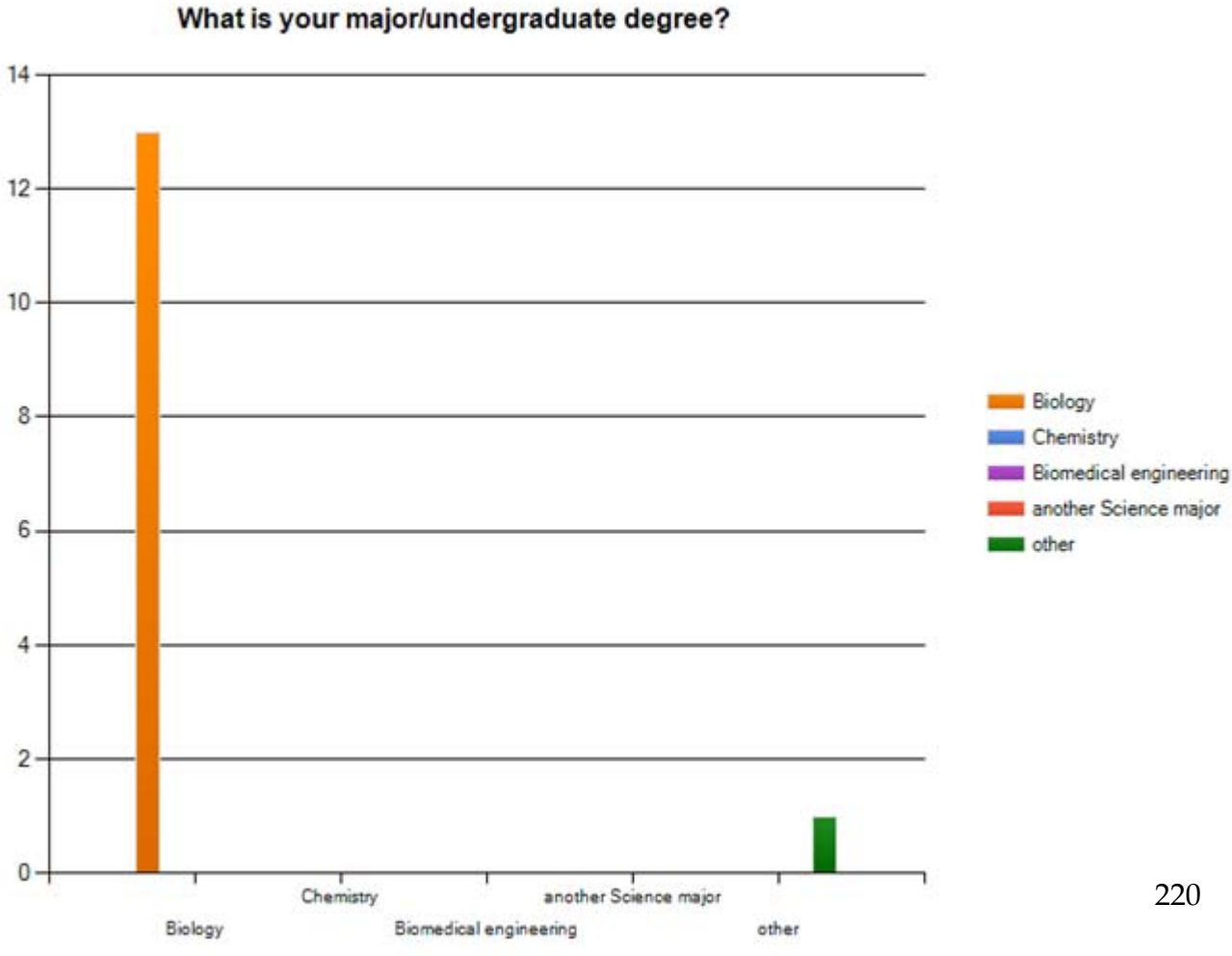
7. Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?

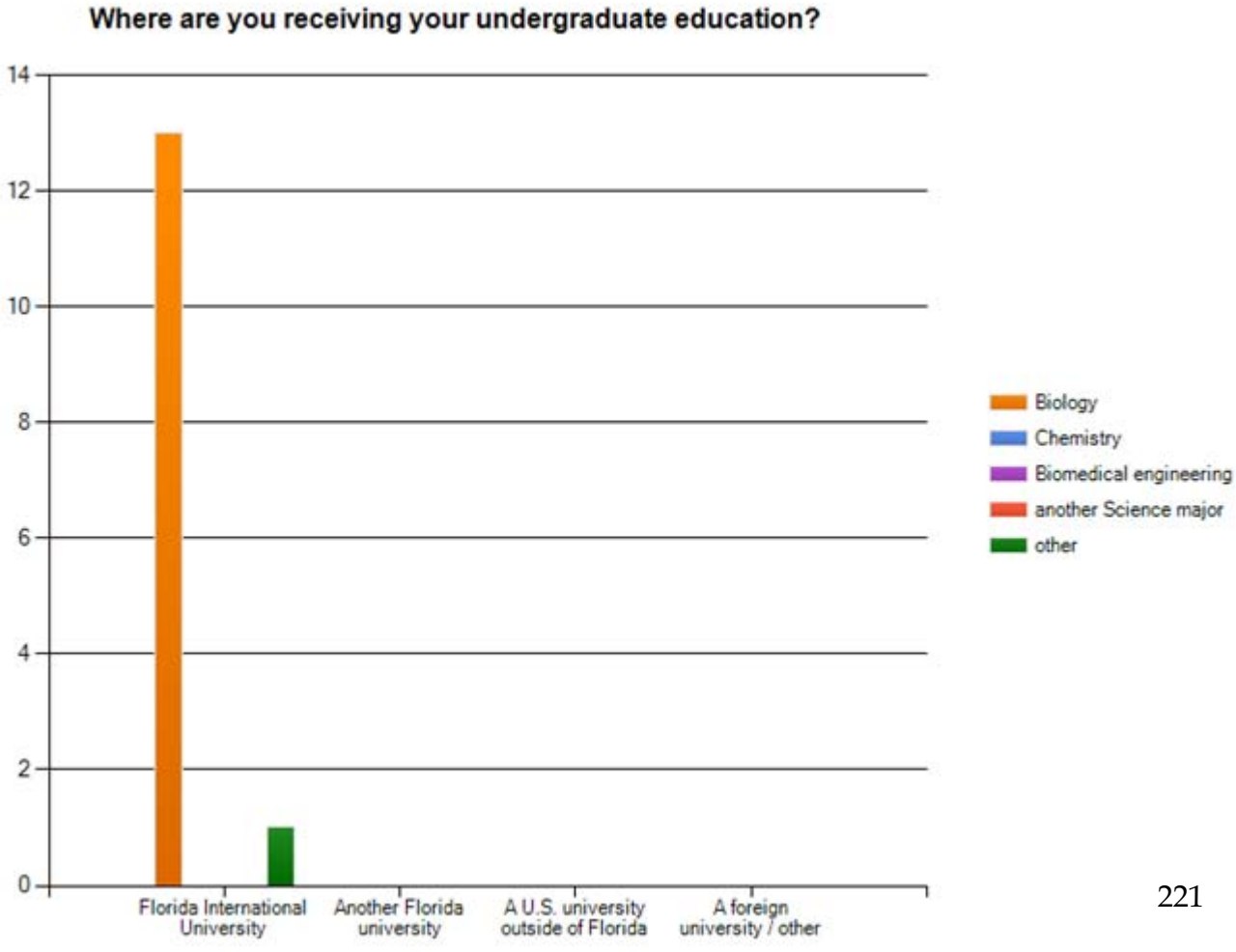
	Response Percent	Response Count
Yes	**85.7%**	**12**
No	14.3%	2
	answered question	**14**
	skipped question	**0**

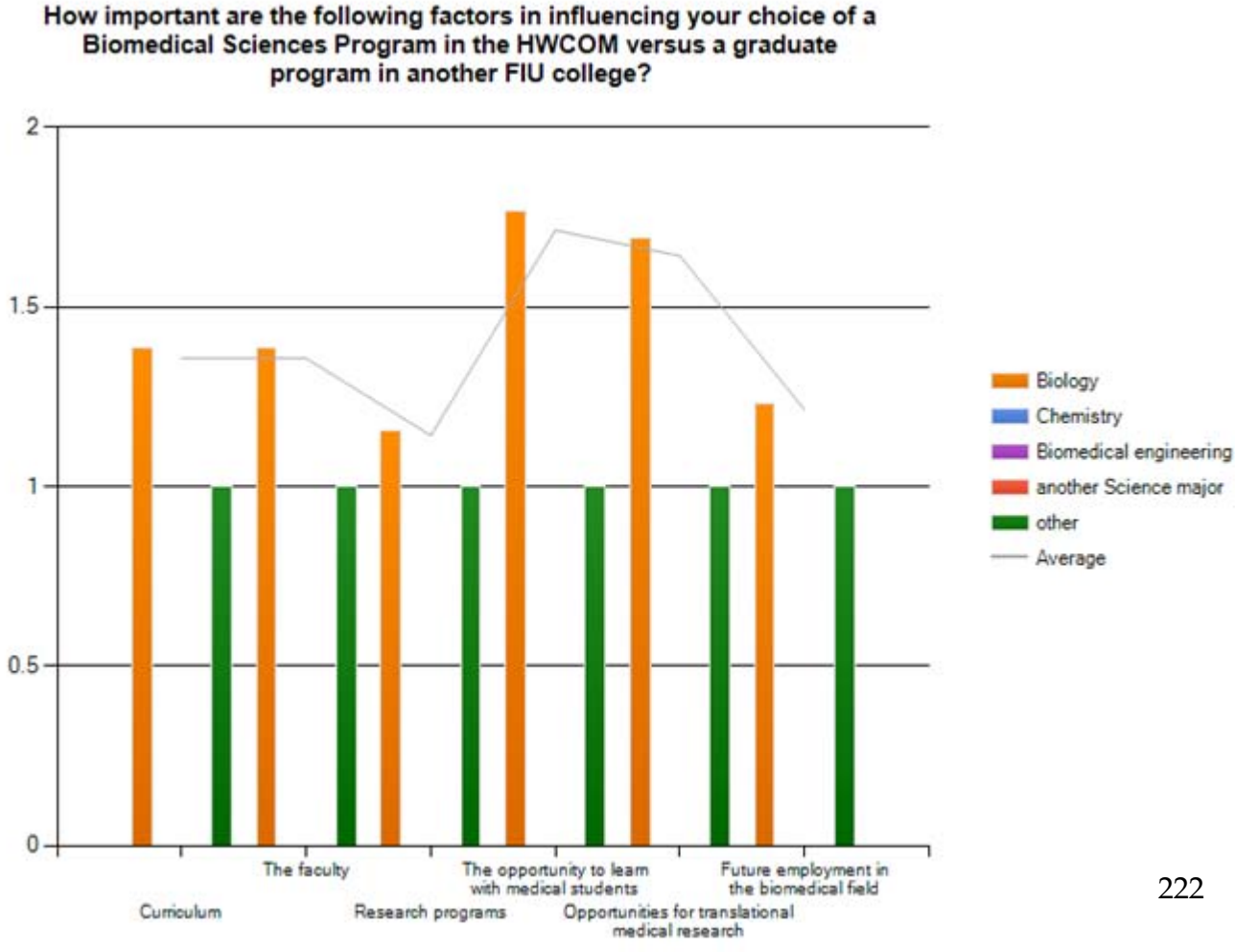
8. How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?

	Very Important	Important	Somewhat Important	Not Important	Rating Average	Response Count
Miami location	**42.9% (6)**	**42.9% (6)**	0.0% (0)	14.3% (2)	1.86	14
Curriculum	**57.1% (8)**	42.9% (6)	0.0% (0)	0.0% (0)	1.43	14
Research Programs	**78.6% (11)**	14.3% (2)	7.1% (1)	0.0% (0)	1.29	14
Opportunities to do clinical/translational research with FIU HWCOM faculty	**78.6% (11)**	14.3% (2)	0.0% (0)	7.1% (1)	1.36	14
Future employment as a physician scientist	**71.4% (10)**	14.3% (2)	7.1% (1)	7.1% (1)	1.50	14
				answered question		**14**
				skipped question		**0**

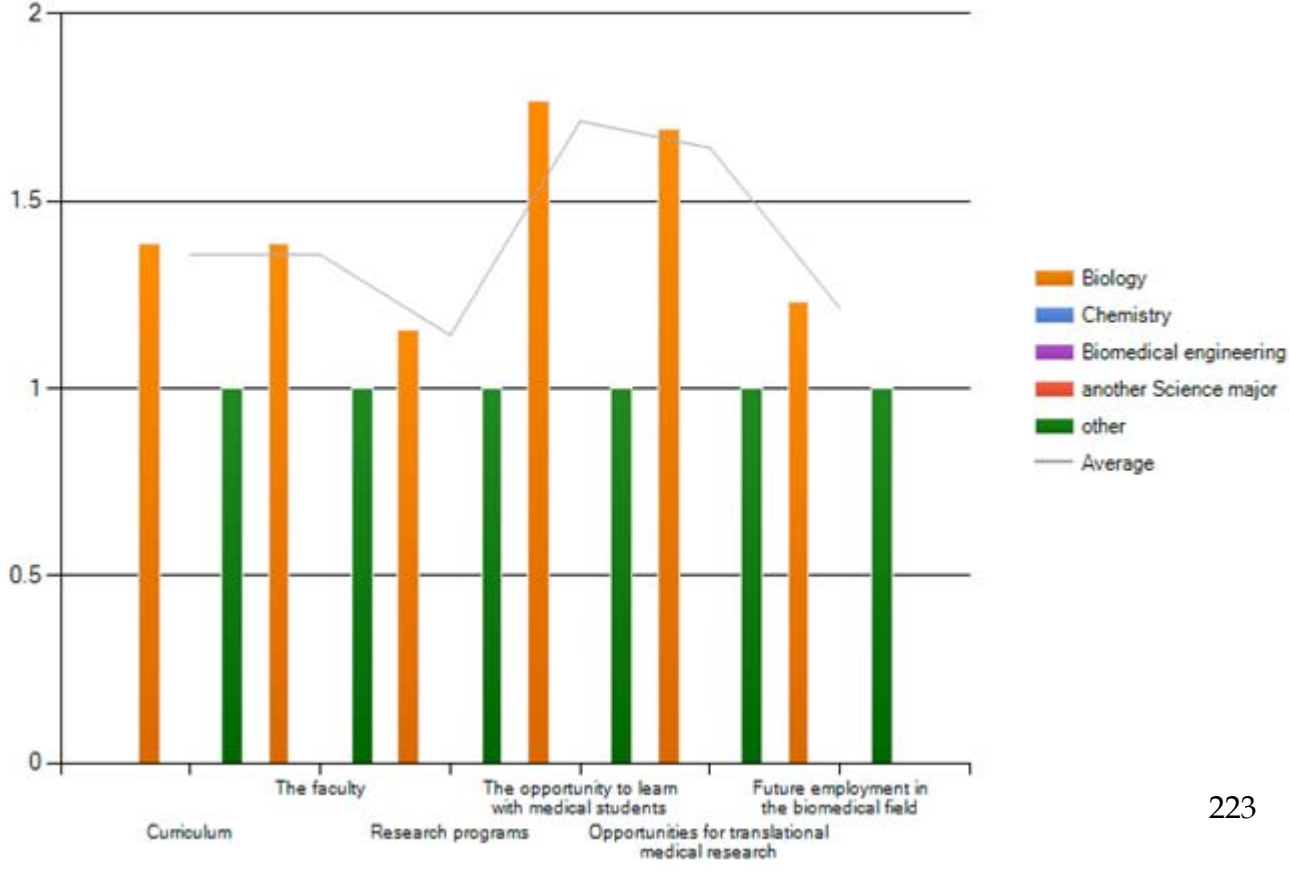

Would you be interested in obtaining a Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?
12
10
8
6
4
2
0
Yes
No
Biology
All Other Responses


What is your major/undergraduate degree?
14
12
10
8
6
4
2
0
Biology
Chemistry
Biomedical engineering
another Science major
other
Biology
Chemistry
Biomedical engineering
another Science major
other

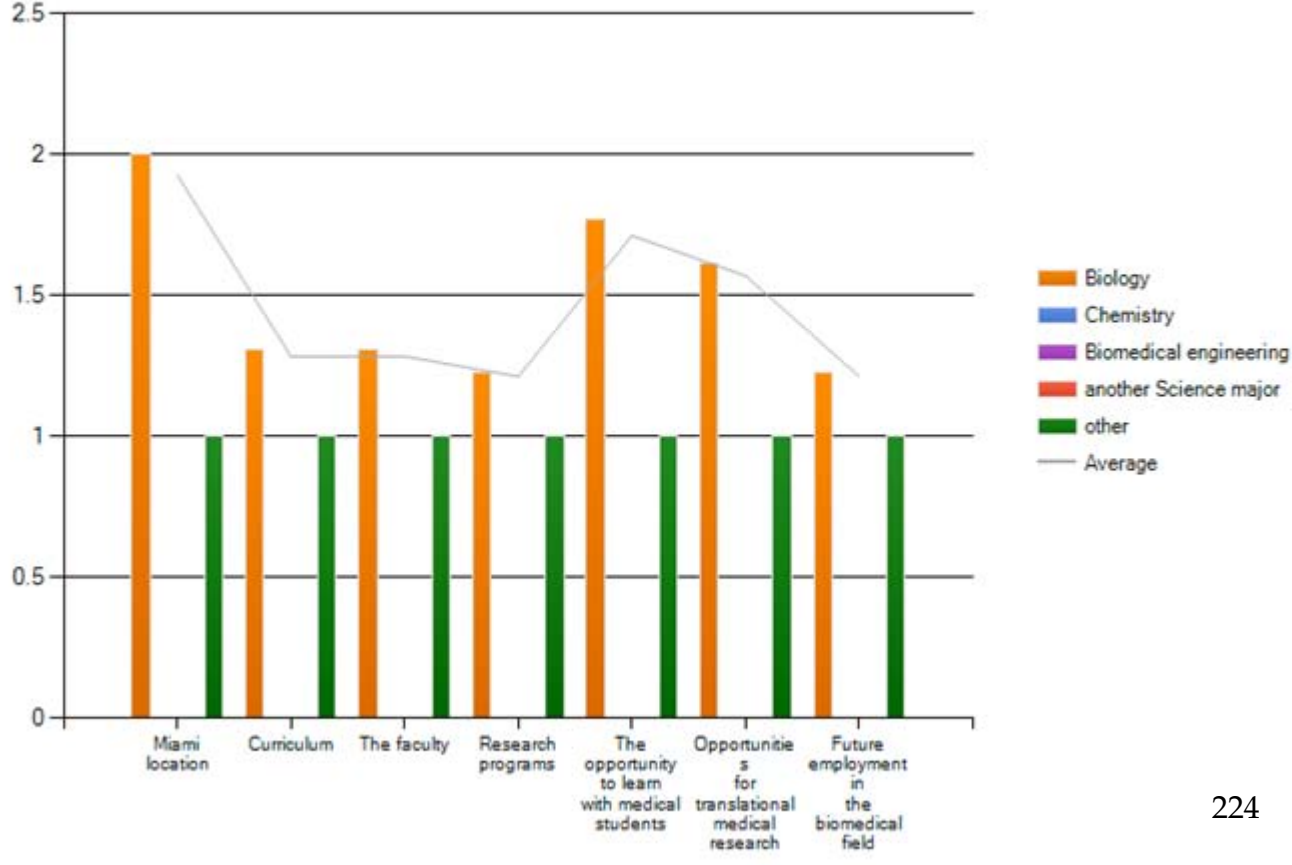

Where are you receiving your undergraduate education?
14
12
10
8
6
4
2
0
Florida International University
Another Florida university
A U.S. university outside of Florida
A foreign university / other
Biology
Chemistry
Biomedical engineering
another Science major
other

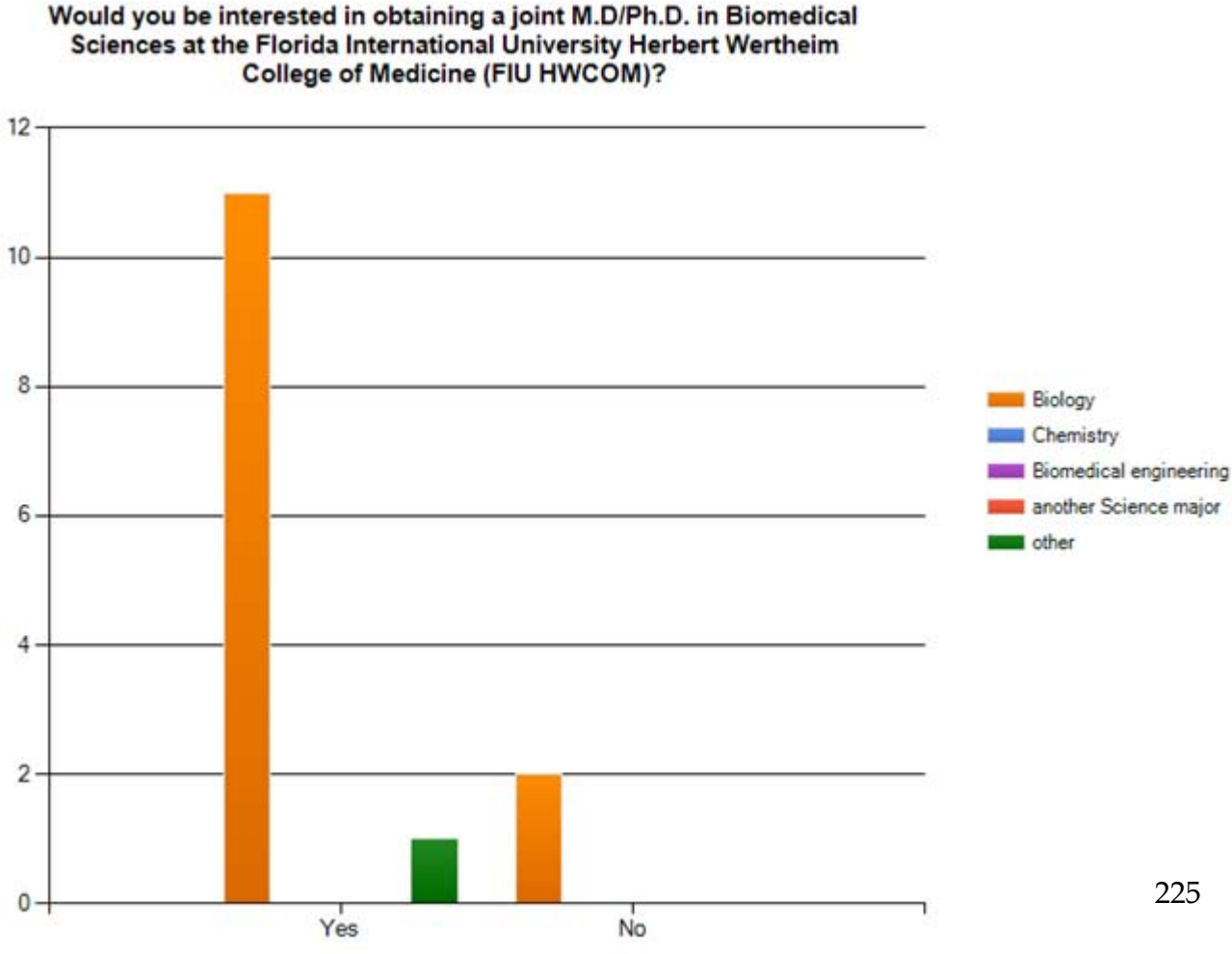

How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?
2
1.5
1
0.5
0
Curriculum
The faculty
Research programs
The opportunity to learn with medical students
Opportunities for translational medical research
Future employment in the biomedical field
Biology
Chemistry
Biomedical engineering
another Science major
other
Average

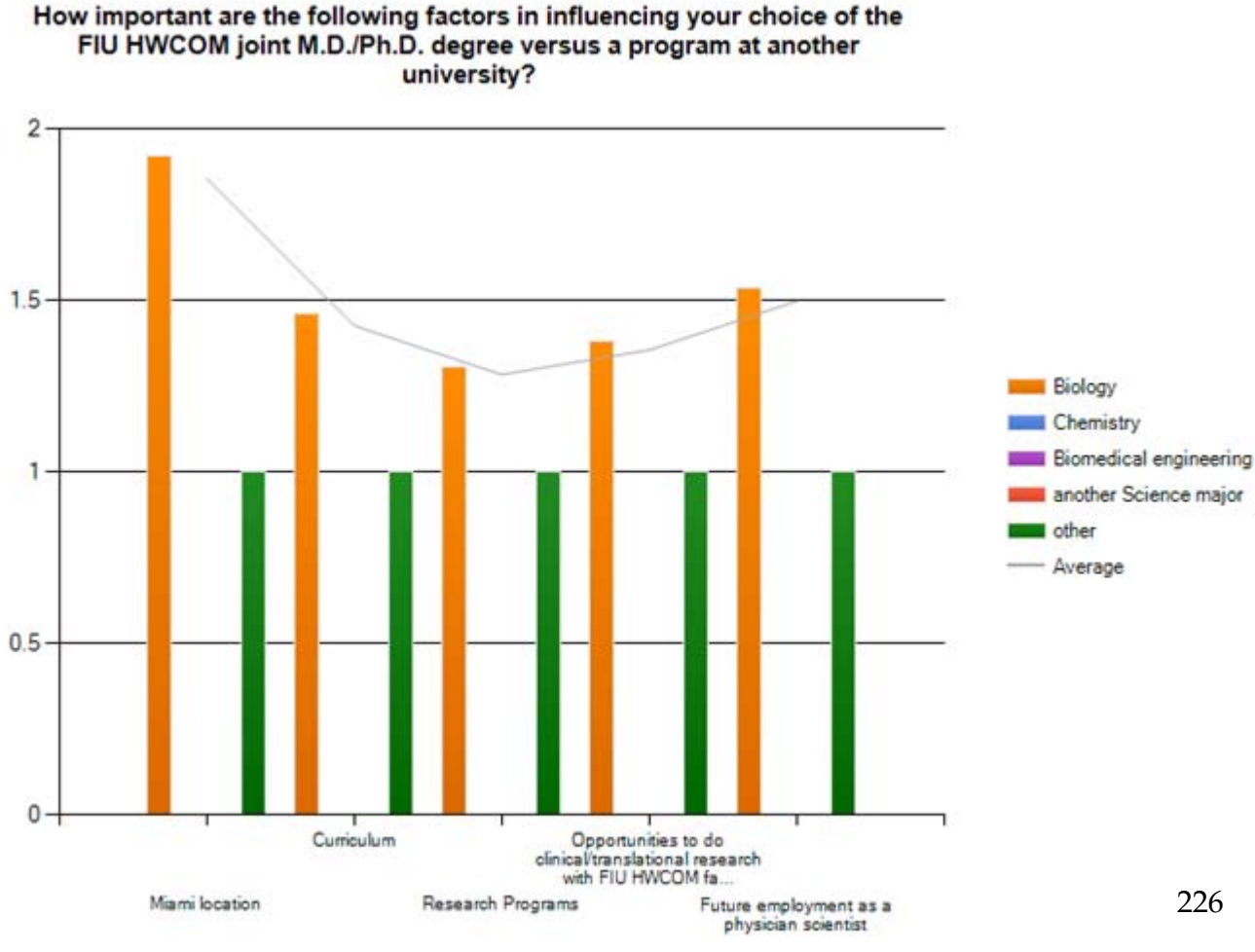
How important are the following factors in influencing your choice of a Biomedical Sciences Program in the HWCOM versus a graduate program in another FIU college?



How important are the following factors in influencing your choice of the FIU HWCOM Biomedical Sciences degree program versus a program at another university?




Would you be interested in obtaining a joint M.D/Ph.D. in Biomedical Sciences at the Florida International University Herbert Wertheim College of Medicine (FIU HWCOM)?
12
10
8
6
4
2
0
Yes
No
Biology
Chemistry
Biomedical engineering
another Science major
other


How important are the following factors in influencing your choice of the FIU HWCOM joint M.D./Ph.D. degree versus a program at another university?
2
1.5
1
0.5
0
Miami location
Curriculum
Research Programs
Opportunities to do clinical/translational research with FIU HWCOM fa...
Future employment as a physician scientist
Biology
Chemistry
Biomedical engineering
another Science major
other
Average

May 18, 2010

Dear Dr. Barry Rosen:

It is my goal to pursue a career in clinical and basic research that is biomedically translational. This August I will be doing a post-baccalaureate program at the NIH Academy and thereafter plan to do a graduate research training program in genetics, immunology or molecular biology and thing that a PhD Program in the Biomedical Sciences at the FIU College of Medicine would be a good match, if available. If this program were available, I would definitely apply. The FIU COM, the state of Florida, and many students would benefit much by having such a program available.

Thank you for your time and for considering the implementation of such a wonderful program!

Sincerely,

Rosa Rodriguez
MBRS RISE Fellow
Rrodr057@fiu.edu
(305)978-38237

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Public Notice of Intent to Amend Board of Governors Regulation 6.018 Substitution or Modification of Requirements for Program Admission, Undergraduate Transfer, and for Graduation by Students with Disabilities

PROPOSED COMMITTEE ACTION

Consider approval of the public notice of intent to amend Board of Governors Regulation 6.018 Substitution or Modification of Requirements for Program Admission, Undergraduate Transfer, and for Graduation by Students with Disabilities.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution

BACKGROUND INFORMATION

Sections 1007.264 and 1007.265, *Florida Statutes*, were amended by the 2011 Florida Legislature. Due to these changes in statute going into effect July 1, 2011, Regulation 6.018 requires amendment. The statement exempting documented intellectual disabilities from the definition of "other health disabilities" has been proposed for elimination. Language was added for clarity, and Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder was added within the individual definitions. Additionally, the name of the regulation has been slightly modified in order to capture the possibility of substitutions being made for university admission decisions.

This regulation has been reviewed by the university general counsels, members of the Council of Academic Vice Presidents, members of the Council of Student Affairs, state university student disability services directors, and other state university staff. Revisions were made due to their input. Pursuant to the regulation procedure adopted by the Board at its meeting on March 23, 2006, the Board is required to provide public notice by publication on its Internet Web site at least 30 days before adoption of the proposed regulation.

Supporting Documentation Included: Proposed Regulation 6.018

Facilitators/Presenters: Richard Stevens

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6.018 Substitution or Modification of Requirements for University or Program Admission, Undergraduate Transfer, ~~and~~ or for Graduation by Students with Disabilities.

(1) ~~Each (1) A~~ university shall provide reasonable substitution or modification for any requirement for admission into the ~~a~~ university, ~~into~~ an undergraduate or graduate program of study~~,~~; for entry into the upper division~~,~~; or for graduation for any otherwise eligible student with a disability, where

a. The student seeking substitution or modification of an admission or graduation requirement has provided ~~. Appropriate~~ documentation demonstrating that he or she is disabled and ~~must be provided to indicate~~ that the student's inability ~~failure~~ to meet the requirement is related to ~~related to t~~the disability, and ~~.~~

b. ~~Additionally, T~~the university has ~~must~~ determined that if the requested substitution or modification is granted, ~~such failure to meet the requirement does not constitute~~ a fundamental alteration in the nature of the ~~academic~~ program will not result.

(2) For purposes of this regulation, the following conditions may constitute a ~~recognized~~ disability for which substitution or modification of an admission or graduation requirement may be provided, depending upon the effect of the condition on the requirement and the effect of the substitution or modification on the program:

(a) Deaf/Hard of Hearing. A hearing loss of thirty (30) decibels or greater, pure tone average of 500, 1000, 2000, and 4000 hertz (Hz), unaided, in the better ear. Examples include, but are not limited to, conductive hearing impairment or deafness, sensorineural hearing impairment or deafness, high or low tone hearing loss or deafness, and acoustic trauma hearing loss or deafness.

(b) Blind or Low Vision. Disabilities in the structure and function of the eyes as manifested by at least one of the following: visual acuity of 20/70 or less in the better eye after the best possible correction, a peripheral field so constricted that it affects one's ability to function in an educational setting, or a progressive loss of vision that may affect one's ability to function in an educational setting. Examples include, but are not limited to, cataracts, glaucoma, nystagmus, retinal detachment, retinitis pigmentosa, and strabismus.

(c) Specific Learning Disability. A disability in one or more psychological or neurological processes involved in understanding or using spoken or written language. Learning disabilities may be manifested in listening,

thinking, reading, writing, spelling, or performing arithmetic calculations. Examples include dyslexia, dysgraphia, dysphasia, dyscalculia, and other specific learning disabilities in the basic psychological or neurological processes. Such disabilities do not include learning problems that are due primarily to visual, hearing, or motor disabilities, to intellectual disabilities, to psychiatric or emotional disabilities or to an environmental deprivation.

(d) Orthopedic Disability. A disability of the musculoskeletal system, connective tissue, or neuromuscular system. Examples include, but are not limited to, cerebral palsy, absence of some body member, clubfoot, nerve damage to the hand or arm, cardiovascular aneurysm (CVA), head injury or spinal cord injury, arthritis or rheumatism, epilepsy, intracranial hemorrhage, embolism, thrombosis (stroke), poliomyelitis, multiple sclerosis, Parkinson's disease, congenital malformation of brain cellular tissue, and physical disabilities pertaining to muscles or nerves, usually as a result of disease or birth defect, including, but not limited to, muscular dystrophy and congenital disorders.

(e) Speech/Language Disabilities. Disabilities of language, articulation, fluency, or voice that interfere with communication in academic settings, employment preparation/training or social interaction on campus. Examples include, but are not limited to, cleft lip or palate with speech disabilities, stammering, stuttering, laryngectomy, and aphasia.

(f) ~~Psychological,~~ Emotional~~,~~ or Behavioral Disabilities~~y~~. Emotional or behavioral disabilities rendering the student unable to complete an admission or graduation requirement. ~~Any mental or psychological disability including, but not limited to, organic brain syndrome, emotional or mental illness, or attention deficit disorders.~~

(g) Autism Spectrum Disorder. Disabilities characterized by an uneven development profile and a pattern of qualitative impairments in social interaction, communication difficulties, and/or the presence of restricted repetitive or stereotyped patterns of behavior, interests, and activities. These characteristics may manifest in a variety of combinations and range from mild to severe.

(h) Traumatic Brain Injury. An injury to the brain, not of a degenerative or congenital nature but caused by an external force, that may produce a diminished or altered state of consciousness, which results in impairment of cognitive ability or physical ability and functioning.

(i) Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder. A chronic condition manifested by hyperactive and impulsive behavior, significant symptoms of inattention, or both. The behavior and symptoms have a significant impact on cognitive ability and academic functioning.

(j) Other Health Disabilities. Any disability not identified in this subsection, ~~except documented intellectual disability,~~ deemed by a disability professional to make completion of the requirement impossible.

(2) In determining whether to grant a substitution or modification, a university will consider pertinent documents including, but not limited to, assessments administered and interpreted by a licensed psychologist or interns supervised by a licensed psychologist; a physician or other qualified professional's statement; vocational rehabilitation records; school records maintained as a result of the exceptional child provisions of Public Law 94-142, military/Veterans Administration records; Board of Governors regulations, or statewide articulation documents. Standards for documentation required for specific learning disabilities shall include at a minimum intelligence, achievement, and processing assessment using adult-normed instruments with information about functional limitations. Each university shall provide the student the opportunity to present evidence of a qualifying disability.

(3) Each university shall develop and implement policies and procedures for providing reasonable substitution or modification for eligible students as required by this regulation. The policies and procedures shall include at least the following:

(a) A mechanism for informing students of the process for requesting a substitution or modification;

(b) A mechanism for identifying reasonable substitutions or modifications for criteria for admission to the institution, admission to a program of study, entry into the upper division, or graduation;

(c) A mechanism for making the designated substitution or modification known to affected persons;

(d) A mechanism for making substitution or modification decisions on an individual basis; and

(e) A mechanism for a student to appeal a denial of substitution, modification, or a determination of eligibility.

(4) The policies shall provide for articulation with other state postsecondary institutions, which shall include, at a minimum, acceptance of all reasonable substitutions previously granted by a state postsecondary institution.

(5) Each university shall maintain records on the substitutions or modifications provided per this regulation, the substitutions identified as available for each documented disability, the number of students granted substitutions by type of disability, and substitutions provided and the number of requests for substitutions that were denied.

Authority: Section 7(d), Art. IX, Fla. Const., History-New 4-20-87, Amended 9-15-91. Amended and Renumbered 1-29-09. Amended 9-16-10, Amended _____.

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic and Student Affairs Committee
November 9, 2011

SUBJECT: Public Notice of Intent to Amend Board of Governors Regulation 8.016 Academic Learning Compacts

PROPOSED COMMITTEE ACTION

Consider approval of the public notice of intent to amend Board of Governors Regulation 8.016 Academic Learning Compacts.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7, Florida Constitution

BACKGROUND INFORMATION

An SUS Academic Learning Compacts Work Group, consisting of representatives from seven universities and the Board office, drafted initial revisions to Regulation 8.016. The proposed amendments clarify the process related to student learning outcomes assessment. As such, the title of the regulation has been changed from "Academic Learning Compacts" to "Student Learning Outcomes Assessment."

Paragraph (1) sets out required policies and procedures. Each board of trustees must have a process for certifying student learning outcomes. Each university must develop processes for the following areas: (1) Academic Learning Compacts (ALCs), (2) related assessment mechanisms, (3) program evaluation, and (4) continuous improvement.

Paragraph (2) outlines required products. A hard copy or electronic version of the university-wide regulation or policy and related procedures regarding student learning outcomes assessment must be provided to the Board office. Each ALC must be posted on the university's Web site. Universities must submit periodic status reports on student learning outcomes assessment to the Board office.

The revised regulation was reviewed by the university general counsels, members of the Council of Academic Vice Presidents, the Academic Contacts, and the Academic Learning Compacts contacts. The regulation was revised based on their input. Pursuant to the regulation procedure adopted by the Board at its meeting on March 23, 2006, the Board is required to provide public notice by publication on its Internet Web site at least 30 days before adoption of the proposed regulation.

Supporting Documentation Included: Proposed Regulation 8.016

Facilitators/Presenters: R.E. LeMon

8.016 ~~Academic Learning Compacts~~ Student Learning Outcomes Assessment

(1) Policies and Procedures

(a) Each board of trustees shall require its university to establish a process for certifying that each baccalaureate graduate has completed a program with clearly articulated expected core student learning outcomes.

(b) Each university shall develop processes to ensure that:

1. program faculty develop and publish an Academic Learning Compact for each baccalaureate program that, at a minimum,
   a. outlines expected core student learning outcomes in the areas of content/discipline knowledge and skills, communication skills, and critical thinking skills;
   b. takes into consideration perspectives of appropriate constituencies (including but not limited to potential employers and graduate programs) regarding the knowledge and skills graduates need in the global marketplace and society; and
   c. lists the types of assessments students may encounter in the program (e.g., capstone projects, juried performances, standardized exams, common embedded exam questions, portfolio requirements, etc.);
2. program faculty develop methods for assessing student achievement of the expected core student learning outcomes within the context of the program;
3. university personnel use program evaluation systems (which may include sampling) to evaluate the program and related assessment practices to analyze their efficacy in determining whether program graduates have achieved the expected core student learning outcomes; and
4. university personnel use the evaluation results to improve student learning and program effectiveness.

(c) As appropriate, this regulation shall support and be supported by regional and specialized accreditation efforts, as well as the program review procedures in Regulation 8.015.

(2) Products

(a) A current hard copy or a URL (Web link) to an electronic version of the university-wide regulation or policy and related procedures regarding Academic Learning Compacts, related assessment mechanisms, program evaluation, and continuous improvement expectations shall be provided to the Board of Governors Office.

(b) Each Academic Learning Compact shall be made available (using student-friendly, jargon-free language) on the university's Web site.

(c) As requested by the Chancellor or the Chancellor's designee, university personnel shall submit to the Board of Governors Office periodic status reports on Academic Learning Compacts, related assessment mechanisms, program evaluation, and continuous improvement processes. The articulation and assessment of expected core student learning outcomes, as well as program evaluation and improvement, shall occur on a continuous basis.

~~(1) Introduction~~

~~(a) "Explicit identification of learning expectations facilitates the department's coherence about their goals. Sharing those expectations explicitly with students can provide an effective learning scaffold on which students can build their experiences and render effective performance." American Psychological Association (March 2002). In recent years, there has been increased emphasis on the identification and assessment of core student learning outcomes in higher education. The Florida Board of Governors has articulated the importance of student achievement in its strategic planning and accountability processes. Research indicates that university students are served best when students and faculty fully engage in a teaching-learning partnership, and this partnership is all the more meaningful if it is made as clear as possible to students what it is they will learn and how program faculty will assess that learning. Therefore, the Board has determined that universities must develop "Academic Learning Compacts" and related assessment processes to define and demonstrate student achievement in baccalaureate degree programs in the State University System.~~

~~(b) University Infrastructure for Developing, Implementing, and Reviewing Academic Learning Compacts and Related Assessment Processes. The Board of Governors supports the ongoing devolution of authority to the universities, campus-level decision making, and institutional accountability under the constitutional framework established by Floridians for their system of public universities. The Board also expects university and BOG personnel to ensure that the Academic Learning Compacts and corresponding assessment processes are of high quality and that they comply with the expectations outlined in Board of Governors and university regulations. The infrastructure outlined below is in place to ensure such compliance.~~

~~(2) Policies and Procedures~~

~~(a) Each university Board of Trustees must approve a process for certifying that each baccalaureate graduate has completed a program with~~

clearly articulated core student learning expectations in content/discipline knowledge and skills, communication skills, and critical thinking skills.

(b) Each university must construct clearly defined policies and procedures for developing, implementing, and reviewing Academic Learning Compacts and related assessment activities. These policies and procedures must be aligned with this System regulation.

(3) Processes: For all baccalaureate programs (or that an institution intends to place on) the State University System Academic Degree Inventory:

(a) Program faculty must develop Academic Learning Compacts that identify, at a minimum, the expected core student learning outcomes for program graduates in the areas of (i) content/discipline knowledge and skills; (ii) communication skills*; and (iii) critical thinking skills.* Input should be sought from the business and professional community to identify learning outcomes that students need for success in the global marketplace and society.

(b) Program faculty must identify the corresponding assessment tools and procedures that faculty use within the context of the program to determine if individual students have met each of the articulated core student learning expectations.

(c) University personnel must develop robust and effective program assessment/evaluation systems (which can involve sampling), including external corroboration, to substantiate that graduates have truly attained the expected core competencies. Such program assessments/evaluations should provide assurance that completion of the baccalaureate degree programs indicates that individual students have attained the articulated core learning requirements.

(d) Program faculty must demonstrate the use of results from program assessments/evaluations to continuously improve program effectiveness and student learning.

(4) Products:

(a) A current copy of each university's policies and procedures regarding both Academic Learning Compacts and corresponding assessment/evaluation processes must remain on file in the Board of Governors Office of Academic and Student Affairs.

(b) Program faculty must provide current and prospective students with student-friendly, jargon-free Academic Learning Compacts for each baccalaureate program on (or that an institution intends to place on) the State University System Academic Degree Inventory. Each Academic

* It will be a university decision as to whether there will be institutional-level definitions and/or required outcomes in the areas of communication and critical thinking skills. Some institutions may decide instead that definitions and/or required outcomes will be established (or supplemented) at the program level.

Learning Compact must be made available on the university's Web site and must include, at a minimum:

(i) concise statements of what active and successful students participating in the joint teaching-learning-assessment process will know and be able to do, expressed in terms of the core student learning outcomes embodied in the requirements for each baccalaureate degree;

(ii) a list of the types of assessments students might encounter in the program (e.g., capstone projects, juried performances, standardized exams, common embedded exam questions, portfolio requirements, etc.).

(c) As part of the mandated review and continuous improvement process for State University System degree programs (refer to the Board of Governors Regulation on Academic Program Review), university personnel must submit an up-to-date hyperlink to a copy of the Academic Learning Compact for each baccalaureate degree program under review. University personnel are expected to demonstrate how results from the periodic review of student learning outcomes, as well as from the evaluation of corresponding assessment mechanisms, have been used to continuously improve program effectiveness and student learning.

(d) Initially, university personnel will be asked to submit periodic status reports to the Board of Governors Office of Academic and Student Affairs on the progress baccalaureate degree program faculty are making on developing, implementing, and reviewing Academic Learning Compacts and corresponding assessment/evaluation policies, procedures, and products.

(5) Responsibilities of the Office of Academic and Student Affairs. The Board of Governors, Office of Academic and Student Affairs will:

(a) Review institutional policies and procedures to ensure that they comply with the expectations outlined in this regulation.

(b) Offer technical assistance to university personnel as they work to improve the quality of program assessment/evaluation processes to demonstrate that individual students receiving the baccalaureate have attained the articulated core learning requirements.

(c) Convene periodic meetings of representatives from the State universities to review institutional progress in developing, implementing, and reviewing Academic Learning Compacts and corresponding assessment policies, procedures, and products, as well as to share related best practices.

(d) Provide periodic updates to the Board of Governors on efforts in the State University System to demonstrate student achievement in the baccalaureate degree programs.

Authority: Section 7(d), Art IX, Fla. Const.; History: New 3-29-07, Amended XX-XX-12.

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic & Student Affairs Committee
November 9, 2011

SUBJECT: Student Affairs Reports and Updates

PROPOSED COMMITTEE ACTION

For information

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Not applicable

BACKGROUND INFORMATION

Dr. Maribeth Ehasz, Chair of the SUS Council for Student Affairs, will provide an update on current student affairs issues on SUS campuses, including a summary of a System survey on threat assessment procedures and practices.

Governor Michael Long, President of the Florida Student Association, will update the Committee on recent FSA activities and plans for the 2011-12 academic year.

Supporting Documentation Included:	Summary chart of SUS Survey on Threat Assessment Practices
Facilitators / Presenters:	Dr. Maribeth Ehasz, Chair, SUS Council for Student Affairs Governor Michael Long

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Threat Assessment Areas	Compliance	N/A
Campus Threat Assessment Multidisciplinary Teams		
Comprises a cross-section of campus: conduct, counseling, health, police, faculty, staff, other key partners	100%	
Creates campus-wide systems of communications	100%	
Maximizes possibility of addressing issues before individual becomes a threat	100%	
Arrives at a consensus about the existence of a threat	100%	
Develops orientation and training schedules	90%	
Record-keeping Practices		
Adheres to the FERPA guidelines and federal statutes	100%	
Maintains common databases; files; meeting minutes; summary cases;	100%	
Maintains confidentiality for sensitive information	100%	
Team Functions		
Writes protocols and procedures	82%	
Sustains campus-wide communication systems	100%	
Partnerships and collaborations across campus	100%	
Creates interventions strategies	100%	
Fostering a Culture of Concern for Students		
Community members taught to recognize signs of distress	100%	
Means to communicate information or to assist that person in distress	100%	

NOTES:

1. There are no standard tests, diagnosis or demographics to foretell violence so continuous observation and assessment is necessary.
2. Experts caution against immediate removal of potential threats from campus as this could 'trigger an event' that may not have occurred if the situation had been handled in a different manner.
3. Threat assessment is long-term process that could take years in order to complete intervention strategies, monitor compliance, and assess the outcome.

Intervention strategies (include-but are not limited to):

a. No-contact orders
b. Involuntary medical withdrawal
c. Conduct charges
d. Interim suspension
e. Housing relocation or removal
f. Trespass

Some of the most frequent situations being seen at SUS institutions:

a. Emotional distress
b. Suicidal threats
c. Disruptive conduct
d. Stalking behaviors
e. Threats of violence to others

Future recommendations:

1. Annual training opportunities within the state to complement those provided at various national conferences
2. Creation of a Behavioral Intervention/Threat Assessment Team SUS Council or Committee in order to promote the sharing of resources, best practices, professional development opportunities, and resolution of state-wide issues of concern
3. SUS-wide discussions with the SUS General Counsels in order to be consistent with regard to liability and privacy issues
4. Creation of a Florida State repository for information about persons of concern

STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic & Student Affairs Committee
November 9, 2011

SUBJECT: Academic Program Coordination Project

PROPOSED COMMITTEE ACTION

For information

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Not applicable

BACKGROUND INFORMATION

Governor Duncan will provide a summary of the results from the Academic Program Coordination Project conducted by the Council of Academic Vice Presidents. Potential "next steps" will be provided for the Committee's consideration.

Supporting Documentation Included:	Summary of Results from the Academic Program Coordination Project
Facilitators / Presenters:	Governor Ann Duncan

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Academic Coordination and Efficiencies in the State University System

2010-2011 Academic Coordination Project

- The Board's Academic and Student Affairs Committee initiated the review of SUS academic degree programs to coordinate System program delivery and to identify academic efficiencies that might be gained across the System.
- For each institution, degree programs by level were identified as being below the degree production threshold criteria that were established in the CAVP Project work plan as follows:
  - Baccalaureate Programs – an average of less than six (6) degrees awarded per year over a five year period.
  - Master's, Specialist, Advanced Programs – an average of less than four (4) degrees awarded per year over a five year period.
  - Doctoral Programs – an average of less than three (3) degrees awarded per year over a five year period.
- Each university provost with faculty and staff reviewed the low productive programs based on: student demand for the program, workforce demand for graduates, program delivery options and innovations, and resource allocation.
- Campus decisions and proposed actions were reported for each program in one of five categories:
  - Program continuation with a specific rationale for doing so
  - A new collaborative or joint-delivery model
  - A specific corrective action plan for the program
  - Place the program in inactive status
  - Program termination.
- University submissions were compiled by the Board Office and reviewed by the CAVP in consideration of the SUS Degree Inventory and the need to provide high quality, high demand programs that meet employer needs.
- The Board Office reviewed with university representatives all programs recommended for continuation with specific rationale. This review included discussions on new delivery formats or other corrective action plans.
- The CAVP provided a summary report to the Committee at its June 2011 meeting.

FINDINGS

2011 Project

Of the **492** threshold programs (low productivity) identified:

- **59** programs were identified for corrective action or collaboration.
- **51** programs were place in inactive status.
- **74** programs were terminated or recommended for termination.
- **128** programs were newly established programs during the period.

- Since 2005, state universities have worked to streamline academic operations by reducing the array of general education courses, increasing enrollment in and thereby reducing course sections, consolidating courses and departments, optimizing the instructional load of faculty, closing non-essential and low-producing units, and increasing the delivery of distance education.

FINDINGS

For the period: Summer 2005 through Spring 2011

- 218 SUS degree programs have been terminated or are planned for termination.
- 74 SUS degree programs have been placed or are planned for placement into an inactive status.
- 191 SUS new degree programs have been implemented or have been approved for implementation.
  In the 2011 University Work Plan updates, the universities listed 96 proposed programs that are being planned for UBOT approval and implementation during the next three years.

An Annual Review Process: 2012 and Beyond

- The 2011 Academic Coordination Project triggered valuable academic planning sessions on the campuses regarding student demand for specific degree programs, workforce demand for graduates, program delivery options and innovations, and resource allocations.
- At its November 2011 meeting, the Board will consider for approval Regulation 8.004 – *Academic Program Coordination,* which will codify a process for the System-wide review and coordination of university academic programs.
- The CAVP will coordinate an annual review process for SUS academic program delivery and coordination that will consider the current and planned degree program offerings at each university and make recommendations that lead to better coordination across the State University System.
- The CAVP will meet at least annually to review degree programs recommended for termination and/or inactive status, along with proposed program reactivation and new degree program plans, to ensure that an appropriate level of access is provided for students across the State, and to ensure that opportunities are examined for collaborative design and utilizing shared resources across multiple institutions.
- In the University Work Plans, each university annually submits a list of new academic degree program proposals for the next three years and a list of low productive degree programs recommended either for a new collaborative or joint delivery model or for other corrective action.

- In each university's Annual Report submission, academic degree program changes are reported, including new program implementations, program suspensions, and program terminations.

System Efficiencies

Below are updates on other SUS Initiatives to gain academic efficiencies that evolved, in part, from the Academic coordination and Efficiencies project:

1. Adult Completion Initiative

Each year a significant number of students are forced to discontinue their pursuit of a college degree due to numerous factors that may include financial, work related, family obligations, health problems, and more. Some of these students have earned 60 to 120 credits, but no degree. The average income of Americans with a four-year degree is $43,000 per year, compared to $27,000 for those with just a high school diploma. In Florida, over 1.9 million adults have some college credit, which equates to 23% of the workforce.

To increase the number of Floridians holding a baccalaureate degree and thereby help to build a strong workforce and improve economic conditions in the state, a statewide degree completion initiative is under development that will utilize the resources of SUS institutions by developing a pilot program with USF, UWF, and other SUS institutions (FIU, UNF, FAMU and UF have expressed an interest). This program will be implemented under institutional Cooperative Program Agreements and it is envisioned that a single statewide portal will be developed for adult learners interested in degree completion. The agreement will enable SUS institutions to participate in this statewide degree completion initiative in two ways (1) offer complementary specializations to students for a program at another SUS institution using transient student model; (2) and/or develop a complementary degree completion program to offer within the statewide initiative.

2. Florida Institute for Oceanography

When FIO was reconstituted under the SUS AISO, Marine and Coastal Science education was a key component of the plan. There were numerous discussions regarding the role FIO could play in Coastal, Marine and Oceanography education, but the Deep Water Horizon oil spill moved that discussion onto the backburner.

Subsequently, the Council developed a plan built around a Marine/Coastal Biology Summer Program. Four or five FIO members located strategically around the state will agree to teach a 5 week Marine Science Course. Each location will specialize in one aspect of the course. Proposed sites include:

- St Petersburg - where oceanographic vessels are available,
- The Keys Marine lab - where reefs could be a focus,
- The Carolinian Bio-geographic Province - where oyster reefs and classic estuaries could be the emphasis,
- The Big Bend / peninsula area; and
- The SW part of the state - where the coastal Everglades and mangroves could be a focus.

Students will register at the five colleges or universities hosting or providing teaching faculty and spend one week at each location. This would likely be a 4 or 5 hour credit course and provide a fantastic and broad exposure to the field of Coastal Science/ Marine Science/ Oceanography. Most teaching institutions already have a course on the books that include these topics. The courses would be funded largely through tuition at the home institution, with some help needed for student ship time at St. Petersburg. Registration priority would be for member institutions, but students from other campuses could also take the course if space was available. It is projected that 80-100 students can be accommodated each summer in this course.

3. Professional Science Masters

Professional Science Master's (PSM) is an innovative graduate degree program initiated by the SUS Council of Graduate Deans and designed to allow students to pursue advanced training in science, while simultaneously developing workplace skills highly valued by employers. PSM programs prepare graduates for careers in business, government, and non-profit organizations, combining rigorous study in science and/or mathematics with coursework in management, policy, law, or related fields. Along with an emphasis on writing, leadership, and communication skills, most PSM programs require a final project or team experience, as well as an internship in a business or public sector setting.

- Currently, there are 27 PSM programs, with 8 more planned.
- In fall 2010, 272 students were enrolled in PSM programs.
- Since 2009, 66 degrees have been awarded in PSM programs.
- A statewide industry advisory board has been established.
- Student and employer surveys have taken place.
- A website is now online.

4. SUS Critical Language Network

The SUS Council of Academic Vice Presidents has initiated creation of a SUS Critical Language Network (CLN) to streamline the acquisition of the critical languages (e.g., Arabic, Mandarin, Russian, Hindi, Farsi, and Portuguese). The SUS CLN of nine state

universities (USF, UF, FSU, UCF, UWF, UNF, FIU, FAU, and NCF) will allow Florida's citizens to access the critical language courses and programs they require from across the entire state university system through: (1) coordination and communication of existing offerings; (2) targeted expansion of existing offerings to increase (online) access throughout the state; and (3) development of new language expertise to be shared across the SUS and the state.

This program will enhance **Florida's global competitiveness** by connecting local business and economic development to new markets (e.g., China, India, Brazil) and by improving the communication skills and intercultural literacy of its work force. In addition to economic benefits for the state and its citizens, this program will contribute significantly to enhancements in national security.

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STATE UNIVERSITY SYSTEM OF FLORIDA
BOARD OF GOVERNORS
Academic & Student Affairs Committee
November 9, 2011

SUBJECT: Adult Degree Completion Pilot Project

PROPOSED COMMITTEE ACTION

For information

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Not applicable

BACKGROUND INFORMATION

Governor Duncan will provide an update to the Committee regarding the status of the Adult Degree Completion Pilot Project that was presented at the September 2011 meeting.

Supporting Documentation Included: None

Facilitators / Presenters: Governor Ann Duncan

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