

Graduate Program Committee:

Attached for your review is the proposed **FAU Biomedical Science Graduate Certificate**.

The Certificate is part of our ongoing efforts in the Charles E. Schmidt College of Biomedical Science to evolve our graduate programs by integrating existing components with new cutting edge interdisciplinary training opportunities to engage faculty and students across campus with interests in the biomedical sciences.

### **Background**

Biomedical science is the focus of life science research globally. This reflects the need to better understand human health and disease to relieve suffering, cure illnesses, and improve the human condition benefiting mankind. The commitment of FAU to this field is clearly reflected by the recent evolution of the Charles E. Schmidt College of Biomedical Science. The ongoing growth of the biomedical science community in Palm Beach County makes this an ideal time to create new opportunities for FAU, and to engage its students and faculty to take on a leading role in the biomedical science arena.

### **Strengths at FAU**

The College of Biomedical Science has 20 faculty engaged in biomedical science basic research and instruction and over 11 faculty primarily engaged in teaching clinical biomedical sciences plus many affiliate faculty. These faculty form the core of the certificate program faculty and they have substantial experience teaching graduate students through two Master's programs offered by the College, and through participation in the interdisciplinary Integrative Biology PhD program with the College of Science, now in its 7<sup>th</sup> year. Participation of faculty from other colleges with complementary experience and expertise strengthen the program.

The College of Biomedical Science houses the regional campus of the University of Miami Miller School of Medicine, establishing the potential for further development of medical education on the main FAU campus in Boca Raton. Scripps Florida and the Max Planck Institute have satellites on the Jupiter campus, while the Harbor Branch Oceanographic Institute and the Torrey Pines Institute for Molecular Studies are established on the Port St. Lucie campus. The opportunities for collaboration in biomedical sciences in our local region is unequalled anywhere in the world.

FAU is already engaging national and international partners in the biomedical sciences. Formalizing a program with this specialization will strengthen these alliances and create new opportunities for interaction and development of graduate education programs.

### **Need**

Biomedical science is the link between basic research and its application in clinical settings that is essential to improving human health. The area is highly interdisciplinary and requires investigators to integrate cross-cutting techniques with advances in multiple fields. The College of Biomedical Science typically confers about 30 MS

degrees (with and without Thesis) in Biomedical Science every year, however, there is currently no PhD in Biomedical Science. There is also no way to collectively engage graduate students from the diverse participating programs across campus and to recognize their overarching interest in biomedical science. The best way to fill these gaps is through creation of the Biomedical Science Graduate Certificate Program.

The proposed graduate certificate program provides a mechanism to connect students and faculty across department, center, and college boundaries promoting exploration and understanding of the biomedical sciences to benefit the individuals and the institution.



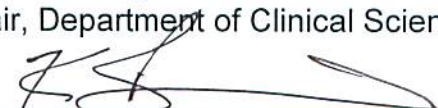

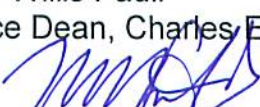
**Resources**

All of the required resources including staff, faculty, courses, and infrastructure are currently in place and no new resources are needed to implement this certificate program. The program will benefit from resources provided by new faculty and outside partners as the College and program grow in the future.

**Consultations**

The FAU Biomedical Science Graduate Certificate does not overlap with other programs at FAU. The relevant departments, centers, and colleges have been consulted and are strongly supportive of the proposed program as documented in the appended emails.

**Approved by:**

	2/25/10
Dr. Yoshimi Shibata Chair, Graduate Committee	Date
	2/25/10
Dr. Stuart Markowitz Chair, Department of Clinical Science and Medical Education	Date
	2/25/10
Dr. Keith Brew Chair, Department of Basic Science	Date
	2/25/10
Dr. Willis Paull Vice Dean, Charles E. Schmidt College of Biomedical Science	Date
	2/25/10
Dr. Michael Friedland Dean, Charles E. Schmidt College of Biomedical Science	Date

E mail from Paull:

Hello

Dr Burns had sent this to you previously and some responded. He incorporated your comments in the new document for your review. Would you please look it over, send me any additional suggestions if necessary. If you are willing to support this proposal, please send me back an email that I can put into the application for the graduate school.

Thank you very much for your help.

Willis K. Paull, PhD  
Vice Dean, Charles E. Schmidt College of Biomedical Science  
Professor and Schmidt Senior Fellow for Medical Education  
Florida Atlantic University  
777 Glades Road  
BC 71 Room 339  
Boca Raton, FL 33431  
561-297-1024(office)  
561-706-7718(cell)

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Responses:

Hi,  
I'm OK with the proposal.  
Herb Weisbach

<FAU Biomedical Science Certificate to distribute.pdf>

Bill,  
OK with me. Best luck with the program. Regards, Ram

**---Dr. Ramaswamy Narayanan**  
**Professor & Chair**  
**Department of Chemistry & Biochemistry**  
**Charles E. Schmidt College of Science &**  
**Assistant Vice President for Research, Division of Research**  
**Florida Atlantic University**  
**777, Glades Road, PS 110E**  
**Boca Raton FL 33431**  
**Tel 561 297 2247; Fax 561 297 2759**  
**<http://www.science.fau.edu/chemistry/2008faculty/2009narayanan.htm>**

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Hi Bill,

Your proposed Certificate program in Biomedical Science looks very good. I think you will find a receptive audience within our existing graduate student population.

Let me know if I can help since we have been working through administrative issues with our Certificate in Neuroscience. The biggest hurdle has been to get the certificate recorded on the student transcript!

Regards,

Janet

Janet C. Blanks, Ph.D.  
Director and Professor  
Center for Complex Systems and Brain Science (BS12) Florida Atlantic  
University  
777 Glades Rd.  
Boca Raton, FL 33431-0991  
Phone: (561) 297-4310  
FAX: (561) 297-3634  
E-MAIL: blanks@fau.edu

Bill,

I have no problem. You may find it an issue with GPC/UFS in that many of the proposed courses are offered as special topics (PCB 6933) and the GPC/UFS often want only approved graduate courses as part of the curriculum, otherwise the curriculum they approve may not necessarily be the final curriculum for the certificate. This may be more of a problem for degrees than certificates. However, if there is time, you could easily fill out the new course paper work and have those "special topics" courses approved as new courses at the same time as the certificate. Or will these be part of the new MD program in which case they will still need to be approved by GPC/UFS

Cheers  
Gary

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Gary W. Perry, Ph.D.  
Dean & Professor  
Charles E. Schmidt College of Science  
Florida Atlantic University  
Boca Raton, FL 33431  
Tel: 561.297.3288  
Email: [perryg@fau.edu](mailto:perryg@fau.edu)

Dr. Paull,

Thanks for sending me the revised document. I am happy to offer my support for the proposed Biomedical Science Graduate Certificate. Good luck with the program.

David L. Wolgin  
Chair

# **FAU Biomedical Science Graduate Certificate**

## **General Information**

Biomedical Science is a broad and interdisciplinary field focused on understanding and improving human health. It incorporates diverse areas of specialized investigation that share this common goal, including anatomy, biochemistry, cell biology, clinical sciences, cognitive sciences, development, genetics, immunology, medical sciences, microbiology, molecular biology, pathology, pharmacology, psychology, and others. FAU offers a Biomedical Science Graduate Certificate to provide Masters and PhD students an integrated background in the biomedical sciences. To achieve this aim, the 14-credit program has been designed with flexibility, reflecting the wide array of interests and expertise linked together through biomedical science. Although the program is centered on the Charles E. Schmidt College of Biomedical Science, faculty from other colleges and institutions contribute to its success, and students are welcomed from many departments, centers, and colleges throughout the university.

## **Admission Requirements**

Admission to, and completion of, this program is organized by the Dean's Office of the Charles E. Schmidt College of Biomedical Science. For admission, the applicant must satisfy the following criteria:

1. Enrollment in an FAU Masters or PhD training program in any of the following:

- Biomedical Science
- Biological Sciences
- Chemistry and Biochemistry
- Complex Systems and Brain Sciences
- Integrative Biology
- Psychology

Students must have approval of their graduate program to enroll, and must remain in good standing with their graduate program to continue in this certificate program.

2. Demonstrate competency in life science, mathematics, and other courses related to the certificate program such as by achieving at least 3.0 in these courses.
3. Interview with the Biomedical Science Graduate Certificate Program Director, or Graduate Committee Chair, to discuss the program goals and requirements, and obtain permission to enroll.

## **Certificate Program Details**

The 14-credit program is designed to recognize students who demonstrate mastery of the biomedical sciences with a certificate so indicating. The curriculum courses represent a select subset of all graduate biomedical science-related courses offered on campus. The courses are taught primarily by faculty in the College of Biomedical

Science although other faculty at FAU participate. The curriculum provide students opportunities to survey different areas of the biomedical science and to focus on ares of particular interest.

### **Requirements for Completion**

1. The course requirement is designed to be tailored to the individual student with their previous coursework and future goals in mind. Students must achieve a grade of at least 3.0 in each of four classes, totaling at least 12 credits, selected from this list:

BSC 6834	Introduction to Radiation Biology
PCB 6804	Reproductive Endocrinology
PCB 6207	Advanced Cell Physiology
PCB 6933	Integrated Morphology I/II
PCB 6933	Fundamentals of General Pathology
PCB 6933	Clinical Microbiology
PCB 6933	Host Defense and Inflammation
PCB 6933	Tumor Immunology
PCB 6933	Problem-Based Immunology
PCB 6933	Molecular Basis of Human Cancer
PCB 6523	Autonomic Function and Diseases
PCB 6933	Molecular Neuropsychopharmacology
BMS 6736	Brain Diseases: Mechanism and Therapy
PSB 6515	Developmental Neurobiology
PCB 6933	Adult Neurogenesis
PCB 6705	Molecular Biol. of the Cardiovascular System and Cardiac Disease
PCB 6885	Physiology of the Heart
PCB 6525	RNA Biology and Diseases
PCB 6933	Macromolecules and Human Disease
PCB 6933	Molecular Basis of Disease and Therapy
PCB 6933	Protein Misfolding and Disease
PCB 6933	Molecular & Cell Biology
PCB 6933	Topics in Biomedical Science 1/2

2. Students must achieve a grade of satisfactory in each of two semesters of PCB 6934 Graduate Seminars (1 cr).
3. Students must participate in the College of Biomedical Science Graduate Research Day each year showcasing graduate student research in the College.

### **Program Administration**

A formal Biomedical Science Graduate Certificate Program Committee will be formed from faculty of participating departments and centers. This committee will be responsible for establishing academic policy pertaining to the program, curriculum development and oversight regarding course offerings, and overall program

administration and evaluation. A Biomedical Science Graduate Certificate Program Director will be appointed by the Dean of the College of Biomedical Science and will chair this Committee. The Director, in consultation with the Dean, may reappoint the members. Decisions will be made by simple majority vote amongst Committee members. The Director will provide a report to the entire program faculty that outlines the activities of the committee at least once each academic year.

**Participating Departments and Centers**

Charles E. Schmidt College of Biomedical Science

Department of Basic Science

Department of Clinical Science and Medical Education

Charles E. Schmidt College of Science

Department of Biological Science

Department of Chemistry and Biochemistry

Department of Psychology

Center for Complex Systems and Brain Sciences

Center for Molecular Biology and Biotechnology