



COASTAL CAROLINA UNIVERSITY

Office of the Provost

October 31, 2008

Dr. Garrison Walters
Executive Director
South Carolina Commission on Higher Education
1333 Main Street, Suite 200
Columbia, SC 29201

Dear Dr. Walters:

Coastal Carolina University is submitting for your consideration the attached Program Planning Summary for a Bachelor of Science in Biochemistry.

Thank you for your help in the reviewing process. I look forward to hearing from you.

Sincerely,

Robert Sheehan, Ph. D.

Provost and Senior Vice President for Academic and Student Affairs

PROGRAM PLANNING SUMMARY

PROGRAM DESIGNATION:

Institution:	Coastal Carolina University
Academic unit involved:	College of Natural and Applied Science
Name of proposed program:	Bachelor of Science in Biochemistry
Proposed date of implementation:	Fall 2010
CIP Code	26.0202
New program or modification:	New Program
Number of credit hours:	120
STEM designation	Yes

JUSTIFICATION OF NEED

Scientific knowledge often advances as a result of interdisciplinary approaches. There is perhaps no better example of this than the advances in molecular biology that emerged largely as a result of research at the interface of biology and chemistry. The rise of molecular biology as a discipline and the applications of molecular biology in healthcare and biotechnology have spawned a need for new interdisciplinary approaches to undergraduate science education. This planning summary addresses such a need by proposing a new interdisciplinary degree in biochemistry. The development of this degree makes use of existing strengths in the Biology Department and in the Department of Chemistry and Physics. We will blend courses offered in the two academic units into a new degree that will be particularly useful and advantageous for students seeking eventual admission to medical school.

Presently, Coastal Carolina University offers B.S. degrees in biology and in chemistry. However, during the last three years the university has implemented several changes that created a need for a new degree in biochemistry. First, the university hired two new faculty members, one in the Biology Department and one in the Chemistry and Physics Department. Both of these individuals conduct research on structure and function of proteins in biological systems and various faculty members have added new courses amenable to a biochemistry emphasis: Immunology, Molecular Biology, Parasitology, and Virology. Their research expertise is complementary but they are physically assigned to different departments. Second, the university is making a concerted effort to increase its medical school application rate and acceptance percentage. This is being done through the hiring of a premed advisor and by the formation of a premed review board. It is the feeling of the premed review board that a degree in biochemistry would better prepare students for medical school than would traditional degrees in biology or in chemistry. Lastly, the university is also attempting to send more students into graduate schools at the R1 institutions in South Carolina. A biochemistry degree would make our students more competitive for admission to the graduate programs in the Genetics and Biochemistry Department at Clemson and in the Chemistry and Biochemistry Department at the University of South Carolina.

ANTICIPATED PROGRAM DEMAND AND PRODUCTIVITY

The proposed degree in biochemistry will not likely attract large numbers of students, but it will attract high-achieving students who are focused on assembling competitive medical school applications. A recent email survey of current Coastal Carolina University science majors generated responses from five students who indicated that this would be their degree of choice if it were available. The primary reason for wanting a biochemistry degree is to prepare for medical school. A recent survey of students taking the current biochemistry class indicated that seven of the fifteen would declare biochemistry as a major rather than declaring biology or chemistry. Assuming six students declare biochemistry as a major, we anticipate that four students each year would graduate with the degree. This represents 70% of the number of students that graduated in 2007 from Coastal Carolina University with degrees in chemistry and 7% of the students that graduated with degrees in biology. It is difficult to estimate how many incoming students would declare biochemistry as a major. However, if we promote the program as a viable option for eventual admission to medical school—which we plan on doing—it is likely that the number of declared biochemistry majors would be substantially higher than six. While these numbers are small, if all of the individuals completing the degree in biochemistry are indeed successful at gaining admission to medical school, this would have a large positive impact on our medical school admission percentage.

ASSESSMENT OF EXTENT TO WHICH THE PROPOSED PROGRAM DUPLICATES EXISTING PROGRAMS IN THE STATE

Two public institutions in South Carolina offer undergraduate biochemistry degrees: Clemson University and College of Charleston. Three private institutions offer undergraduate biochemistry degrees: Charleston Southern, Claflin, and Converse College. The curriculum proposed at Coastal Carolina University is similar in many aspects to the ones offered by Clemson and College of Charleston in that students take a broad range of foundation courses in biology, chemistry, mathematics and physics during the first two years. During the final two years, students take advanced courses in physical biochemistry, cell biology, molecular biology techniques and others. However, unique aspects of the Coastal Carolina University program include courses in both Physical Biochemistry and Physical Chemistry as well as several specialized courses in biology will focus on biochemical aspects of human disease. Coastal Carolina University also encourages undergraduate student research therefore students in the program will complete at least one research project.

RELATIONSHIP OF THE PROPOSED PROGRAM TO EXISTING PROGRAMS AT THE PROPOSING INSTITUTION

The proposed biochemistry degree at Coastal Carolina University is an interdisciplinary program formed by selective blending of the existing biology and chemistry degrees. It is anticipated that the initial cohort of students pursuing biochemistry will come from the

biology and chemistry departments. Faculty members from biology and chemistry will oversee this degree program, will meet regularly to assess program success and will be responsible for systematic offering of key courses in the degree. It is anticipated that this degree will foster greater interdisciplinary activity and will perhaps spawn more collaborative research and the pursuit of external funding.

Lastly and perhaps most importantly, students in this degree will get a unique perspective. By completing the sequence of courses and by observing involved faculty, they will learn, for example, that some disciplines can only be approached by a multi-disciplinary approach.

RELATIONSHIP OF THE PROPOSED PROGRAM TO OTHER INSTITUTIONS VIA INTER-INSTITUTIONAL COOPERATION

We predict that this degree will have impacts on other institutions primarily as a result of greater success in Coastal Carolina University sending students to Clemson and University of South Carolina. Specifically, we anticipate that more of our students will gain admission to the Medical University of South Carolina and to the graduate biochemistry program at Clemson and University of South Carolina. We also anticipate that this program will better position Coastal Carolina University for expanded participation in the South Carolina Experimental Program to Stimulate Competitive Research and Institutional Development Awards (SC EPSCOR/IDeA).

TOTAL NEW COSTS ASSOCIATED WITH IMPLEMENTING THE PROPOSED PROGRAM

This new program makes full use of existing and planned faculty; thus no new hires are required. Instrumentation for student use in the new Physical Biochemistry course will be purchased with a combination of internal (technology) and external (NIHS) funding sources. Supplies for the new course will be provided from the existing departmental budgets. No additional funds for this program are expected to be requested from the state.



Dr. David A. DeCenzo, President
Coastal Carolina University

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