

**New Program Proposal
Bachelor of Science
Biochemistry
Coastal Carolina University**

Summary

Coastal Carolina University requests approval to offer a new program leading to the Bachelor of Science degree in Biochemistry, to be implemented in Fall 2010. The proposed program is to be offered through traditional instruction on the Coastal Carolina University main campus.

The Program Planning Summary was submitted to the Commission on October 31, 2008, and reviewed and voted upon favorably with substantive comment by the Advisory Committee on Academic Programs (ACAP) on January 15, 2009. At the meeting, a Coastal Carolina University representative was asked to provide clarification as to why the institution chose to add a new major rather than add a concentration. The representative stated that the department chose a new major because of the proposed program's interdisciplinary aspect, and they anticipate the program will grow quickly. Coastal Carolina University Board of Trustees approved the final proposal on May 8, 2009. The final proposal was received by the Commission on August 17, 2009.

According to the proposal, the purpose of the proposed program is three- fold: (1) to provide students with job skills; (2) to assist students with preparation and performance in medical school; and (3) to place more science students in graduate school. The proposed program's interdisciplinary approach and emphasis on health-related programs will prepare science students for careers in the biotechnical/biochemical sciences and increase their preparation for entry into medical and graduate school. The proposed program will assist graduates to develop thorough knowledge and complex problem-solving skills important to potential employees and/or graduate schools. Students with knowledge and training in such an interdisciplinary field will be well prepared for employment in the new industry of biotechnology.

According to the proposal, the growing interest in the program is illustrated by an email survey distributed to current Coastal Carolina University science majors. Of the students who responded, five indicated that they would choose a biochemistry degree if it were to be available, primarily to prepare for medical school. According to a different survey conducted during the 2009/2010 academic year, 19 out of 73 students enrolled in an organic chemistry course indicated that they would switch to a biochemistry major. The proposal states that the majority of the students expressing an interest in the proposed program are biology majors.

Clemson University and the College of Charleston offer programs leading to the Bachelor of Science degree in Biochemistry. Three private institutions, Charleston Southern, Claflin College, and Converse College, also offer an undergraduate degree program in Biochemistry. According to the proposal, Coastal Carolina University's program will include unique components such as courses in Physical Biochemistry and Physical Chemistry, specialized courses in biology that focus on biochemical aspects of human diseases, and a research project.

The proposed program will consist of 120 credit hours. All but two of the courses currently exist within the college's catalog of courses. The coursework will include general education requirements (34-41 credit hours); freshman success seminar requirement (3 credit hours); foundation courses (60 credit hours); major requirements (12 credit hours); and

electives (4-14 credit hours). The proposed curriculum will require two new courses (Physical Biochemistry and Physical Biochemistry Lab) for a total of four credit hours to be added to Coastal Carolina University's catalog.

Student learning outcomes will be evaluated using an assessment process approved by the College of Natural and Applied Sciences. The proposed program's assessment plan will use two instruments, the Educational Testing Service's Major Field Test (MFT) and the National Science Foundation-sponsored Critical Thinking Assessment Test (CAT), to assess students' content knowledge and critical thinking skills. Data collected will assist in program evaluation to determine the need for program improvement and curricular modifications.

According to the proposal, Coastal Carolina University plans to promote the program as a viable option for preparation for admission to medical school, which would attract new students and students currently enrolled in the biology and chemistry programs. The proposal anticipates there will be ten new students (7.0 FTE) in the program's first year, increasing to 11 students (7.5 FTE) in the second through fourth years and to 12 students (8.0 FTE) in the fifth year of the program. Total enrollment in the proposed degree program is estimated to begin at 20 students (19.0 FTE) in the first year of the program, increasing to 22 students (21.0 FTE) in the second year, to 25 (24.0 FTE) in the third and fourth years, and to 30 students (29.0 FTE) in the fifth year of the program's implementation. If enrollment and program completion projections are met, the proposed program will meet the Commission's productivity standards.

The proposal states that admissions and transfer criteria will be the same as for all other students accepted into Coastal Carolina's undergraduate programs. The proposal also states that current articulation agreements in place with all South Carolina's two-year institutions will apply.

The program proposal notes that one new faculty member was added to the Chemistry Department in Fall 2009; however, no additional faculty will need to be hired to support this program. The proposed program will use existing faculty currently teaching in the biology and chemistry departments. Additionally, there will be no new administration or staff personnel required for the implementation of the proposed program.

The interdisciplinary program leading to a degree in Biochemistry will be administered and housed in the chemistry and biology departments. Faculty members in the biology and chemistry departments will oversee the proposed program's curriculum. The proposal states that as the program develops the institution may seek the American Chemical Society (ACS) certification for the Biochemistry degree program.

The proposal states that no new costs for additional physical space are required for the successful implementation of the proposed biochemistry program. According to the proposal, the existing Smith Science Center has two teaching labs dedicated to upper-level courses in biology and biochemistry. Swain Hall, currently under construction, will house four additional teaching labs and 18 research spaces; it is expected to be completed in 2010. The proposal further states that equipment, including one computer (\$2000) and lab equipment (\$52,000), will be purchased for the proposed program within the first five years of implementation.

The Kimbel Library provides print and electronic resources, including the statewide PASCAL databases, Interlibrary Loan, Internet access, bibliographic instruction, reference books and a variety of class-specific user education programs, library catalog, and on-line resources. As noted in the proposal, Coastal has identified three institutions based on FTE student enrollment and type of institution for the purpose of evaluating library holdings.

These institutions, Charleston Southern University, Clemson, and Rowan University, have an average of 29 titles per student, while Coastal has only 22 relevant titles per student in the major. Also, according to the proposal, only 30% of the available titles relevant to this area were published within the last eight years, indicating that the holdings will need to be updated. The library will need to acquire approximately 70 additional titles to reach the bench mark of 29 titles per student and will expend a total of \$7,000 over the first five years of the program in order to do so.

The proposal states that new costs for the proposed program include \$54,500 in the first year, increasing to \$103,000 in the second year, decreasing to \$54,636 in the third year, and increasing to \$55,636 and \$57,275 in the fourth year and fifth years respectively. Categories of new costs in the first five years of the proposed program include faculty salaries (\$65,456), library resources (\$7,000), and equipment (\$54,000). Total new costs for the first five years of the program are estimated to be \$326,456. Revenues will be generated through tuition funding and reallocation of existing funds. No "unique cost" or other special state appropriations will be required or requested.

Shown below are the estimated Mission Resource Requirement (MRR) costs to the state and new costs not funded by the MRR associated with the implementation of the proposed program for its first five years. Also shown are the estimated revenues projected under the MRR and the Resource Allocation Plan as well as student tuition.

Estimated Program Costs and Revenue

	Estimated Program Costs		Estimated Program Revenue				
	(A) MRR Cost	(B) Other Costs *	(C) Actual State Funding	(D) Tuition	(E) Additional Revenue	(F) Total Revenue (C+D+E)	(G) Total Revenue - Total Costs (F-(A+B))
Year 1	\$42,777	\$0	N/A	\$80,374	\$0	\$80,374	\$37,597
Year 2	\$45,833	\$0	\$16,709	\$86,587	\$0	\$103,296	\$57,463
Year 3	\$45,833	\$0	\$17,732	\$86,587	\$0	\$104,319	\$58,486
Year 4	\$45,833	\$0	\$17,732	\$86,587	\$0	\$104,319	\$58,486
Year 5	\$48,888	\$0	\$17,732	\$91,856	\$0	\$109,588	\$60,700

*Includes costs of an extraordinary nature not otherwise included in the MRR cost calculation (e.g., costs for a new building required to support a program). [Note: \$2533 in-state funding per FTE -\$13,122 in tuition funding per FTE!]

These data demonstrate that if Coastal Carolina University can meet the projected student enrollments and contain costs as shown in the proposal, the proposed program will be able to cover costs with revenues it generates beginning in the first year of implementation and continuing thereafter.

CHE
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In summary, Coastal Carolina University is proposing a new program leading to the Bachelor of Science degree in Biochemistry, to be implemented in Fall 2010. The proposed program will prepare graduates for further education, advanced training, and employment in various biotechnical and biochemical related occupations as well as entry into medical and graduate school.

Recommendation

The Committee on Academic Affairs and Licensing commends favorably to the Commission approval of the program leading to the Bachelor of Science degree in Biochemistry at Coastal Carolina University, to be implemented in Fall 2010, provided that no “unique cost” or other special state funding be required or requested.