New Program Proposal
Bachelor of Science in Clinical Laboratory Science
University of South Carolina Aiken

Summary

The University of South Carolina Aiken (USC Aiken) requests approval to offer a program leading to the Bachelor of Science in Clinical Laboratory Science to be implemented in Fall 2016. The proposed program is to be offered through traditional instruction. The following chart outlines the stages of review for the proposal; the Committee on Academic Affairs and Licensing (CAAL) voted to recommend approval of the proposal. The full program proposal is attached.

Stages of Consideration	Date	Comments
Program Proposal Received	5/1/15	Not Applicable
ACAP Consideration	6/11/15	ACAP members discussed the need and expressed support for the proposed program.
Comments and suggestions from CHE staff sent to the institution	6/15/15	Staff suggested that the University use CIP code 260102, which is more appropriate given the description of the program. Staff also requested the proposal be revised to: • Include state level employment data, if available. • Provide the total credit hours required for the program. • Explain costs identified in the MOU with University Health Services in the budget justification section.
Revised Program Proposal Received	6/17/15	The revised proposal satisfactorily addressed all of the requested revisions.
CAAL Consideration	7/15/15	The University's representative described the program as a 3+1 program with students studying at USC Aiken for three years and then completing their studies with a clinical experience at University Health Care System. He also stated that the program will be very competitive and those who are not admitted to the program will be given the option of completing a degree in biology. A commissioner asked how many graduates of the program will be employed by the University Health Care System. The University's representative stated that several graduates could expect to be employed there, but that USC Aiken's Career Center would also assist graduates seeking employment.

Stages of Consideration	Date	Comments
		He added that the year-long clinical experience would increase graduates' employment opportunities. A commissioner asked whether the institution's proximity to the state border would be an issue. The University's representative responded that reciprocal agreements are place with institutions and employers in the Augusta, Georgia area so the proximity to the border is not an issue.

Recommendation

The Committee on Academic Affairs and Licensing recommends the Commission approve the program leading to the Bachelor of Science in Clinical Laboratory Science to be implemented in Fall 2016.

Name of Institution

University of South Carolina Aiken

Name of Program (include concentrations, options, and tracks)

Bachelor of Science in Clinical Laboratory Science

Program Designation

- ☐ Associate's Degree
- ☐ Master's Degree
- ☒ Bachelor's Degree: 4 Year
- ☐ Specialist
- ☐ Bachelor's Degree: 5 Year
- ☐ Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA)
- ☐ Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.)

Does the program qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- ☒ Yes
- ☐ No

Proposed Date of Implementation
Fall 2016

CIP Code
26.0102 Biomedical Sciences, General

Delivery Site(s)
USC Aiken campus, University Health Care System (Augusta, GA)

Delivery Mode

- ☒ Traditional/face-to-face*
  *select if less than 50% online
- ☐ Distance Education
  - ☐ 100% online
  - ☐ Blended (more than 50% online)
  - ☐ Other distance education

Program Contact Information (name, title, telephone number, and email address)
Dr. William H. Jackson, Chair
Department of Biology and Geology
Email: billj@usca.edu
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Institutional Approvals and Dates of Approval

USCA Department of Biology and Geology Faculty-September 13, 2013; USCA Courses and Curricula Committee-March 17, 2014;USCA Council of Science-April 8, 2014; USCA Academic Council-April 8, 2014; USCA Faculty Assembly-April 29, 2014

Background Information

State the nature and purpose of the proposed program, including target audience and centrality to institutional mission. (1500 characters)

The purpose of the Bachelor of Science in Clinical Laboratory Science (BSCLS) is to provide a regional professional program for USC Aiken biology majors who are interested in an Allied Health career in a medical laboratory setting. Our program is unique in that it will be the only one of its type in this area of South Carolina and will supply well-qualified Medical Laboratory Scientists to hospitals and clinical laboratories within the Central Savannah River Area (CSRA). The USC Aiken BSCLS is designed as a 3+1 program offered in collaboration with the University Health Care System, which is accredited through the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) and will offer the professional, clinical component of the degree program. Students who successfully complete the clinical internships will be awarded the BSCLS degree and be eligible to sit for national certification examinations administered by the National Certifying Agency for Medical Laboratory Personnel (NCA) and the American Society of Clinical Pathologists (ASCP). Those who fail to qualify for the Clinical component may complete their degree through our proposed Molecular Biology concentration (program modification).

List the program objectives. (2000 characters)

USC Aiken biology majors pursuing the Bachelor of Science in Clinical Laboratory Science will be provided the opportunity to understand general and human health-related biological concepts, develop clinical skills, communicate ideas, and accept responsibilities in scientific settings. Students will study the history, laws, principles, and theories of biology. By graduation, the BSCLS major will:

1. develop critical thinking skills;

2. apply the Scientific Method;

3. develop research and clinical skills;

4. demonstrate an understanding of the history, terminology, principles, and unifying theories of the Biological sciences;

5. perform the duties and carry out the responsibilities of a Clinical Laboratory Scientist in a professional manner;

6. operate clinical laboratory equipment to carry out analyses of bodily fluids and tissues;

7. manage patient data and communicate results with supervisors and physicians.

Assessment of Need

Provide an assessment of the need for the program for the institution, the state, the region, and beyond, if applicable. (1500 characters)

The American Society of Clinical Laboratory Scientists (ASCLS) predicts a 14% increase in job opportunities for medical laboratory technicians and scientists through 2016. In addition, this group projects 25% job growth and stable job security for all clinical laboratory scientists, which ranks third highest among all health-related occupations. A further analysis of job projections for Clinical Laboratory Scientists by the U.S. Bureau of Labor Statistics predicts an 11% rate of growth for medical laboratory technologists between 2010 and 2020. In addition, these data suggest that our aging population will lead to a greater need for medical laboratory technologists. There are currently (June 2015) 51 job postings Clinical Laboratory Technologists across South Carolina on Indeed.com. In addition, there are 14 additional postings in the Augusta, Georgia area.

The Central Savannah River Area encompasses thirteen Georgia counties and five South Carolina counties, Aiken, Allendale, Barnwell, Edgefield, and McCormick counties, which are primarily rural and underserved in terms of career opportunities. As our population ages there will be a greater impact on the healthcare industry in this area, and while we typically think of physicians and nurses as impacted by this trend, we often fail to consider the support staff that is required to generate and process medical laboratory data. This in turn points to the need for a professional program in clinical laboratory medicine specifically targeted to the USC Aiken-serving population. USC Aiken is uniquely poised to collaborate with the UHCS to offer a Bachelor of Science degree in Clinical Laboratory Science.

Employment Opportunities

Is specific employment/workforce data available to support the proposed program?

☒Yes

☐No

If yes, complete the table and the component that follows the table on page 4. If no, complete the single narrative response component on page 5 beginning with “Provide supporting evidence.”

Employment Opportunities			
Occupation	**Expected Number of Jobs**	**Employment Projection**	**Data Source**
Clinical Laboratory Technician	47,900 Nationwide	29.7% increase through 2022	U.S. Bureau of Labor Statistics
Clinical Laboratory Scientist	Not provided	16% increase through 2016	American Society of Clinical Laboratory Scientists
Clinical Laboratory Technologist	51 SC postings, 14 Augusta, GA postings		Current job postings (June, 2015) on Indeed.com

Provide additional information regarding anticipated employment opportunities for graduates. (1000 characters)

As of January 1, 2015, there were 6,360 national job postings for Clinical Laboratory Technologists on Indeed.com (www.indeed.com), a job search site recommended by our clinical partner. A more recent search (June, 2015) of positions showed 50 postings from across South Carolina. In addition there are 52 postings for positions within 100 miles of USC Aiken, which includes 14 positions in the Augusta, GA area. In numerous discussions with potential clinical partners, the consensus opinion on career outlook and continued job opportunities for Clinical Laboratory Technologists was very positive. A common theme among our partners was the need to train new clinical laboratory technologists, not only for the increased demand in the job market, but also to replace those who are approaching retirement. In all, there is no evidence that there will be difficulties for graduates of this program to find gainful employment in their field.

Will the proposed program impact any existing degree programs and services at the institution (e.g., course offerings or enrollment)?

☐Yes

☒No

If yes, explain. (500 characters)

List of Similar Programs in South Carolina

Program Name	Institution	Similarities	Differences
Clinical Laboratory Science/ Medical Technology/Technician	Southern Wesleyan University	Coursework taken on campus, clinical instruction in approved institution	Additional biology course requirements (37 hours at USCA vs. 23 hours at SWU)
Clinical Laboratory Science/ Medical Technology/Technician	Coker College	Coursework taken on campus, clinical instruction in approved institution	Additional biology course requirements (37 hours at USCA vs. 23 hours at Coker College). BS degree at USCA, BA degree at Coker.
Clinical/Medical Laboratory Technician	Several SC Tech schools, e.g. Midlands Tech, Greenville Tech, Tri-County Tech, etc.	Coursework taken on campus, clinical instruction at affiliated hospital	Additional biology course requirements (37 hours at USCA vs. 23 hours at Tech Schools). USCA students have the option of completing a BS with a concentration in Molecular Biology.
Cardiovascular Technology/Technologist	MUSC, USC Columbia, and Piedmont Tech (AAS)	Coursework taken on campus, clinical instruction at approved institution.	Much more specialized program where graduates work in cardiology departments in a hospital setting

Description of the Program

Projected Enrollment						
Year	Fall		Spring		Summer	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Credit Hours
2015-2016	10	160	10	170	2	8
2016-2017	22	390	22	410	2	8
2017-2018	31	535	31	555	2	8
2018-2019	36	610	36	630	2	8
2019-2020	40	680	40	700	2	8

Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program?

☒Yes

☐No

If yes, explain. (1000 characters)

All regularly admitted USC Aiken students will be eligible for the Clinical Laboratory Science program upon completion of 60 semester hours toward the biology major to include 8 semester hours of introductory biology, 8 semester hours of general chemistry, 3-4 semester hours of calculus, and a 2.75 cumulative GPA, which is required for admission into the clinical component. Students must maintain a 2.75 GPA to remain in the program. Students not meeting the minimum GPA requirement, or those who fail to gain admittance into a clinical program, may choose to complete the BS degree program in our proposed Molecular Biology concentration. The BS in Clinical Laboratory Science consists of 51-54 general education semester hours, 37 biology semester hours, 4 cognate hours, and 28 semester hours of clinical study, totaling 120-123 semester hours. BSCLS candidates may apply to enter the clinical program following completion of 75 semester hours. Those who are admitted into the professional program will complete 48 weeks of clinical training at the University Health Care System.

Are there any special articulation agreements for the proposed program?

☐Yes

☒No

If yes, identify. (1000 characters)

Curriculum

Select one of the following charts to complete: Curriculum by Year **or** Curriculum by Category

Curriculum by Year					
Course Name	**Credit Hours**	**Course Name**	**Credit Hours**	**Course Name**	**Credit Hours**
Year 1					
Fall		**Spring**		**Summer**	
English 101	3	English 102	3		
Biology 121 – Biological Sci I	4	Biology 122 – Biological Sci II	4		
Math 122 or 141 - Calculus	3-4	Chem 112 – General Chem II	4		
Chem 111 – General Chem I	4	Social/Behavioral Science	3		
Critical Inquiry	1				
Total Semester Hours	15-16	Total Semester Hours	14	Total Semester Hours	
Year 2					
Fall		**Spring**		**Summer**	
Biology 350 – Genetics	4	Biology 340 - Virology	4		
Chem 331/331L – Organic Che	4	Biology 541 - Biochemistry	3		
Statistics	3	American Political Institutions	3		
Foreign Language I	3-4	Foreign Language II	3-4		
		Humanities	3		
Total Semester Hours	14-15	Total Semester Hours	16-17	Total Semester Hours	
Year 3					
Fall		**Spring**		**Summer**	
Biology 330 – Microbiology	4	Biology 550 - Immunology	3		
Biology 502 – Cell/Molecular	3	Biology 360 – Animal Physiol	4		
Biology 332 – Human Anatomy	4	Humanities	3		
Social/Behavioral Science	3	Humanities	3		
Communications	3	World History	3		
Total Semester Hours		Total Semester Hours	16	Total Semester Hours	
Year 4					
Fall		**Spring**		**Summer**	
Biology 440 – Clinical Intern I	14	Biology 450 – Clinical Intern II	14		

120-123 Total Hours

Course Descriptions for New Courses

Course Name	Description
BIOL 332 Integrated Human Anatomy	An integrated survey of human anatomy to include development, histology, and gross anatomy of human systems. The organizational structure and integration of human systems are stressed.
BIOL 440 Medical Technology Internship I	A 24 week didactic internship in collaboration with the University Health Care System consisting of the following topics: Laboratory/Hospital Orientation (1 wk); Urinalysis and Body Fluid Analysis (1 wk); Introduction to Phlebotomy (1 wk), Clinical Chemistry and Toxicology (3 wks); Clinical Hematology/Coagulation (3 wks); Microbiology I (4 wks); Microbiology II (3 wks); Medical Parasitology (2 wks); Medical Mycology (1 wk); Medical Virology (1wk**);** Clinical Immunohematology (3 wks); Laboratory Leadership and Management (1wk).
BIOL 450 Medical Technology Internship II	A 24 week clinical internship in collaboration with the University Health Care System with clinical rotations in the following areas: Microbiology I (4 wks); Microbiology II (4 wks); Clinical Hematology (4 wks); Clinical Chemistry (3 wks); Blood Banking (3 wks); Urinalysis and Body Fluid Analysis (1 wk); Serology/POC (1 wk); Histology (2 wks); Laboratory Leadership and Management (2wks) and Phlebotomy (1 wk).

Faculty

Faculty and Administrative Personnel				
Rank	**Full- or Part-time**	**Courses Taught or To be Taught, Including Term, Course Number & Title, Credit Hours**	**Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major**	**Other Qualifications and Comments (i.e., explain role and/or changes in assignment)**
Associate Professor 1	Full	BIOL 340 (4), 350 (4) 502 (3), 550 (3)	Ph.D., Immunology, Medical College of GA	
Professor 1	Full	BIOL 330 (4) Microbiology	Ph.D., Microbiology, Clemson University	
Associate Professor 2	Full	BIOL 121 (4), Biological Science I, BIOL 360 (4)	Ph.D., Envrn. Toxicology, Univ of South Carolina	
Associate Professor 3	Full	BIOL 122 (4) Biological Science II	Ph.D., Ecology, Wake Forest University Missouri-Columbia	
Assistant Professor 1	Full	BIOL 121 (4) Biological Science I; 332 (4) Integrated	Ph.D., Devlp. Biology, Univ College London	
Assistant Professor 2	Full	BIOL 121 (4) Biological Science I, 541 (3)	Ph.D., Biochemistry, University of Missouri-Columbus	
Assistant Professor 3	Full	BIOL 122 (4) Biological Science II	Ph.D., Wildlife & Fisheries, Texas A&M	

Note: Individuals should be listed with program supervisor positions listed first. Identify any new faculty with an asterisk next to their rank.

Total FTE needed to support the proposed program (i.e., the total FTE devoted just to the new program for all faculty, staff, and program administrators):

Faculty	3.3	Staff	0.10	Administration	0.05

Faculty /Administrative Personnel Changes

Provide a brief explanation of any additional institutional changes in faculty and/or administrative assignment that may result from implementing the proposed program. (1000 characters)

The program will be provided by existing faculty/staff/administration. No new positions required.

Library and Learning Resources

Identify current library/learning collections, resources, and services necessary to support the proposed program and any additional library resources needed. (1000 characters)

The USC Aiken Gregg-Graniteville Library occupies a two-story, 40,000ft^2 building situated on the university's quadrangle. The collection contains 211,251 volumes of books/serials, 79,896 microfilm/microfiche units, and some 4,217 volumes of media materials. Students have access to 252 databases, including DISCUS and PASCAL, totaling 29,776 E-journals and 60,841 E-books. Our current monograph holdings (print and electronic) in the biological sciences include: Genetics - 213, Cell Biology - 163, Human Anatomy - 91, Physiology - 1296, Molecular Biology/Microbiology - 343.

Given that the biological sciences are particularly reliant on current peer-reviewed journal literature, our current monographs collection is adequate to meet student needs; however, additional resources should be acquired to strengthen the monographic holdings to fully meet the curricular needs in the areas that are weakest. This would require an estimated $5,000 per year additional funds, totaling $25,000.

Student Support Services

Identify academic support services needed for the proposed program and any additional estimated costs associated with these services. (500 characters)

No additional academic support services are anticipated for this program.

Physical Resources

Identify any new instructional equipment needed for the proposed program. (500 characters)

The current physical plant will provide adequate space for the BSCLS degree program. No modifications to existing facilities are anticipated at this time. No purchases of major equipment will be needed to implement the BSCLS degree program. Additionally, our clinical partner will provide all clinical equipment and training.

Will any extraordinary physical facilities be needed to support the proposed program?

☐Yes

☒No

Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements, including new facilities or modifications to existing facilities. (1000 characters)

The Department of Biology and Geology houses shared laboratory spaces, totaling 2,272 square feet. These facilities include: Tissue culture: equipped with two biological safety cabinets, two CO_2 incubators, two inverted microscopes (one with epifluorescence capabilities), digital imaging capability, an electorporator, and centrifuges; Microscopy: equipped for both brightfield and epifluorescence microscopy work, each with digital imaging capabilities; Gel/Blot documentation: equipped with a BioRad ChemiDOC gel imaging system for EtBr, fluorescence, and luminescence imaging, and a Storm Phosphorimager; and General use: equipped with autoclaves, high-speed centrifuges, deionized and distilled water, and ¯80 freezers. In addition, there are three research laboratories dedicated to the Biomedical/molecular biology research of four faculty members. These laboratories contain ample bench space and the required consumables and equipment to conduct standard molecular biology techniques.

Financial Support

Estimated New Costs by Year						
Category	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Total**
Program Administration	3258	3300	3333	3367	3400	16668
Faculty and Staff Salaries	69368	114514	186729	270975	271009	912595
Graduate Assistants	0	0	0	0	0	0
Equipment	0	0	0	0	0	0
Facilities	0	0	0	0	0	0
Supplies and Materials	600	1850	3450	5450	5450	16800
Library Resources	5000	5000	5000	5000	5000	25000
Other*	2500	2500	2500	2500	2500	12500
Total	80726	127164	201012	287292	287359	983563
Sources of Financing						
Category	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Total**
Tuition Funding	94895	213987	309065	367888	377085	1362920
Program-Specific Fees	0	0	0	0	0	0
State Funding (i.e., Special State Appropriation)*	0	0	0	0	0	0
Reallocation of Existing Funds*	0	0	0	0	0	0
Federal Funding*	0	0	0	0	0	0
Other Funding*	0	0	0	0	0	0
Total	94895	213987	309065	367888	377085	1362920
Net Total (i.e., Estimated New Costs Minus Sources of Financing)	14169	86823	108053	80596	89726	379357

*Provide an explanation for these costs and sources of financing in the budget justification.

Budget Justification

Provide a brief explanation for the other new costs and any special sources of financing (state funding, reallocation of existing funds, federal funding, or other funding) identified in the Financial Support table. (1000 characters)

Note: Institutions need to complete this budget justification *only* if any other new costs, state funding, reallocation of existing funds, federal funding, or other funding are included in the Financial Support table.

The budget assumes 10 new students in year one, 22 total students in year two, 31 students in year three, 36 total students in year four and 40 total students by year five. The budget also assumes a 2.5% tuition increase per year, 10% of time for an administrative assistant and a 1% annual raise for clerical staff. Faculty salary estimates are based on the average FTE salary and fringes of $72,182. In the MOU with UHMC, USC Aiken has agreed to reimburse UHMC at $2,000/student for the first 12 students, and $1,500 for each student over 12 up to 15 students. We anticipate 5 interns ($10,000) in the third year, 12 interns ($24,000) in the fourth year, and 12 students ($24,000) in the fifth year. This reimbursement was categorized as part-time faculty salaries for supervising/teaching the clinical laboratory experiences at UHMC and has been included in the faculty salary portion of the table. Administrative costs assume 5% of unit head's time for administering program and a 1% raise per year. Course material costs are based on current per student expenditures for proposed lab courses. The BSCLS program is designed to use existing courses currently offered by the Department of Biology and Geology, and therefore no additional faculty are anticipated. Therefore there are no real additional expenses concerning personnel. The only new costs are library ($5,000/year and marketing costs ($2,500/year). These costs will be funded through tuition generated after the first year of the program.

Evaluation and Assessment

Programmatic Assessment: Provide an outline of how the proposed program will be evaluated, including any plans to track employment. Identify assessment tools or software used in the evaluation. Explain how assessment data will be used. (3000 characters)

Assessment of the BSCLS degree program will mirror our practices in our current BA/BS biology degree programs.

1. Students in our introductory courses (BIOL A121 and A122) will be assessed by pre- and posttest to determine student baseline knowledge. The test will have a multiple choice format and contain ten questions derived from each target course. (SLO 4a-c)

2. Students will be assessed in our mid-level core courses (BIOL A350 and A332) by pre-and posttest to determine student progress through the major. Each test will consist of ten questions that are derived from the target course. (SLO 4a-c)

3. The final assessment for students will be during the final year in the program. Graduating seniors will be assessed with the full posttest, which consists of 40 questions derived from our four target courses, to determine the success of the program.

4. The overall success of the BSCLS program will be determined by the success rate of graduates in obtaining national certification as Medical Laboratory Scientists. These data will be tracked and reviewed on a three-year rotation by department's Curriculum and Assessment Committee.

The department's assessment plan and results are currently reviewed on a three-year rotation by USC Aiken's Academic Assessment Committee. Additionally our assessment data is reviewed annually by the unit head in consultation with the department's Curriculum and Assessment Committee. Annual oversight of the department's assessment results is carried out by the university's Executive Vice Chancellor for Academic Affairs.

Student Learning Assessment

Expected Student Learning Outcomes	Methods of/Criteria for Assessment
SLO 1.Develop critical thinking skills: a) critique credible evidence to support arguments, b) solve biological problems using strategies appropriate to the subject	A pre-test and post-test will be administered in the core courses (BIOL 121, 122, 332, 350) and a post-test in the senior capstone experience (BIOL 490/498) to evaluate progress in these skills.
SLO 2. Apply the scientific method: a) develop hypotheses and design experiments to solve biological problems, b) collect, analyze, and interpret data, c) communicate results in both written and oral form	A pre-test and post-test will be administered in the core courses (BIOL 121, 122, 332, 350) and a post-test in the senior capstone experience (BIOL 490/498) to evaluate progress in these skills.
SLO 3.Develop research skills: a) compile and organize relevant information, b) apply biological concepts to design a problem-solving strategy, c) develop and execute a research capstone project	Communication and research skills will be assessed by targeting a lab writeup in core courses, assessing oral presentations in BIOL 350, and assessing senior research oral presentation and posters (BIOL 499/498) using a rubric developed by the department.
SLO 4.Demonstrate an understanding of the history, terminology, principles, and unifying theories of the biological sciences	A pre-test and post-test will be administered in the core courses (BIOL 121, 122, 332, 350) and a post-test in the senior capstone experience (BIOL 490/498) to evaluate progress in these skills.

Will the proposed program seek program-specific accreditation?

☐Yes

☒No

If yes, provide the institution's plans to seek accreditation, including the expected timeline for accreditation. (500 characters)

Will the proposed program lead to licensure or certification?

☒Yes

☐No

If yes, explain how the program will prepare students for licensure or certification. (500 characters)

Students who successfully complete the clinical component of the degree may sit for certification as a Clinical Laboratory Technician from the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Teacher or School Professional Preparation Programs

Is the proposed program a teacher or school professional preparation program?

☐Yes

☒No

If yes, complete the following components.

Area of Certification

Please attach a document addressing the South Carolina Department of Education Requirements and SPA or Other National Specialized and/or Professional Association Standards.