

PROGRAM MODIFICATION PROPOSAL

Background Information

Provide a detailed description of the proposed modification, including its nature and purpose and centrality to institutional mission. (1500 characters)

MUSC has been offering a single PhD Degree in Biometry and Epidemiology (CIP 26.1101) for over three decades. Applicants to this PhD program, upon matriculation, gravitate to either biostatistics or epidemiology, based on their career interest, with subsequent coursework and research training appropriately tailored. Students therefore receive a breadth of training in both disciplines, but a depth of experience (specifically research and higher level seminars) in one or the other. This evolution in the program has been incremental over time, in an effort to ensure that the program remains current with advances in each areas. Following initial didactic training, the program diverges/specializes in subsequent years with distinct content requirements for qualifying examinations and expectations for research. Because the degree is still labeled with both disciplines in the title, it can be confusing to prospective students interested in pursuing either biostatistics or epidemiology. Therefore, we request CHE approval to modify our existing program as two separate doctoral training programs in Biostatistics (CIP 26.1102) and Epidemiology (CIP 26.1309). The proposed modified degree programs are fundamentally unchanged with respect to curriculum and research training, so students enrolled in the current PhD program will not be disadvantaged. The transition will assist current students and prospective students by providing a more specific and focused title to the expertise they will acquire from the program. It is important to note that since the initiation of the PhD program in Biometry and Epidemiology, the fields of Biostatistics and Epidemiology have evolved to become distinct specializations and hence the modification is essential.

The well-respected PhD Biostatistics program at the Arnold School of Public Health at the University of South Carolina has been operating in parallel to MUSC's PhD in Biometry and Epidemiology program for decades with minimal competition, and all our graduates receive employment in academia, research and government immediately after graduation, further supporting that the requested program modification to allow the PhD in Biostatistics to exist as a distinct degree program will not adversely affect the existing program at USC nor will it create an imbalance in supply to demand for doctorally-trained biostatisticians.

List the objectives of the modified program. (1500 characters)

The following lists core competencies of the Biostatistics PhD degree:

- Describe the role of biostatistics in the discipline of public health.
- Describe the basic concepts of probability, random variation and commonly used statistical probability distributions.
- Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.
- Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.
- Apply descriptive techniques commonly used to summarize public health data.
- Apply common statistical methods for inference.
- Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.
- Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.
- Interpret results of statistical analyses found in public health studies.
- Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.
- Develop advanced and novel biostatistical methods that address challenging clinical and population-based research questions.

Assessment of Need

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

The Biostatistics PhD degree program aligns with MUSC's strategic priorities of disease prevention, patient and community wellness, and population health. The PhD degree program in Biostatistics will continue to equip students with expertise in biostatistics and research methodology.

PhD-trained biostatisticians help fill a growing need for qualified public health professionals as the nation transitions to a new health care delivery model. The program will provide graduates marketable skills for careers in public health agencies, health departments, hospitals and other health care organizations, government regulatory agencies, not-for-profit agencies, academic institutions, and industry. Graduates with PhD training are equipped to enter careers in current and projected growth areas, as shown on the following table.

Area	Title	Base	Projected	Change	% Change	Avg. Anl Openings
South Carolina	Statisticians	410	560	150	37.9	20
United States	Statisticians	30,000	40,100	10,100	33.8	1,540

Area	Title	Base	Projected	Change	% Change	Avg. Anl Openings
South Carolina	Survey Researchers	130	140	10	13.6	00
United States	Survey Researchers	16,700	18,700	1,900	11.6	390

Area	Title	Base	Projected	Change	% Change	Avg. Anl Openings
South Carolina	Health Educators	880	1,000	120	13.3	30
United States	Health Educators	61,400	68,900	7,500	12.2	1,950

Source: www.projectionscentral.com (US Bureau of Labor Statistics database)

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Will the proposed modification impact any existing programs and services at the institution?

Yes

No

If yes, explain. (1000 characters)

Eliminating the existing degree and replacing it with PhD in Biostatistics (see separate modification form for Epidemiology) will provide students to be appropriately tailored into disciplines that best match their career goals and to be most marketable in industry and academia and health care today.

We currently have 26 students in the existing PhD program (including four students who enrolled in Fall 2017). The proposed change would direct 16 of those to the proposed PhD Biostatistics degree program (which includes 2 of the four new students). Thus, the change is not expected to significantly affect number of students enrolled in the degree program—only to accurately divide the current students enrolled in the PhD degree in Biometry and Epidemiology into one degree or the other and to appropriately enroll new students into the degree program that best serves their career interests. In the projected new enrollment table that follows, we propose that 3 students per year may enter this new degree program.

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List of Similar Programs in South Carolina

Program Name	Institution	Similarities	Differences
PhD Biostatistics	Arnold School of Public Health, USC	Core course work	<ul style="list-style-type: none"> • Emphasis on clinical trials, medical informatics, oncology research, spatial biostatistics, and bioinformatics • Emphasis on collaborative biomedical research • Different student pool • Different elective coursework

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Faculty

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

Administrative responsibilities will be shared between the two revised programs and existing faculty and personnel will implement the programs. The graduate program student services coordinator will commit 50% time to the Biostatistics program and 50% to the Epidemiology program. Program oversight will be conducted by the graduate coordinator for Biostatistics and the Vice Chair for Academic Programs. In short, MUSC can provide the expertise needed for this PhD in Epidemiology with existing faculty and staff.

Resources

Identify any new library/learning resources, new instructional equipment, and new facilities or modifications to existing facilities needed to support the modified program. (2000 characters)

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We have had a longstanding history of providing a doctoral level education in this biostatistics and hence we have sufficient educational resources to support this program modification.

It is not anticipated that additional equipment will be necessary. The current computing and data storage equipment will be updated and replaced using the normal acquisition process. DPHS has Full time Information Technology (IT) Support personnel for support staff, faculty and student systems and software. DPHS provides Network access to internet resources, shared department network storage and services as well as access to High Performance Compute Clustering. DPHS IT staff provide software.

The current physical plant will be adequate to meet the educational needs of the students given the expected annual enrollment. The core classes taught to students in this program will be conducted in existing classrooms in Cannon Place, the Bioengineering building, and the Drug Discovery building as needed. These classrooms are all equipped with SmartBoard technology, high definition cameras, high-fidelity projection systems, and all necessary audiovisual equipment.

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Financial Support

Estimated New Costs by Year (ALL COSTS SHOWN HERE)						
Category	1st	2nd	3rd	4th	5th	Total
Program Administration	33,797	34,810	35,855	36,930	38,037	179,429
Faculty and Staff Salaries	528,799	544,663	561,003	577,833	595,168	2,807,466
Graduate Assistants	84,000	168,000	252,000	336,000	420,000	1,260,000
Grad. Asst. Tuition	15,270	30,540	45,810	61,080	76,350	229,050
Grad. Asst. Health Ins.	6,054	12,108	18,162	24,216	30,270	90,810
Supplies and Materials	750	773	796	820	844	3,983
Library Resources	-	-	-	-	-	-
Other*	-	-	-	-	-	-
Total	668,670	790,894	913,626	1,036,879	1,160,669	4,570,738
Sources of Financing						
Category	1st	2nd	3rd	4th	5th	Total
Grant Funded Tuition	-	5,090	20,360	35,630	50,900	111,980
Dean Funded Tuition	15,270	25,450	25,450	25,450	25,450	117,070
Grant Funded Stipend	-	28,000	112,000	196,000	280,000	616,000
Dean Funded Tuition	84,000	140,000	140,000	140,000	140,000	644,000
Program-Specific Fees	3,885	3,885	3,885	3,885	3,885	19,425
State Funding (i.e., Special State Appr)*	-	-	-	-	-	-
Reallocation of Existing Funds*	565,515	588,469	611,931	635,914	660,434	3,062,263
Federal Funding*	-	-	-	-	-	-
Total	668,670	790,894	913,626	1,036,879	1,160,669	4,570,738
Net Total (i.e., Sources of Financing Minus Est. New Costs)	0	0	0	0	0	0

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

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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.

While only new costs are requested, the budget table shows all costs to assist in reviewing the proposal and shows that the existing costs of the current PhD in Biometry and Epidemiology will be shared between the PhD Biostatistics and PhD Epidemiology degree programs.

Thus, implementation of this program will not incur any unique costs or special state appropriations. Tuition and research grants to the faculty will be the primary source of funding. Most of the necessary infrastructure exists now, so there will be no new costs directly associated with program administration.

Evaluation and Assessment

Will any the proposed modification impact the way the program is evaluated and assessed?

Yes

No

If yes, explain. (1000 characters)

Per university policy, each academic degree program engages in continuous quality improvement through annual self-assessment of performance on program outcomes (PO) and student learning outcomes (SLO). At least every third year in a four years assessment cycle, these data drive comprehensive plans for improvement.

Program Outcome 1: The program performs well on dashboard indices of quality

Assessed by: Percentage of students who graduate within 150% of program length (7.5 years);

Percentage of students who obtain full-time employment in a relevant field within 6 months of graduating.

Student Learning Outcome 1: Evidence scientific curiosity reflective of a career biomedical scientist

Assessed by: Faculty evaluations of the student in the third year; performance on his/her oral defense for breadth and depth of knowledge in epidemiology (as determined by a standardized rubric)

Student Learning Outcome 2: Demonstrate the ability to think independently

Assessed by: Faculty evaluations of the student in the third year; performance on his/her oral defense for critical thinking and assimilation of knowledge in epidemiology (as determined by a standardized rubric)

Student Learning Outcome 3: Design, complete, and defend a rigorous scientific research project

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Assessed by: Faculty evaluations of the student in the third year; performance on his/her oral defense as an overall assessment (as determined by a standardized rubric)

Student Learning Outcome 4: Demonstrate strong communication skills (orally and written)

Assessed by: Faculty evaluations of the student in the third year; performance on his/her oral defense for overall quality of presentation (as determined by a standardized rubric)

Will the proposed modification affect or result in program-specific accreditation?

Yes

No

If yes, explain; if the modification will result in the program seeking program-specific accreditation, provide the institution's plans to seek accreditation, including the expected timeline for accreditation. (500 characters)

Will the proposed modification affect or lead to licensure or certification?

Yes

No

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

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Teacher or School Professional Preparation Programs

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

Yes

No

If yes, complete the following components.

Area of Certification

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



Department of Epidemiology and Biostatistics
Arnold School of Public Health

November 6, 2017

John Vena, Ph.D.
Professor and Founding Chair
Department of Public Health Sciences
Medical University of South Carolina

Dear Dr. Vena,

I appreciate you sharing the program modification applications that the Medical University of South Carolina will submit to the Commission on Higher Education. There is a strong rationale to separate the current Ph.D. in Biometry and Epidemiology degree program into two distinct degree programs, a Ph.D. in Epidemiology and a Ph.D. in Biostatistics. There is a similarly strong rationale to take a parallel step with the Masters of Science degree in Biomedical Sciences with a concentration in Biometry and Epidemiology and separate it into two separate concentrations, an M.S. in Epidemiology and an M.S. in Biostatistics.

The characterization in your program modifications of the differences between the Medical University of South Carolina's and the University of South Carolina's degree programs in these areas are accurate, and I agree that these changes will not result in unnecessary competition or duplication between the programs at the two institutions. Similarly, your summary is accurate that the programs at our two universities have been operating in parallel for decades with minimal competition. Your requested separation of the program into separate Ph.D. programs and M.S. concentrations will not adversely affect the existing program in the Department of Epidemiology and Biostatistics at the University of South Carolina's Arnold School of Public Health, nor will it create a greater supply than demand for well-trained epidemiologists or biostatisticians in South Carolina.

Sincerely,

A handwritten signature in blue ink that reads "Anthony J. Alberg".

Anthony J. Alberg, Ph.D., M.P.H.
Professor and Chair
Department of Epidemiology and Biostatistics
Arnold School of Public Health
Medical University of South Carolina

College of Public Health and Health Professions
College of Medicine
Department of Biostatistics

PO Box 117450
Gainesville, FL 32610
352-294-5909
352-294-5931 Fax
www.biostat.ufl.edu

John Lane, DMA
Director of Academic Affairs
South Carolina Commission on Higher Education
1122 Lady Street, Suite 300
Columbia, SC 29201

November 6, 2017

Dear Dr. Lane:

It is my pleasure to provide a letter in strong support of the proposed PhD program in Biostatistics at the Medical University of South Carolina. I have served as the Director of the PhD program in Biostatistics at the University of Florida since 2009. I received my PhD in Statistics at the University of California, Berkeley in 1996, followed by postdoctoral training in Biostatistics and Epidemiology at the Harvard School of Public Health from 1996-1999. I was an Assistant Professor of Biostatistics at the University of Washington from 1999-2002, and I was an Assistant Professor in Residence at the University of California, Los Angeles from 2002-2004. I came to the University of Florida in 2004 as Associate Professor, first in the Department of Health Services, then in the Department of Epidemiology and Biostatistics, and finally in the Department of Biostatistics. I was granted tenure in 2009 and I was appointed Full Professor and Associate Chair for Education in 2013.

The proposal for the new PhD program at MUSC is a solid one. It is the norm in research universities across the United States to offer a PhD in Biostatistics rather than a joint PhD in Biostatistics and Epidemiology. PhDs in Biometry are rare. The proposed program is similar to our program at the University of Florida, and after reading the 2016-2017 Graduate Handbook for the Department of Epidemiology and Biostatistics at the University of South Carolina in Columbia, I can say that there are some differences in the emphasis of the two Biostatistics PhD programs and this will avoid any unnecessary competition for students and resources. It is also similar to PhD programs in Biostatistics across the nation. The effect on existing programs at MUSC will be to replace an unusual PhD program in Biometry and Epidemiology with two independent PhD programs with much more traditional structure. This is a very positive change that should aid in student recruitment. The required courses are very typical for a program of this nature. The proposed funding for the PhD students coming from grants and the Dean's office should enable the size of the program to be typical of similar programs across the nation. Faculty at MUSC will be able to fund research assistantships for PhD students as part of collaborative or methodological grants. The support from the Dean's office for tuition is more than adequate. In general the financing will come from reallocating existing funds from the current joint Biometry and Epidemiology PhD program. The Biostatistics faculty are clearly ready to support the new program, as it is not very different from the Biostatistics concentration in the program that they already support.

In summary, this is a strong proposal and I have no reservations about recommending it for approval. Please let me know if I can answer any specific questions or be of further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Babette A. Brumback".

Babette Brumback, PhD
Professor and Associate Chair for Education
Department of Biostatistics
College of Public Health and Health Professions
College of Medicine
University of Florida
Gainesville, FL 32611