

**New Program Proposal
Master of Science/Doctor of Philosophy, Applied Health Research and Evaluation
Clemson University**

Summary

Clemson University requests approval to offer a program leading to the Master of Science and Doctor of Philosophy degree in Applied Health Research and Evaluation to be implemented in Fall 2014. The proposed program is to be offered through traditional instruction on campus with the Master of Science degree awarded en route to the Doctor of Philosophy degree. The following chart outlines the stages for approval of the proposal; the Advisory Committee on Academic Programs (ACAP) voted to recommend approval of the proposal to the Committee on Academic Affairs and Licensing (CAAL). The full program proposal **is attached**.

Stages of Consideration	Date	Comments
Program Planning Summary received and posted for comment	5/1/2012	
Program Planning Summary considered at ACAP	7/12/2012	ACAP members expressed support for the proposed program and suggested that Clemson consider awarding a M.S. degree en route to the Ph.D. ACAP also requested that the full proposal better explain the differences between the proposed program and a similar program offered by USC Columbia.
Program Proposal Received	9/16/2013	
Comments and suggestions from CHE staff to the institution	10/1/2013	Staff asked questions about equipment and possible articulation as well as suggested edits for clarity and consistency.
Revised Program Proposal received	10/5/2013	Revisions addressed staff's questions.
ACAP Consideration	10/17/2013	ACAP voted to recommend approval of the program.
Comments and suggestions from CHE staff to the institution	10/22/2013	Commission staff asked for additional information about library resources.
Revised Proposal Received	11/4/2013	Minor revisions made to the proposal to address staff's question.

Recommendation

The staff recommends that the Committee on Academic Affairs and Licensing commend favorably to the Commission the program leading to the Master of Science and Doctor of Philosophy degree in Applied Health Research and Evaluation at Clemson University to be implemented in Fall 2014, provided that no additional "unique cost" or other special state funding be required or requested.

CLEMSON UNIVERSITY

COLLEGE OF HEALTH, EDUCATION AND HUMAN DEVELOPMENT
Department of Public Health Sciences (DPHS)

REQUESTING TO OFFER A NEW DEGREE PROGRAM

Master of Science/Doctor of Philosophy

in

Applied Health Research and Evaluation

Date of Submission: September 15, 2013

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Classification

- Program Title: Applied Health Research and Evaluation
- Academic Unit: Department of Public Health Sciences, College of Health, Education and Human Development
- Designation, Type, and Level of Degree: PhD and MS, graduate degrees
- Implementation Date: Fall 2014
- CIP code: 51.2299
- Site: Clemson University (one or two courses may be offered at the University Center of Greenville)
- Palmetto/Life scholarships: N/A
- Delivery Mode: Traditional

Institutional Approval

- ACAP: July 12, 2013
- Departmental Curriculum Committee: November 14, 2012
- College Curriculum Committee: April 17, 2013
- Departmental Faculty Final Approval: April 24, 2013
- University Graduate Curriculum Committee: August 26, 2013
- Provost: September 5, 2013
- President: September 15, 2013
- Board of Trustees: April 19, 2012

Program Purpose

The purpose of the M.S./Ph.D. program is to produce healthcare researchers who incorporate skills from, and collaborate among, a wide range of disciplines. Because the program fosters transdisciplinary faculty collaboration and will involve research partnerships in communities and healthcare settings in the region, its graduates will be prepared to conduct applied research and evaluation that improves a wide variety of health delivery systems.

Students are expected M.S/Ph.D. to apply for admission to the Ph.D. program. The M.S. degree is awarded en route to the Ph.D. program or as an exit for a student who finds him/herself unable to complete the doctoral studies. Applicants with a master's degree or higher may apply up to twelve credits of their graduate work toward the M.S/Ph.D. program if deemed appropriate by the Admissions Committee.

The proposed M.S/Ph.D. program is based on the research experience of the faculty of the Department of Public Health Sciences in partnership with researchers in other academic units at Clemson University, and with researchers and research-oriented practitioners in the healthcare system of upstate South Carolina. The program is committed to scientific inquiry and focuses on developing applied health research and evaluation knowledge and skills. The learning framework combines rigorous instruction in the collection, analysis, and interpretation of health data, and practical experience in applying these tools and methods to improve health systems performance and population health. The curriculum includes a core of conceptual courses that foster a thorough understanding of health issues and contemporary technical issues in healthcare delivery and population health. The methodological core of the program consists of a combination of course work, research, and advanced practice application.

The combination of a strong conceptual framework, advanced research skills, and application to a cognate area (outside the department) is designed to provide graduates with a depth and

breadth of knowledge in applied health research and evaluation that makes them highly competitive for employment in both academia and the applied health research community.

The program goals are to prepare researchers to:

- (1) Conduct applied research and evaluation that improves a wide variety of health delivery systems.
- (2) Lead applied health research programs in private and public sectors.
- (3) Enhance oversight and accountability in health services delivery and in the development of healthcare programs.
- (4) Improve the effectiveness and efficiency of public and private health and medical services delivery systems.
- (5) Evaluate the implementation of services and compare effectiveness of competing programs and interventions.
- (6) Provide structured data-informed decision making to empower change in population and healthcare practice.
- (7) Work in both academia and the applied health research community.

The graduates will provide leadership to applied health research programs in private and public sectors. The program is designed to provide graduates with a depth and breadth of knowledge in applied health research and evaluation that makes them highly competitive for employment in both academia and the applied health research community. Specifically, graduates will gain knowledge and develop skills to: enhance oversight and accountability; assess effectiveness of programs and interventions; improve the effectiveness and efficiency of services; and ultimately, provide structure for data-informed decision making to empower change in population and healthcare practice.

Program Justification

There is a nationally recognized need for researchers skilled in rigorously evaluating clinical and population health data and capable of working across traditional disciplinary boundaries. The National Research Council has stated:

...some of the most significant research occurs at the interfaces between traditional research areas. This is even more likely to be true in the future because the solution to complex biological and health care problems will require experts and expertise in many different disciplines—and increasingly expertise in more than one field. Consequently, it is important to encourage such research. If this research is to be successful, individuals must be broadly trained so that they can understand and contribute to research that overlaps different fields.¹

(¹ *Advancing The Nation's Health Needs*. (2005) Committee for Monitoring the Nation's Changing Needs for Biomedical, Behavioral, and Clinical Personnel, Board on Higher Education and Workforce, Policy and Global Affairs, National Research Council Of The National Academies, The National Academies Press, Washington, D.C.)

System changes already underway in the 21st century have been spurred by provisions of the *Affordable Care Act* of 2010 (ACA). Providers are being encouraged to join together to form "Accountable Care Organizations," through which doctors can better coordinate patient care and improve the quality of care, help prevent disease and illness, and reduce unnecessary hospital admissions. The future funding of American health care will involve a system that rewards the value gained from services (quality, safety, effectiveness), not merely the volume of services provided. However in order to achieve this goal there is a tremendous need for researchers

trained to work across traditional disciplines with health data of all types and to evaluate health programs and health outcomes.

The goal of the Applied Health Research and Evaluation MS/PhD program is to prepare researchers to investigate a wide array of health issues and problems in order to foster the development of improved, evidence-based policies, guidelines, interventions and practices. The program will include trans-disciplinary faculty collaboration and research partnerships in the context of high quality graduate research instruction. Target audiences include both beginning professionals and established professionals who need to incorporate this new set of research skills.

The proposed M.S/Ph.D. program reflects the goals of Clemson University to serve the public good by focusing on one of the great challenges of the 21st century—the maintenance and improvement of population health. Applied Health Research and Evaluation is designed to prepare graduates with the core competencies of applied health research, balancing instruction in the determinants and disparities of population health with rigorous methodological training in several key disciplines supporting the practical application of research. Graduates will provide leadership in research that is essential to health-related programs in private and public sectors.

On January 17, 2013, the Department of Public Health Sciences convened its External Advisory Board to provide feedback on the knowledge and skill they felt would be critical for future applied health researchers and evaluators. The Advisory Board consists of eight members from across the United States and from a variety of settings (academic [LSU, UNC Chapel Hill, MUSC, RAND-Pardee Graduate School], state-level public health, health system/health care, and private consulting). The Board strongly endorsed the need for a program of this type and emphasized the need for strong analytical skills, the ability to appropriately apply and interpret data analytic methods, the ability to comfortably work with large data sets, and the ability to work with a wide range of professionals and in multiple settings. The Board also stressed that innovative partnerships among academic mentors, clinical mentors and students would best prepare students for the demands of complex health problems and health data.

The Advisory Board endorsed our core courses, but recommended we require that students take an additional class in advanced data analysis to increase their expertise as applied health researchers and evaluators. In response to the Advisory Board's recommendations, we required an additional analysis class through the cognate course option and increased the minimum cognate hours by three. We also increased the number of required seminar courses to ensure that students had sufficient opportunities for professional development, networking and communication skill building.

In addition, the Department conducted a survey of current Clemson University graduate students and former Public Health students. The purpose of the survey was to identify potential student interest in the proposed program, factors that would promote enrollment and barriers to enrolling, current employment areas, need for research and evaluation skills, and demographic data. One hundred and forty-six students responded to the survey and 48 were either working or studying in a health-related area. Forty-two percent of the students working or studying in health reported that they would have been "very" or "extremely" interested in the proposed program if it had been available after the completion of their undergraduate degree. (Survey submitted with report.)

Anticipated Program Demand and Economic Productivity

Rising health care costs, limited resources, the Affordable Health Care Act, and the need to make evidence-based decisions about program impact on population health are driving a demand for researchers skilled in making meaningful use of data collected across settings. Graduates of the proposed program will be needed not only in academic departments but also in large corporations, the health insurance industry, government agencies, health care organizations, and consulting firms. The demand for these graduates will increase as health system change occurs, evidence-based program requirements grow, and new economic opportunities emerge.

Job announcements from multiple sources between 2010 and 2011 were reviewed as part of program planning. Sources included the *Chronicle of Higher Education*, American Public Health Association's *Nations Health*, the Health Sciences Career list-serve, the Center for Disease Control website, and the Emory Health Careers website. Using a maximum two-month time frame for any one source, we identified health-related, doctorally-prepared academic, government, and private sector job announcements that included one or more of the following terms in their titles or descriptions: scientific evaluation director, health care data and analysis director, health analyst, applied research and evaluation, evaluation lead, research analyst, interdisciplinary statistician/epidemiologist, comparative effectiveness research, outcomes research, health services research, economic evaluation, health impact assessment, program effectiveness, and continuous quality improvement. Numerous jobs were posted by multiple organizations across the US, Canada, and Australia. (Sample announcements are available).

The Bureau of Labor Statistics does not refer directly to researchers of applied health research and evaluation but when occupations with comparable skill sets were searched job growth projections between 2010-2020 were at least average (approximately 14%) or higher than average: Statisticians 14%, Actuaries 27%, Market research analyst 41%, Operations research analysts 15%, Survey research 24%, Epidemiologist 24%, and Medical scientists 36%. These skill areas are also sought by the Bureau of Labor Statistics, National Center for Health Statistics, and US Census Bureau through their Postdoctoral Research program for researchers with skills in statistics, mathematics, social and behavioral sciences, epidemiology, health statistics, and survey methodology. These are all areas emphasized in the Department of Public Health Sciences Ph.D. program.

In the March 2013 edition of **Nation's Health** (p1, 10), the editor highlighted health services and systems research as an important area of growth in health research. This area of research will play a critical role in providing information practitioners and policy makers need to make decisions that allow for the effective translation of research to practice. This type of applied health research considers organizational structure, health care financing and service delivery and their impact on people's health. According to Glen Mays, co-principal investigator with the National Coordinating Center for Public Health Services and Systems Research at the University of Kentucky, practitioners need continuous and rapid access to health care service and delivery data to best respond to community needs. This area of research also engages practitioners on the 'front end' of building the research agenda so that research questions are relevant to what practitioners are dealing with in the field. The program proposed here speaks directly to this growing need for researchers who can collaborate across traditional disciplinary boundaries to use health research to assist practitioners in accessing and using health data for positive change in their systems and health care delivery services.

Centrality of the Program to the Mission of the Institution

Clemson University has identified health as an area in which the university promotes excellence in education and scholarship. As a land grant university, Clemson is committed to offering doctoral and research programs that contribute to the economic future of the state, nation, and the world. The Clemson 2020 Road Map strategic plan for the university states that one of Clemson's responsibilities to students and the state of South Carolina is to serve the public good by focusing on four emphasis areas that address the great challenges of the 21st century. Health is specifically identified as one of these emphasis areas. One of the university's ten-year goals is to "Increase the number and quality of doctoral students in focus areas by 30%." The proposed doctoral program in Applied Health Research and Evaluation fulfills the stated goal of developing a doctoral program that specifically addresses a key emphasis area as identified in the Clemson 2020 Road Map by addressing one of the emerging priorities of the 21st century—the need to develop more efficient and effective approaches to the delivery of health care and health services.

Relationship of the Proposed Program to Existing Programs at the Proposing Institution

The Department of Public Health Sciences (DPHS) has academic and research relationships with multiple graduate programs at Clemson University. The Department provides graduate instruction in health each semester for the MBA program. We also collaborate with Health Care Architecture to cross list courses for our students to take together. In addition, we have recently partnered with faculty in the Mathematical Sciences Department to offer quantitative analysis courses for our new graduate-level Certificate in Clinical and Health Services Research. The DPHS regularly provides graduate-level instruction in multiple health content areas that attract graduate students from Food, Nutrition, and Packaging Science; Parks, Recreation, and Tourism Management; Psychology; Education; Nursing; Industrial Engineering; Computer Sciences; and Health Care Architecture. The DPHS faculty is actively involved with master's and doctoral committees for students in the programs listed above. The faculty of the DPHS has productive research relationships with faculty within these disciplines as evidenced by the numerous publications, grants, and graduate committees they have successfully completed with these partners. Students in our doctoral program will develop concentration areas in these and other disciplines at Clemson and likewise, we anticipate that our courses will complement classes available to students in existing graduate programs. The DPHS is also actively involved with Clemson Extension and The Youth Learning Institute in program delivery and evaluation.

Similar Programs Existing in the State:

At present, there are no doctoral programs within the state of South Carolina that reflect the historical land-grant responsibilities of teaching, research, and public service while focusing specifically on providing researchers prepared to conduct interdisciplinary research and program evaluation with application to health services and systems. There are Ph.D. programs in health-related fields at USC (Arnold School of Public Health a Ph.D. in Health Services Policy and a Ph.D. in Health Promotion, Education, and Behavior), MUSC (a Ph.D. in Health and Rehabilitation Sciences and a D.H.A., Health Administration), and Clemson (Ph.D., Healthcare Genetics with a concentration in Ethics and Public Policy,) but none of these programs focuses primarily on applied health research and evaluation.

Similar Programs in the Region and Nation

The program we are proposing is similar to other applied health research doctoral programs and evaluation programs outside the state of South Carolina at institutions within the land grant university tradition, such as the Ph.D. program in Health Services Research recently established

at Texas A & M University. There are also similar programs in place at Johns Hopkins University, the University of Nebraska Medical College, and the University of Washington. Doctoral programs in applied health services research also exist outside the United States, particularly in the United Kingdom and Canada. Several Ph.D. programs in evaluation research also exist around the country but not in the state of South Carolina (Florida State University – Ph.D. Policy and Program Evaluation, George Washington University – Ph.D. Program Evaluation, University of Pittsburg – Ph.D. Public Health with program evaluation concentration).

The Southern Regional Education Board's Academic Common Market includes programs from the following states: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. Florida and Texas, as noted above, have Ph.D. programs similar to the one we are proposing; however, neither of them includes the emphasis on evaluation research.

The DPHS Applied Health Research and Evaluation MS, PhD has incorporated competencies and skills unique to existing doctoral programs in South Carolina. Competencies have been drawn from the American Evaluation Society, Council on Linkages Between Academia and Public Health Practice, the CDC/Council of State and Territorial Epidemiologists, National Association of Chronic Disease Directors, and Agency for Health Care Research and Quality. The DPHS will integrate the proposed program into unique partnerships the Department has established with state health care leaders (e.g. Greenville Health System - Institute for Advancement of Health Care), community coalitions (e.g., LiveWell Greenville) and the Clemson's Institute for Engaged Aging.

The faculty members of the DPHS reflect the trans-disciplinary core necessary for this program. Faculty hold graduate degrees in a wide variety of fields applied to healthcare including Health Promotion and Behavior, Medical Sociology/Health Services Research, Health Policy, Community Psychology, Health Economics, Policy Analysis, Epidemiology, Health Communication, and Medicine. Over the course of their careers, ranging from 5 to 30 years, each faculty member has developed expertise across various areas of health research and each has significantly advanced and expanded their expertise. Nine of the twelve faculty members in the Department have worked in other research settings around the nation prior to coming to Clemson University. Their continuous career development efforts through fellowships in areas such as cancer research and physical activity research; certificates and post-doc graduate classes in areas such as statistics, chronic disease, health coaching, and epidemiology have allowed the Department to cultivate a unique mixture of backgrounds and talents that will support this Ph.D. program.

Relationship of the Proposed Program to Other Institutions via Inter-institutional Cooperation:

The DPHS currently has active and productive relationships with other institutions at international, national, state, and local levels. Faculty within our Department have working relationships (e.g. research, instruction, or intervention) with Greenville Health System, AnMed Hospital, Oconee Medical Center, the Medical University of South Carolina, the University of South Carolina Arnold School of Public Health, The Health Services South Carolina Data Warehouse, SC Department of Health and Environmental Control, Center for Disease Control and Prevention, Rand Corporation, ABT Associates, University of Queensland, and the nations of Australia, Vietnam, Taiwan, Costa Rica, and Kenya. The Department of Public Health Sciences faculty are actively serving on state level initiatives in aging, physical activity,

cardiovascular disease prevention, obesity prevention, cancer prevention and substance abuse prevention. Faculty also are serving professional organizations as editorial board members and manuscripts reviewers and federal organizations (e.g., CDC, NIH) as grant reviewers. These relationships will provide important opportunities for our students to engage in applied research and evaluation projects.

Admission Criteria

Applicants for the M.S./Ph.D. in applied Health Research and Evaluation must meet the University minimum requirement of (at minimum) a bachelor's degree from an accredited institution with a B (3.0) average in upper division courses and/or prior graduate study as well as satisfactory performance on the verbal and quantitative sections for the Graduate Record Exam (GRE). Applicants will be required to submit GRE test results and transcripts to demonstrate foundational competencies in math and statistics. The general admissions requirements will be GRE verbal scores of at least 153 (on the old tables 500) and quantitative reasoning scores of approximately 155 (on the old tables 700). Any applicant with a composite verbal/quantitative score below 1,200 must be able to submit exceptional supporting materials to have a competitive application (transcripts, reference letters, etc.).

All applicants will be required to submit a statement of purpose outlining goals and career objectives as they relate to the graduate program, three letters of recommendations (at least two from former professors and, if appropriate, one from an employer), and an example of published or other written work where applicant is the sole author. International applicants must also report TOEFL scores. Applicants with a master's degree or higher may apply up to twelve credits of their graduate work toward the M.S./Ph.D. program if deemed appropriate by the Admissions Committee. Students are expected to apply for admission to the Ph.D. program. The M.S. degree is awarded en route to the Ph.D. program or as an exit for a student who finds him/herself unable to complete the doctoral studies. Explicit criteria for the M.S. degree are outlined below.

Enrollment

Enrollment estimates are based on the Department's estimate of faculty capacity to accommodate the courses, mentors, and assistantships needed to conduct the program. It is estimated that three new students will be admitted to the program during the first two academic years. In year three, the enrollment will increase to four students each academic year. The enrollment in the program is limited as a result of the size of the Department, the large undergraduate teaching obligation, available stipends for graduate students, placement opportunities, and time to degree. After four years, twelve to sixteen students will be enrolled in the program at various stages of completion—coursework to dissertation. The Department will continuously evaluate enrollment and interest in the program. As additional resources become available, the number of students would be increased as appropriate.

Table A: PROJECTED TOTAL ENROLLMENT						
YEAR	FALL		SPRING		SUMMER	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Cr Hours
2014– 15	3	30	3	30		
2015– 16	6	60	6	60	2	6
2016– 17	10*	90	10	90	3	6
2017– 18	14	126	14	126	3	6
2018– 19	16**	144	16	144	4	8

*Enrollment increases to 4 new students;

**Anticipates students graduating.

Brief Description of Curriculum:

This program is built upon instruction that emphasizes the application of theory and research to the resolution of practical problems in communities and healthcare settings in the region and beyond. Specifically, graduates will gain knowledge and develop skills to enhance oversight and accountability and assess effectiveness of programs and interventions, improve the effectiveness and efficiency of services, and ultimately, to participate in data-informed decision making to empower change in population health and healthcare practice. This doctoral program will prepare students to examine critically how ecological factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect the quality and cost of health care, access to health care, and ultimately the health and well-being of the population.

The M.S. in *Applied Health Research and Evaluation* requires a minimum of 30 credits of the core courses; passing the qualifying exam; preparing a research manuscript; submitting the manuscript to a scientific, peer-review journal approved by a faculty committee. This degree allows the Department the option of awarding a master’s degree (en route) to students who enter the doctoral program with only a bachelor’s degree or those leaving the Ph.D. program due to a personal decision after completing a major component of the degree requirements.

The Ph.D. in *Applied Health Research and Evaluation* has a minimum requirement of 66 credit hours for students entering with a bachelor’s degree or 54 credit hours for students entering with a master's degree. Students are required to complete core course requirements, cognate course requirements, and dissertation credit hour requirements. In addition, students will be required to pass the qualifier exam, dissertation proposal defense, final oral dissertation defense, and final comprehensive exam.

The Ph.D. curriculum is the culmination of review of other applied health research and evaluation programs, faculty experiences, and Advisory Board recommendations. Students will

complete core courses offered in the DPHS related to health research theory, measures, design, implementation, analysis, and evaluation. Students will develop expertise in a content area (cognate) of their choosing with departmental approval and guidance. Students will identify an additional set of four or five courses, primarily outside the home department, to create this content area. One of these courses must be an advanced statistics or analysis class related to the student's research. Cognates can also be enhanced through internships at an appropriate research setting in public, private, or government organizations. Students will also be required to participate in teaching effectiveness workshops, academic governance meetings (when appropriate), and manuscript or grant writing teams (e.g. through seminar classes). Cross-campus linkages will be expanded and strengthened through the doctoral program to fulfill the University's goal of promoting interdisciplinary research across the eight specific programmatic emphasis areas. Students will partner with both an academic mentor and a clinical mentor.

Curriculum:

This graduate program will award an M.S. (en route) and Ph.D. in *Applied Health Research and Evaluation* upon completion of minimum of 66 hours for students entering with a bachelor's degree or a minimum of 54 hours for students entering with a master's degree. Students who choose to leave the program before the completion of the Ph.D. must complete 30 hours of the research core coursework and perform adequately on qualifying examinations to be awarded the M.S. in Applied Health Research and Evaluation. Students entering the program with an M.S. could exempt a maximum of 12 credit hours if appropriate courses were taken in their master degree program (* Courses eligible for this exemption are noted below with an asterisk.). Students applying to the Ph.D. program will be expected to have completed 6 credit hours of statistics or research methods.

Total Hours: 66 credit hour minimum for students entering with a BS
54 credit hour minimum for students entering with MS and with 12 credits of approved graduate courses from their MS

Core Courses (36 credit hours)

*HLTH 810 (3 cr) Theory and Determinants in Health Research - NEW COURSE
*HLTH 811 (3 cr) Health Care Delivery Systems - NEW COURSE
*HLTH 821 (3 cr) Health Research – Design and Measurement - NEW COURSE
*HLTH 822 (3 cr) Health Research - Qualitative and Mixed Methods – NEW COURSE
*HLTH 809 (3 cr) Epidemiological Research
HLTH 829 (3 cr) Epidemiology II – Applied Epidemiology – NEW COURSE
HLTH 841 (3 cr) Foundation of Evaluation in Health – NEW COURSE
HLTH 842 (3 cr) Applied Evaluation Methods in Health – NEW COURSE
HLTH 831 (3 cr) Quantitative Analysis in Health Research I - NEW COURSE
HLTH 832 (3 cr) Quantitative Analysis in Health Research II - NEW COURSE
HLTH 889 (1 cr) Seminar (class repeated six times) – NEW COURSE

Dissertation (18 credit hours) HLTH 899 (variable credit) – NEW COURSE

Cognate Courses (12 credit hours)

Cognate courses allow the student to develop an appropriate content area if he or she is entering the program with a bachelor's degree or if the master's degree lacks content specific to the research interests and constitute 12-credit hours (4 classes) approved by the student's advisor. One of the cognate courses must include three credits in an advanced statistics or analysis class relevant to the research interests (e.g., methods courses in Nutrition, Physical Activity, Built

Environment, Aging, Substance Abuse, Violence, Health Communication, Health Care, Research Specialization, Survey Design, Secondary Data Analysis, Advanced Qualitative Analysis, etc.)

Curriculum Map

Year 01-Fall	Year 01-Spring
HLTH 810 (3 cr) Theory and Determinants in Health Research HLTH 821 (3 cr) Health Research – Design and Measurement HLTH 809 (3cr) Epidemiology Research (3cr) HLTH 889 (1 cr) Seminar #1	HLTH 829 (3 cr) Epidemiology II HLTH 811 (3 cr) Health Care Delivery Systems HLTH 831 (3 cr) Quantitative Analysis in Health Research I HLTH 889 (1 cr) Seminar #2
Year 02-Fall	Year 02-Spring
HLTH 822 (3 cr) Health Research – Qualitative and Mixed Methods HLTH 841 (3 cr) Foundation of Evaluation in Health HLTH 832 (3 cr) Quantitative Analysis in Health Research II HLTH 889 (1 cr) Seminar #3	HLTH 842 (3 cr) Applied Evaluation Methods in Health HLTH 889 (1 cr) Seminar #4 Cognate course(s)
Year 03-Fall	Year 03-Spring
HLTH 889 (1 cr) Seminar #5 Cognate course(s) Dissertation Hours	HLTH 889 (1 cr) Seminar #6 Cognate course(s) Dissertation Hours
Year 04-Fall	Year 04-Spring
Dissertation	Dissertation

Course	Description
HLTH 811 Health Care Systems (3 cr)	This course examines healthcare delivery systems with a focus on the U.S. It first describes healthcare systems and their functions. Economic theory will then be used to examine a number of critically important issues including the organizational structure of U.S. healthcare, payment systems, access and quality of care.
HLTH 810 Theory in Health Research (3 cr)	An ecological perspective of biological, behavioral and social health determinants and how theory is used to explain relationships between determinants and health and describe behavior change process. Emphasizes theories or individual behavior, community and group models of behavior change, and the use of theory in practice, research, and
HLTH 821 Research Methods I (3 cr)	Addresses issues in research design, measurement, project planning, data collection and data management for health research. Topics include experimental and quasi experimental design, measuring key health concepts, introduction to survey methodology, observational research and research ethics.

<p>HLTH 822 Research Methods II (3 cr)</p>	<p>Qualitative research methods and mixed methods including identification and creation of research problems, the development of designs, actual data collection, and analysis procedures to address those problems. Includes qualitative-interpretive methods of accessing and analyzing data including participant observation/ethnography, case studies and grounded theory. The course addresses the methodological grounding for these methods, some of the methods themselves (through field exercises), and research designs. Prerequisite: HLTH 811</p>
<p>HLTH 809 Epidemiology I (3 cr)</p>	<p>Introduction to epidemiological principles and methods utilized in the study of the origin, distribution, and control of disease.</p>
<p>HLTH 819 Epidemiology II (3 cr)</p>	<p>Instruction in basic and advanced epidemiological principles, concepts and methods with an emphasis on the practical application of epidemiological methods in public health and clinical settings. Students will be challenged to apply epidemiologic concepts and methods to analysis of data on current issues using case studies and a variety of practice-related exercises in real world public health problem-solving simulations. Pre-Requisite: HLTH 809</p>
<p>HLTH 841 Program Evaluation I (3 cr)</p>	<p>Foundational course on historical and theoretical aspects of evaluation as applied to population health, medicine and healthcare. Paradigms and philosophies associated with methods, use, values and social justice branches are emphasized. Other topics: evaluation terminology and standards, theory-driven evaluation, planning models, planning and evaluation cycle, engaging stakeholders, and presenting findings.</p>
<p>HLTH 842 Program Evaluation II (3 cr)</p>	<p>Continuation of HLTH 841. Practical aspects of planning, designing and managing evaluations in population health, medicine and healthcare are emphasized. Topics include: scoping, selecting an appropriate design, threats to validity, common and emerging methods of formative and summative evaluation, staffing and management, collecting and analyzing data, and writing evaluation reports. Prerequisite: HLTH</p>
<p>HLTH 831 Quantitative Analysis I (3 cr)</p>	<p>This course focuses on the application of statistical methods to health research questions using health survey data. The course material is built on knowledge gained from previous courses in research design methods and statistics. It gives students hands-on experience in investigating health research questions analyzing complex health data sets. Prerequisite(s): MTHSC 206 and MTHSC 403 or equivalent</p>
<p>HLTH 832 Quantitative Analysis II (3 cr)</p>	<p>This course covers other common statistical and econometric methods used in population health research. Extended from the topics covered in Quantitative Analysis I, students get more hands-on experience in applying advanced analytic techniques and tools to investigate health research questions using complex health data sets. Prerequisite(s): Quantitative Analysis in Health Research I (HLTH 831)</p>
<p>HLTH 889 Seminar (1 cr)</p>	<p>Provides an opportunity for students to present, critically discuss and examine issues related to their research with students, faculty and visitors in a formal setting, approximating professional meetings. Students will develop communication skills, leadership skills and professional conduct expected of the Applied Health Research and Evaluation graduate student. Prerequisite: HLTH 822</p>

HLTH 899 Dissertation (variable credit)	Doctoral dissertation research includes research topic identification, proposal development, research execution and finalization of dissertation report
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(All courses in the program are new except for HLTH 809.)

Assessment Plan

The University engages in program evaluation and assessment that focuses on program outcomes as well as student learning outcomes. While assessment of students is essential, program assessment is an important component well. The faculty examines a number of factors related to program quality and effectiveness including, but not limited to, enrollment and graduate rates, publications and presentations of faculty and students, student assessment of instructors, and exit interviews. These data assist faculty in evaluating and improving program implementation. The University provides annual data for department chairs to use in conducting program reviews. The student learning outcomes are of particular importance and relate directly to the curriculum plan of study.

Students Learning Outcomes include the following:

Students will be able to:

- Compute and interpret accurately statistics used in applied health research and evaluation.
- Design research and evaluation studies using quantitative and qualitative methods and analysis.
- Employ correctly methods for measuring health variables and assessment of health outcomes.
- Assemble secondary data from existing public and private sources and use information technology to conduct research.
- Pose innovative and important research and evaluation questions informed by critical and systematic review of the literature, stakeholder needs and relevant theoretical and conceptual models.
- Address systems models and the policy process for improving population health.
- Describe and appropriately incorporate issues in the organization, financing and delivery of personal and population health services.
- Demonstrate effective written and oral communication and leadership skills for collaborating across disciplines and for constructive review and feedback of ideas with colleagues and partners from diverse backgrounds.
- Apply quality and performance improvement approaches to health care systems.
- Conduct research and evaluation that is appropriate from an ethical, legal and regulatory standpoint.
- Apply analytic techniques and methodologies from epidemiology, econometrics, outcomes research and risk assessment.
- Describe and apply individual, interpersonal and community models of health behavior in evaluating programs or interventions focused on social and structural determinants of health.
- Prepare and submit competitive grant proposals.
- Prepare and submit publishable manuscripts and prepare evaluation reports.
- Describe the four basic types of evaluation (formative, process, impact, outcome), evaluation concepts, and evaluation assumptions.

- Apply skills in evaluation paradigm interpretation, project planning and logic model development, data collection, data management and situational analysis.
- Know how to apply alternative theoretical and conceptual models from a range of disciplines relevant to applied health research and evaluation.
- Know how to collect primary health and health care data obtained by survey, qualitative, or mixed methods.

Accomplishment of learning objectives will be assessed through course artifacts, a qualifying examination upon completion of at least 80% of core coursework, a preliminary oral defense of a detailed dissertation proposal that addresses both the topic and proposed methodology, and a final oral defense of the dissertation. The department will also examine graduate student publications and postgraduate employment. Because student enrollment and growth per year will be small, if any student fails to achieve the expected performance for coursework (B or higher), qualifying exam (pass), or completion of the research dissertation (pass), the faculty advisor will meet with the curriculum committee to determine if the performance shortfall is a curricular issue, advising issue or student capacity issue. Learner outcome deficiencies linked to curriculum will be addressed through the curriculum committee and reported to the general faculty. The Advisory Committee will assist the faculty in monitoring post-graduate employment, publication rate, career advancement and other measures of impact of the program's graduates on applied health research.

Faculty

As noted above, the program is built upon a strong core of existing faculty. Current faculty members have terminal degrees from Brandeis University, Emory University, Georgetown University, Johns Hopkins University, Rand Graduate School, Purdue University, and the University of South Carolina. New faculty hires will focus on individuals with strong quantitative analysis skills, experience in evaluation research, a successful record of scholarship and grant-awards, and competencies in teaching both undergraduate and graduate students. A new faculty hire was approved in fall 2013. New staff will have experience with graduate program coordination and graduate student supervision.

The faculty members of the Department are qualified to direct graduate students in this field. All faculty members attend professional conferences and publish peer-reviewed manuscripts in their areas of expertise. All faculty members are actively engaged in research. Faculty development resources will continue to be available through funds provided by the Mary Lohr Foundation.

The institutional definition of the full-time equivalents (FTE) is 12 credit hours

Table B – Faculty List

List Staff by Rank	Highest Degree Earned	Field of Study	Teaching in Field (Yes/No)
Professor #1	Ph.D.	Medical Sociology, Health Services Research, Survey Research	yes
Professor #2	Ph.D.	Older adult health and chronic disease self-management	yes
Professor#3	Ph.D.	Medical Sociology, Epidemiology, Social Determinants of Health and Illness	yes
Professor#4	Ph.D.	Women’s Health, Global Health, Cancer Disparities	yes
Professor#5	Ph.D.	Health Administration, Health Finance, Health Services Research and Evaluation, Health Disparities	yes
Professor #6	Ph.D.	Substance Abuse	yes
Associate Professor #1	Ph.D.	Public Health, Health Promotion, Obesity, Physical Activity	Yes
Associate Professor #2	Ph.D.	Health Behavior, Community Development, Public Health Practice and Evaluation, Physical Activity, Obesity Prevention, Health Disparities	yes

List Staff by Rank	Highest Degree Earned	Field of Study	Teaching in Field (Yes/No)
Associate Professor #3	Ph.D.	Health Behavior, Physical Activity, Nutrition, Obesity, Evaluation, Applied Statistics	yes
Associate Professor #4	Ph.D.	Health Policy Analysis, Health Economics	yes
Assistant Professor #1	Ph.D.	Simulation and Modeling; Empirical Methods; Behavioral and Cognitive Economics; Health Communication	yes
Assistant Professor #2	MD, Ph.D.	Epidemiology, Nutrition, Biostatistics	yes

Table C: UNIT ADMINISTRATION/FACULTY/STAFF SUPPORT						
YEAR	NEW		EXISTING		TOTAL	
	Headcount	FTE	Headcount	FTE	Headcount	FTE
Administration						
2014 – 15			1	.5	1	.5
2015 – 16			1	.5	1	.5
2016 – 17			1	.5	1	.5
2017 – 18			1	.5	1	.5
2018 – 19			1	.5	1	.5
Faculty						
2014 – 15			12	.125	12	3
2015 – 16			12	.25	12	4
2016 – 17			12	.25	12	4
2017 – 18			12	.25	12	4
2018 – 19			12	.25	12	4
Staff						
2014 – 15			2	.10	20	.10
2015 – 16	.5	1	2	.20	2.5	.5
2016 – 17	.5	1	2	.20	2.5	.5
2017 – 18	.5	1	2	.20	2.5	.5
2018 – 19	.5	1	2	.20	2.5	.5

Physical Plant

The M.S/Ph.D. in Applied Health Research and Evaluation will be housed in Edwards Hall. The Department of Public Health Sciences has office space to accommodate 12 faculty, three instructors, and three graduate students. The Department also has lab space available for research application and instruction. The College of Health Education and Human Development will remodel and subdivide existing space to provide individual study areas for the graduate students in the college. The existing facilities will be adequate, with minor adjustments, for the faculty and students for the next three years. For the following two years additional space for both faculty and students could be necessary if our faculty grows and this has addressed with the college dean.

Equipment

There are no additional major research and scientific equipment items needed to support the proposed program. As stated in the budget, new computers and office desks for graduate assistants will be needed. These materials will be acquired through self-generated funds from the department's certificate programs.

Library Resources

The Clemson University Library holdings and electronic access are adequate to support the program. All major journals in our files are available online or through open access. No additional library resources are anticipated; however, a small amount of funding will be budgeted to add journals or books if the need arises. The Clemson University Libraries hold more than 1.8 million items including books, periodicals, electronic resources, digital media collections, government publications and patents, musical recordings, maps and microforms. Resources include 3,593 print journal subscriptions, approximately 48,000 e-journals, more than 22,800 e-books, and more than 400 online databases. During the 2007-2008 fiscal year, the budget for electronic databases and journals was \$3.8 million; \$1 million for print periodicals; and \$1.4 million for e-books, printed books, standing orders, and media.

Interlibrary loan and PASCAL provide students and faculty access to this wide array of resources. PASCAL is the Partnership Among South Carolina Academic Libraries, a consortium of South Carolina's academic libraries together with their parent institutions and state agency partners. PASCAL fosters cooperation on a broad range of issues including shared licensing of electronic resources, universal borrowing, and ILS hosting. PASCAL provides timely and universal access to information resources and library services - through creative use of technology, central licensing, and collaborative action - in order to support a highly productive knowledge environment for every student and faculty member at every institution of higher learning in South Carolina.

Specific journals available through Clemson's Library system and relevant to students in the PhD program of Applied Health Research and Evaluation include:

Administration and policy in mental health and mental health services research, American journal of epidemiology, American journal of evaluation, American journal of public health, Annals of family medicine, Annals of internal medicine, Behavioral medicine, BMC health services research, Clinical epidemiology, Diabetes Care, Epidemiology, Ethnicity & disease, Evaluation & the health professions, Evaluation & program planning, Evaluation review, Future medicine, Health affairs, Health and history, Health and human rights, Health and place, Health and quality of life outcomes, Health care analysis, Health care auditing strategies, Health care for women international, Health Communication, Health culture and society, Health data

management, Health economics , Health economics policy and law, Health economics review, Health education research, Health industry today, Health information science and systems , Health law and policy , Health management technology, Health outcomes research in medicine, Health, risk & society, Health service journal, Health services research, Health services and outcomes research methodology, Health statistics quarterly, Health system research , Healthcare benchmarks and quality improvement , Healthcare informatics research , Hypertension Research, Journal of behavioral health services & research, Journal of comparative effectiveness research, JAMA : the Journal of the American Medical Association and complete collection of AMA Journals, Journal of evaluation in clinical practice, New England Journal of Medicine, Medical Care, Obesity Research, Public Health Forum, Research Evaluation. Journals that will be considered in addition to the existing holdings include: Advances in Program Evaluation, Evaluation in Education and Human services, Journal of Multidisciplinary Evaluation, The Patient : Patient-Centered Outcomes Research.

Accreditation, Approval, Licensure, or Certification

The proposed Applied Health Research and Evaluation M.S. and Ph.D. programs are not subject to specialized or professional accreditation or approval by any state agency other than the Commission on Higher Education.

Articulation

This proposed program leads to a terminal degree. This program does not include collaborations or articulations with other state institutions and no agreements are required. Students who have been enrolled in graduate studies at other institutions do have an opportunity to apply for admission and appropriate course work completed will be evaluated for application to the degree program. When appropriate, articulation agreements may be developed for students to conduct their doctoral research at other institutions. These are unique situations and are not anticipated at this time.

Total new costs associated with implementing the proposed program:

The estimated cost for Year 01 is \$291,200. Sixty-eight percent of this cost involves personnel items (faculty and staff) and will come from reallocation of existing funds. Future health services faculty hires currently planned by Clemson University are anticipated to contribute to and complement the expansion in health related programs and research at the University. One new faculty member has been allocated for the Department in the 2013-14 budget.

Twenty-two percent of this overall cost will include two new graduate assistant positions, space modifications and equipment, etc. Funds for graduate positions, remodeling, and other expenses as well as the recruitment, travel, library and other miscellaneous expenses of the Year 01 budget will come from self-generated revenues the Department currently collects through summer school course and graduate health courses that we offer for the MBA program in Greenville. Additional self-generated funds will come from two certificate programs that we have recently launched (Undergraduate Public Health and Graduate Clinical and Health Services Research). No “unique costs” or special state appropriations will be required for this program.

Table D: ESTIMATED COSTS BY YEAR						
CATEGORY	1st	2nd	3rd	4th	5th	TOTALS
Program Administration	50,000	51,500	53,045	54,636	56,275	265,456
Faculty Salaries	125,000	257,500	265,525	273,182	281,277	1,202,484
Graduate Assistants	68,200	107,700	110,481	113,345	116,295	516,021
Clerical/Support Personnel	7,000	25,000	25,750	26,522	27,318	111,590
Supplies and Materials						
Library Resources	2,000	1,000	1,000	1,000	1,000	6,000
Equipment	10,000	0	0	5,000	5,000	20,000
Facilities	25,000	0	0	25,000	0	50,000
Other (Identify)						
travel	2,000	4,000	4,000	4,000	4,000	18,000
recruitment/seminars	2,000	4,000	4,000	4,000	4,000	18,000
TOTALS	291,200	450,700	463,801	506,685	495,165	2,207,551
SOURCES OF FINANCING BY YEAR						
Tuition Funding	\$24,000	48,000	72,000	96,000	96,000	336,000
Program-Specific Fees						
State Funding*						
Reallocation of Existing Funds** (Reassignment of existing faculty to graduate classes, etc.)	267,200	402,700	391,801	410,685	399,165	1,871,551
Federal Funding						
Other Funding (Specify)						
TOTALS	\$291,200	450,700	463,801	506,685	495,165	2,207,551

* Special legislative appropriations to support the program.

**Specify significant internal sources of reallocated funds. Add additional rows as necessary.



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SANDRA B. GREENE, DrPH
Interim Chair

LAUREL FILES, PhD, MBA
Associate Chair

April 30, 2013

Dr. Lee Crandall
Chair, Department of Public Health Sciences
Clemson University
501 Edwards Hall
Clemson SC 29634

Dear Lee,

It is a distinct privilege to serve on your External Advisory Board as you move forward with the proposed MS/PhD Program in Applied Health Research and Evaluation at Clemson University. As background, I have been Director of the PhD Program in Health Policy and Management at the University of North Carolina at Chapel Hill for the past decade. During that time, health care reform, Institute of Medicine reports recognizing the need for system-level approaches to increase value of our investment in health care, and funding for comparative effectiveness research are a few factors that have heightened the importance of health services/health policy research. In this rapidly-changing environment, our students must develop an understanding of how their research can be applied in real-world health care systems. As such, during the past 10 years, our Department has revised our curriculum to provide our students with the skills and experience for careers in which they can make a difference in health care. As a PhD Program Director who has overseen the revision of our curriculum, I believe that I have the expertise to serve on your External Advisory Board. Based upon our face-to-face meeting in January and my review of your proposal, I believe that the MS/PhD in Applied Health Research and Evaluation is extraordinarily well-crafted, and it will prepare your graduates with the skills to improve health care delivery in diverse systems. I will use the remainder of the letter to provide my rationale.

Let me begin with your curriculum, which is structured around explicit learning objectives for your doctoral students. You combine didactic and experiential learning activities to achieve these objectives (including specific metrics that will allow you to apply formative, process, impact, and outcome evaluations of your curriculum). The didactic component of your curriculum includes core courses that will provide all MS/PhD students with essential content, methodological, analytical, and professional development skills required for careers in applied health research. In particular, they will understand the principles for developing, implementing, and evaluating innovative strategies to improve the processes and outcomes of health care. Your students will

also understand how to appropriately use, analyze and interpret data from large secondary data sets; these skills are currently critical, but will become increasingly important in an era of "big data" and the proliferation of electronic medical records that can be linked to other datasets. In addition to core required courses, your students will select a cognate in which to focus their study. This is important because students will be able to tailor their formal training to their individual interests; a secondary benefit of this structure is that it will provide the Department with a richer, more diverse student population. This is similar to the structure of the curriculum in our PhD Program in Health Policy and Management.

Beyond the formal courses, you have capitalized on your strong relationships with health care systems throughout the state. As we recommended at the January External Advisory Board Meeting, these partnerships can provide your students with clinical and operations mentors to complement the strong academic mentors within your Department. This combination of didactic and experiential learning has many benefits. First and foremost, having mentors within organizational partners will help students develop the skills and experience to conduct meaningful health services research in real-world settings. Second, it has the potential to further ongoing research between faculty in your Department and your partners. Doing so would create a sustainable relationship that would expand opportunities for faculty and students alike. Third, it will distinguish your proposed MS/PhD program from others in South Carolina. As we discussed at the External Advisory Board meeting, your focus on applied health research will complement, rather than compete with, other PhD programs. For these reasons, your graduates will be exquisitely well-prepared to join diverse health care organizations that seek creative solutions to improve health care quality, organizational efficiency, and patient outcomes.

The faculty in your Department are excellent and have the skills to teach, mentor and guide the research of the students you will attract to your MS/PhD program. They have diverse expertise, including medical sociology, health services research, economics, health policy, epidemiology, health promotion, health behavior, and health communication. They also have wide-ranging research foci that can accommodate students' interests, including cancer prevention and control, minority health/health disparities, health systems/policy research, gerontology, and nutrition/physical activity/obesity. In addition to the excellent faculty within your Department, you have strong faculty throughout Clemson (especially within the College of Health Education and Human Development). And, you capitalize on mentors in health care organizations with which you currently have established partnerships (e.g., Greenville Health Care System, Institute for Engaged Aging). Together, you have outstanding resources to teach and mentor students in the proposed MS/PhD Program.

You have carefully evaluated the demand for your program, and based on the data in your proposal, I have no question that you will be able to recruit very strong students into your program. Although you will recruit students expecting them to complete the PhD, you have provided them with the ability to graduate with a master's degree should they wish to exit at that point. Regardless of which degree they complete, your graduates will be prepared to conduct applied health research in diverse health care organizations, as well as state and federal agencies. All of these organizations will face

challenges associated with health care reform. Your students will be prepared to help these organizations consider how to implement Accountable Care Organizations, new payment and reimbursement models, electronic health records, patient-centered medical homes, and community-based programs. They should possess the training and experiences to develop innovative and pragmatic ways to foster meaningful change in health care.

In closing, I believe that your proposed MS/PhD program in Applied Health Research and Evaluation fills an important niche that complements, rather than competes with, other PhD programs at Clemson University and the state of South Carolina. You have developed a very strong curriculum that capitalizes on the strengths of your Department, Clemson University, and your partnerships with various organizations in the State. Your current proposal has been very responsive to the suggestions made at the January External Advisory Board meeting. I am excited to serve on this Board and look forward to future meetings to offer advice as your program develops over time. If you have any questions, please feel free to contact me by email (mweinber@email.unc.edu) or telephone (919-966-7385).

Sincerely,

A handwritten signature in black ink, appearing to read 'V. N. Slee', written in a cursive style.

Vergil N. Slee Distinguished Professor of Healthcare Quality Management
Department of Health Policy and Management
Gillings School of Global Public Health
University of North Carolina at Chapel Hill
Senior Research Career Scientist, Durham VAMC Center for Health Services Research