

INTERDISCIPLINARY
GRADUATE COURSE AND CURRICULUM CHANGES

approved by the
interdisciplinary Public Health faculty
via electronic vote
November 30, 2007

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**Units outside the college, which may be directly
impacted by these changes are:
Diagnostic Medicine/Pathobiology
Hotel Restaurant Institution Management and Dietetics
Kinesiology
Statistics**

**Please provide the sponsors of a proposed change with any information
regarding fiscal or programmatic impact on your department, program or
students.**

CURRICULUM PROPOSAL**ADD:****GRADUATE CERTIFICATE IN PUBLIC HEALTH CORE CONCEPTS****SECTION I: PROGRAM DESCRIPTION****A statement of the educational objectives of the certificate program**

This certificate program is designed to give individuals, both working professionals and graduate students on campus with no formal public health education, a strong foundation of knowledge in the five core concept areas in public health: biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences. The courses required for the certificate are the same ones required in the core concept areas for the Master of Public Health (MPH) degree program currently offered at Kansas State University. These five areas meet the Council of Education for Public Health (CEPH) program accreditation standards. The following are the basic or core competencies in each of the five discipline areas.

Biostatistics: collection, storage, retrieval, analysis, and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.

Epidemiology: distributions and determinants of disease, disabilities, and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.

Environmental health sciences: environmental factors including, biological, physical, and chemical factors that affect the health of a community.

Health services administration: planning, organization, administration, management, evaluation, and policy analysis of health programs.

Social and behavioral sciences: concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

A list of the courses associated with the certificate, including titles and course descriptions both for existing courses and any new course that may be developed

Coursework can be taken in a distance learning format or in the traditional on-campus classroom setting. The certificate program in public health core concepts requires a total of 16 credit hours taken from the following six courses: (*denotes courses offered through distance learning)

***STAT 703 Statistical Methods for Natural Scientists. (3) I, II, S.** Statistical concepts and methods basic to experimental research in the natural sciences; hypothetical populations, estimation of parameters; confidence intervals; parametric and nonparametric tests of hypothesis; linear regression, correlation; one-way analysis of variance; t-test; chi-square test. Pr.: Junior standing and equivalent of college algebra.

Note: STAT 702 Statistical Methods for Social Sciences (3) may be taken in place of STAT 703. STAT 702 is currently available only on campus.

DMP 708 Principles and Methods of Epidemiology. (2) II. Ecologic and epidemiologic concepts in the study of diseases in populations: epidemiologic methods emphasizing problem solving and application to epidemiologic principles of disease control.

DMP 854 Disease Epidemiology. (3) I. Epidemiologic principles relative to infectious and noninfectious diseases transmissible from animals to humans, and application of these principles by use of case investigations.

DMP 806 Environmental Toxicology. (2) II. An advanced toxicology course concerned with the occurrence, biological effect, detection, and control of foreign chemicals in the environment.

KIN 818 Social and Behavioral Bases of Public Health. (3) II. This course examines the role of behavioral, social, economic, cultural, and social structural factors in both the occurrence of health problems in groups and populations, and in the development of the risk factors that contribute to these problems. Principles of health behavior change and their application of these principles to a variety of health issues as well as an emphasis on how social structural factors impact health are examined to better understand health behavior and health inequities in contemporary society.

***HRIMD 720 Administration of Health Care Organizations. (3) S.** Comprehensive review of current healthcare institutions and their response to the economic, social/ethical, political/legal, technological, and ecological environments.

A statement of how the courses associated with the certificate will meet the stated educational objectives

These six courses will provide sufficient breadth to allow each student as a current or future public health professional to attain knowledge and skills in the core public health concepts needed to improve population-level health. The common focus of all public health professionals, whether educated in public health or a related discipline, is on population-level health. The basis of this focus is an ecological model of health which assumes that health and well being are affected by interaction among the multiple determinants of health.

To apply for admission into the certificate program, students must have completed an undergraduate degree with a GPA of 3.0 or higher based on the last 60 credits of the bachelor's degree AND be concurrently enrolled in a graduate program at K-State OR be admitted as a non-degree student. Acceptance into the certificate program does not automatically mean acceptance into the MPH degree program. The full sixteen hours in the graduate certificate, however, may be applied to the MPH degree upon application and acceptance into the MPH program.

A statement of the need for the proposed certificate and the basis for such a need, supported by either externally or internally derived data

Background. The history of public health in the United States in the 20th century was marked with collective achievements that prevented countless premature deaths, almost doubled life expectancy at birth, and improved the quality of life. Near the end of the past century, however, there was a growing perception among scientists and public health professionals that this country had lost sight of its public health goals and had allowed the infrastructure to fall into disarray. The Committee for the Study of the Future of Public Health¹ concluded that "concerted action would be needed to successfully counter both the continuing and emerging threats to the health and safety of the public (pages 1-18)." Events in the opening years of the 21st century reinforced and confirmed these conclusions². Such events include continuing crises such as the HIV/AIDS and obesity epidemics and lack of health care for a growing population of medically indigent, and impending crises foreshadowed by acts of bioterrorism and outbreaks of infectious diseases.

Need for well-trained personnel. The public health infrastructure in the United States is dependent on people and requires a workforce that can meet the continuing and emerging challenges of the 21st century. As the population ages and becomes increasingly diverse, the need for public health services will expand and as they do, so will the number of jobs.² Well-prepared leaders with advanced knowledge and leadership skills will be needed to fill positions as they develop. The traditional and most direct educational path to a career in public health was to obtain a graduate degree from a school of public health. In response to a movement for credentialing public health workers³, several universities have established certificate and/or public Preparation of public health professionals involves training in discipline-based knowledge from cutting-edge research, but also an understanding of how a specialized discipline relates to the whole of public health, and the skills to provide leadership in a large, complex, socially responsive enterprise. Personnel employed in public health, whether they have formal preparation or not, will need continuing opportunities to keep up with advances in knowledge and practice as new threats to security, safety, and health emerge.

Target audiences:

- Those who work in public health settings, but who have never had any formal public health education
- Those who deliver health services who need knowledge and skills in the core public health disciplines, but may not want the full MPH degree curriculum
- Those who wish to pursue an MPH degree and intend to apply these credits toward that goal
- Those who are enrolled in advanced degrees in related areas such as agricultural economics, public administration, food safety, veterinary medicine, nutrition, and kinesiology who wish to enhance their professional knowledge of key public health concepts

References:

1. Committee for the Study of the Future of Public Health, Institute of Medicine. ***The Future of Public Health.*** Washington, DC, National Academy Press, 1988.

2. Committee on Assuring the Health of the Public in the 21st Century, Institute of Medicine. ***The Future of the Public's Health in the 21st Century***. Washington, DC, National Academies Press, 2003.
3. DeBuono BA, Tilson H (eds.). ***Advancing Healthy Populations: The Pfizer Guide to Careers in Public Health***. New York: Pfizer Inc., 2002.
4. Lloyd DS. Credentialing the public health workforce—its time has arrived. ***Public Health Reports*** 2000;115:582.

A description of the certificate program's administration, including coordinating/governing committees, additional requirements for membership on student supervisory committees if the certificate is linked with graduate degree programs

The Director of the Master of Public Health degree program will serve as the administrator of the proposed graduate certificate in public health core concepts. Currently, Dr. Carol Ann Holcomb from the Department of Human Nutrition, College of Human Ecology, serves as the Director. An unclassified program assistant position will be needed to provide support for processing of applications, marketing and recruitment of students, maintaining databases, and other related clerical duties. The existing MPH Program is governed by a ten-member Coordinating Committee representing all five units participating in the program: Department of Diagnostic Medicine/Pathobiology; Department of Hotel, Restaurant, Institutional Management and Dietetics; Department of Human Nutrition; Department of Kinesiology; and the Food Science Institute. The Coordinating Committee meets once a month throughout the academic year. The Director of the MPH Program serves as the moderator at the meetings.

There are currently 44 graduate faculty members who participate in the MPH Program. These individuals will serve as advisors for students in the Graduate Certificate program. Students in the certificate program will not have a supervisory committee to guide their program of study. All students admitted to the certificate program will take the same six required courses for a total of 16 credit hours. Admission to the certificate program is contingent upon meeting the requirements for admission to the Graduate School.

Estimated budget to support the certificate program

All of the required courses in the proposed graduate certificate in public health core concepts are the same ones required in the interdisciplinary Master of Public Health degree offered in residence at Kansas State University. A proposal for a permanent central program office staffed with a program director and program assistant has been developed for consideration by central administration. The requested funds from the program office proposal are listed in the following matrix:

Budget item	Amount needed for FY 2009
Total personnel expenses:	\$80,000- \$100,000
A. Director's salary and benefits	\$60,000 - \$75,000
B. Program assistant's salary and benefits	\$20,000 - \$25,000
Total operating expenses:	\$13,500
C. Telephone equipment	\$1,500
D. Mailing and postage	\$500
E. Computer upgrades and software licenses	\$5,000
F. Web support	\$500

G. Office supplies	\$500
H. Printing costs	\$1,000
I. Travel expenses	\$3,000
J. Exhibit fees	\$1,500
Total Budget Request for the MPH Program Office	\$93,500 - \$113,500

DESCRIPTION OF BUDGET ITEMS:

- A. Director's salary and fringe benefits for 12 months (at least 0.75 FTE)
- B. Program assistant's salary and fringe benefits (at least 0.60 FTE)
- C. Telephone lines to the offices of the director and program assistant
- D. Postal and other delivery services for print mailings of correspondence and recruiting materials
- E. Upgrades to existing desktop and laptop computers, as well as appropriate site licenses for software applications
- F. Technical support for redesign and updating of the program website
- G. Routine office supplies of stationery, envelopes, cards, writing paper, clips, pens, staples, etc.
- H. Printing of displays for professional meeting exhibits, brochures, flyers, letterhead, business cards, etc.
- I. Travel expenses for the director and program assistant to attend state, regional, and national public health and other professional meetings to promote the program and recruit new students
- J. Fees for exhibit space and registration at professional meetings

Initially the certificate courses will be offered only on campus, but future plans do include continued development of all six courses for a distance learning format. Income generated from tuition and fees for the distance courses will be returned to the departments and the faculty who teach the courses.

The names of faculty associated with or contributing to the certificate program, either by teaching one or more of the courses associated with the program or participating in the design of the curriculum. Adjunct faculty members associated with the program should provide a current curriculum vita

Name	Position	Course and/or program role
Boyer, John E.	Professor and Head, Statistics	STAT 703
Barrett, Betsy	Associate Professor, HRIMD	MPH Coordinating Committee Member
Canter, Deborah	Professor, HRIMD	HRIMD 720
Dzewaltowski, David	Professor and Head, Kinesiology	MPH Coordinating Committee Member
Fung, Daniel Y.C.	Professor, ASI	MPH Coordinating Committee Member
Haub, Mark	Associate Professor, Human Nutrition	MPH Coordinating Committee Member
Higgins, James J.	Professor, Statistics	STAT 703
Holcomb, Carol Ann	Professor, Human Nutrition	Director of the MPH Program
Larson, Robert	Professor, Clinical Sciences	MPH Coordinating Committee Member
McElroy, Mary	Professor, Kinesiology	KIN 818 and MPH Coordinating Committee Member
Moro, Manuel	Assistant Professor, DM/P	DMP 708 and MPH Coordinating Committee Member
Nguyen, Thu Annelise	Assistant Professor, DM/P	DMP 806
Oehme, Frederick W.	Professor, DM/P	DMP 806
Pickrell, John	Associate Professor, DM/P	DMP 806

Retzlaff, Deanna D.	Assistant Professor, Food Science Institute	MPH Coordinating Committee Member
Sanderson, Michael	Associate Professor, Clinical Sciences	DMP 854
van der Merwe, Deon	Assistant Professor, DM/P	DMP 806

The name and address of the faculty member designated as the coordinator of the program
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For 2007-2008 academic year:

Carol Ann Holcomb, PhD, CHES
Professor and Director of the MPH Program
Department of Human Nutrition
210 Justin Hall
Manhattan, KS 66506-1407
Phone: 785-532-0152
FAX: 785-532-3132
Email: carolann@ksu.edu

Endorsements from those academic units whose students, courses, or programs could be impacted by the creation of the new graduate certificate
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Letters of endorsement from the following department heads are attached:

Dr. M. M. Chengappa, Department of Diagnostic Medicine/Pathobiology, supporting DMP 708, DMP 806, and DMP 854

Dr. John E. Boyer, Jr, Department of Statistics, supporting STAT 702 and STAT 703

Dr. David A. Dzewaltowski, Department of Kinesiology, supporting KIN 818

Dr. Deborah D. Canter, Department of Hotel, Restaurant, Institution Management and Dietetics, supporting HRIMD 720

Letters of endorsement from the following deans are attached:

Dean Virginia Moxley, College of Human Ecology; Dean Ralph C. Richardson, College of Veterinary Medicine; and Dean Steve White, College of Arts and Sciences

SECTION II: STUDENT LEARNING OUTCOMES AND ASSESSMENT PLAN FOR THE PROGRAM

Students seeking a graduate certificate will come from a variety of backgrounds and experiences with a desire for a broad introduction to public health as a potential career path. The required courses are designed to provide a general understanding in the areas basic to public health so that each student will be able to:

- Apply statistical methods to the solution of problems in public health and medicine, including the use of health data and the design and analysis of surveys and experiments
- Understand the distribution and determining factors of disease, injuries, and death in human populations, exploring variations in relation to such considerations as age, gender, race, occupational and social characteristics, diet, and the environment
- Identify, measure, and control biological, chemical, and physical hazards in the environment to promote and protect human health
- Examine the organization and financing of the public and private sector activities required at local, state, and federal levels and treat disease
- Explore how people's health-related behaviors interact with their social, cultural, physical, and biological environments and learn how to combat health-damaging behaviors and become advocates for health-promoting behaviors

Specific student learning outcomes in the six courses required for the certificate in public health core concepts

Core course	Student learning outcomes
STAT 702 or STAT 703 (biostatistics)	1. Calculate and understand basic descriptive statistics (measures of central tendency--mean, median, mode; measures of variance--standard deviation, quartiles) 2. Calculate and understand hypothesis testing (estimation, significance tests, types of errors, t distribution, binominal distribution) 3. Calculate and understand variable associations (contingency tables, Chi-square, tests of independence, 2 x 2 tables, scatter plots, linear regression models, Pearson correlation)
DMP 708 and DMP 854 (epidemiology)	1. Describe the basic components of a study and the different study design types; discuss public health research, surveillance, and outbreak investigation. 2. Discuss the complex interaction of host, environment, and agent factors that cause disease and the different patterns of disease, population immunity, and disease transmission in populations of humans and animals. 3. Evaluate, apply, and interpret different types and uses of diagnostic and screening tests. 4. Explain different types of bias and how to control or reduce error through good study design and statistical analysis. 5. Select and apply the basic epidemiological methods of measuring disease frequency and association in a population.
DMP 806 (environmental health sciences)	1. Define and describe the basic interactions and relationships in the environment, such as ecological cycles, natural disruptions, and their negative impacts on humans and animals. 2. Illustrate the basic principles of toxicology, including pollution/toxicity indicators, location and action of toxins, factors that alter pollutant actions, and host/organ responses to toxins. 3. Explain the sources, detection, monitoring, and public health hazards of water, land/soil, and air pollution. 4. Recommend strategies for personal and political management of pollution, global impacts, and future impacts/solutions of pollution.
HRIMD 720 (health services administration)	1. Describe the complex and turbulent environment in which health-related organizations and agencies must operate. 2. Summarize the demographic trends that impact public health and health services in the United States today and in the near future. 3. Explain the skills essential for successful management and leadership in health service agencies.
KIN 818 (social and behavioral sciences)	1. Describe the importance of social and psychological factors for major health problems. 2. Explain the widely used theories of health behavior. 3. Become familiar with the current research literature concerning the social and behavioral determinants of health. 4. Describe current empirically-based applications of behavioral and social science principles to various health domains. 5. Apply a theoretically derived social change framework designed to promote health among

	a variety of social groups.
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Relationship to Kansas State University Student Learning Outcomes

Graduate Certificate Program Student Learning Outcomes		University-wide SLOs for Graduate Programs			Program SLO is conceptually different from university SLOs
		Knowledge	Skills	Attitudes and Personal Conduct	
STAT 702 or STAT 703 (biostatistics)	1. Calculate and understand basic descriptive statistics (measures of central tendency--mean, median, mode; measures of variance--standard deviation, quartiles) 2. Calculate and understand hypothesis testing (estimation, significance tests, types of errors, t distribution, binominal distribution) 3. Calculate and understand variable associations (contingency tables, Chi-square, tests of independence, 2 x 2 tables, scatter plots, linear regression models, Pearson correlation)	X	X		
DMP 708 and DMP 854 (epidemiology)	1. Describe the basic components of a study and the different study design types; discuss public health research, surveillance, and outbreak investigation. 2. Discuss the complex interaction of host, environment, and agent factors that cause disease and the different patterns of disease, population immunity, and disease transmission in populations of humans and animals. 3. Evaluate, apply, and interpret different types and uses of diagnostic and screening tests. 4. Explain different types of bias and how to control or reduce error through good study design and statistical analysis. 5. Select and apply the basic epidemiological methods of measuring disease frequency and association in a population.	X	X		
DMP 806 (environmental health sciences)	1. Define and describe the basic interactions and relationships in the environment, such as ecological cycles, natural disruptions, and their negative impacts on humans and animals. 2. Illustrate the basic principles of toxicology, including pollution/toxicity indicators, location and action of toxins, factors that alter pollutant	X			

	actions, and host/organ responses to toxins. 3. Explain the sources, detection, monitoring, and public health hazards of water, land/soil, and air pollution. 4. Recommend strategies for personal and political management of pollution, global impacts, and future impacts/solutions of pollution.				
HRIMD 720 (health services administration)	1. Describe the complex and turbulent environment in which health-related organizations and agencies must operate. 2. Summarize the demographic trends that impact public health and health services in the United States today and in the near future. 3. Explain the skills essential for successful management and leadership in health service agencies.	X		X	
KIN 818 (social and behavioral sciences)	1. Describe the importance of social and psychological factors for major health problems. 2. Explain the widely used theories of health behavior. 3. Become familiar with the current research literature concerning the social and behavioral determinants of health. 4. Describe current empirically-based applications of behavioral and social science principles to various health domains. 5. Apply a theoretically derived social change framework designed to promote health among a variety of social groups.	X	X	X	

How will the student learning outcomes be assessed? What groups will be included in the assessment plan?

Graduate Certificate Program SLOs	Measures used in the assessment of SLOs	Direct measure	Indirect measure	Who will be assessed?
1. Calculate and understand basic descriptive statistics (measures of central tendency--mean, median, mode; measures of variance--standard deviation, quartiles) 2. Calculate and understand hypothesis testing (estimation, significance tests, types of errors, t distribution, binominal distribution) 3. Calculate and understand variable associations (contingency tables, Chi-square, tests of independence, 2 x 2 tables, scatter plots, linear regression models, Pearson correlation)	Completion of either STAT 702 or STAT 703		The MPH Program Director will administer an exit survey to each student at the completion of the certificate program.	All students in the program.

1. Describe the basic components of a study and the different study design types; discuss public health research, surveillance, and outbreak investigation. 2. Discuss the complex interaction of host, environment, and agent factors that cause disease and the different patterns of disease, population immunity, and disease transmission in populations of humans and animals. 3. Evaluate, apply, and interpret different types and uses of diagnostic and screening tests. 4. Explain different types of bias and how to control or reduce error through good study design and statistical analysis. 5. Select and apply the basic epidemiological methods of measuring disease frequency and association in a population.	Completion of both DMP 708 and DMP 854	DMP 708 DMP 854: Six computer-based assignments; 4-6 papers from the scientific literature	The MPH Program Director will administer an exit survey to each student at the completion of the certificate program.	All students in the program.
1. Define and describe the basic interactions and relationships in the environment, such as ecological cycles, natural disruptions, and their negative impacts on humans and animals. 2. Illustrate the basic principles of toxicology, including pollution/toxicity indicators, location and action of toxins, factors that alter pollutant actions, and host/organ responses to toxins. 3. Explain the sources, detection, monitoring, and public health hazards of water, land/soil, and air pollution. 4. Recommend strategies for personal and political management of pollution, global impacts, and future impacts/solutions of pollution.	Completion of DMP 806	Weekly brief quizzes; written individual reports; oral presentations	The MPH Program Director will administer an exit survey to each student at the completion of the certificate program.	All students in the program.
1. Describe the complex and turbulent environment in which health-related organizations and agencies must operate. 2. Summarize the demographic trends that impact public health and health services in the United States today and in the near future. 3. Explain the skills essential for successful management and leadership in health service agencies.	Completion of HRIMD 720	Biweekly email journal entries; interview with a health care administrator; final comprehensive examination	The MPH Program Director will administer an exit survey to each student at the completion of the certificate program.	All students in the program.
1. Describe the importance of social and psychological factors for major health problems. 2. Explain the widely used theories of health behavior. 3. Become familiar with the current research literature concerning the social and behavioral determinants of health. 4. Describe current empirically-based applications of behavioral and social science principles to various health domains. 5. Apply a theoretically derived social change framework designed to promote health among a variety of social groups.	Completion of KIN 818	Two comprehensive written examinations; In-class discussions and assignments; a research paper	The MPH Program Director will administer an exit survey to each student at the completion of the certificate program.	All students in the program.

When will these outcomes be assessed? When and in what format will the results of the assessment be discussed?

Graduate Certificate Program SLOs	Year 1 (2008-2009)	Year 2 (2009-2010)	Year 3 (2010-2011)	Discussion group(s)
1. Calculate and understand basic descriptive statistics (measures of central tendency--mean, median, mode; measures of variance--standard deviation, quartiles) 2. Calculate and understand hypothesis testing (estimation, significance tests, types of errors, t distribution, binominal distribution) 3. Calculate and understand variable associations (contingency tables, Chi-square, tests of independence, 2 x 2 tables, scatter plots, linear regression models, Pearson correlation)	X	X	X	Course instructors, students, and members of the MPH Coordinating Committee.
1. Describe the basic components of a study and the different study design types; discuss public health research, surveillance, and outbreak investigation. 2. Discuss the complex interaction of host, environment, and agent factors that cause disease and the different patterns of disease, population immunity, and disease transmission in populations of humans and animals. 3. Evaluate, apply, and interpret different types and uses of diagnostic and screening tests. 4. Explain different types of bias and how to control or reduce error through good study design and statistical analysis. 5. Select and apply the basic epidemiological methods of measuring disease frequency and association in a population.	X	X	X	Course instructors, students, and members of the MPH Coordinating Committee.
1. Define and describe the basic interactions and relationships in the environment, such as ecological cycles, natural disruptions, and their negative impacts on humans and animals. 2. Illustrate the basic principles of toxicology, including pollution/toxicity indicators, location and action of toxins, factors that alter pollutant actions, and host/organ responses to toxins. 3. Explain the sources, detection, monitoring, and public health hazards of water, land/soil, and air pollution. 4. Recommend strategies for personal and political management of pollution, global impacts, and future impacts/solutions of pollution.	X	X	X	Course instructors, students, and members of the MPH Coordinating Committee.
1. Describe the complex and turbulent environment in which health-related organizations and agencies must operate. 2. Summarize the demographic trends that impact public health and health services in the United States today and in the near future. 3. Explain the skills essential for successful management and leadership in health service agencies.	X	X	X	Course instructors, students, and members of the MPH Coordinating Committee.
1. Describe the importance of social and psychological	X	X	X	Course

factors for major health problems. 2. Explain the widely used theories of health behavior. 3. Become familiar with the current research literature concerning the social and behavioral determinants of health. 4. Describe current empirically-based applications of behavioral and social science principles to various health domains. 5. Apply a theoretically derived social change framework designed to promote health among a variety of social groups.				instructors, students, and members of the MPH Coordinating Committee.
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What is the MPH Program's process for using assessment results to improve student learning?

Based on input from course instructors and student evaluations, the current courses in the certificate program will be reviewed and revised as necessary. The same self-assessment survey used by students in the MPH degree program will be administered to each student at the completion of the certificate. Information from student evaluations of courses, discussions with faculty members and representatives of the units on the Coordinating Committee, and the student self-assessment surveys will be used to determine what information and skills need to be added to the core concept courses to improve the overall certificate program.

RATIONALE:

This certificate program is designed to give individuals, both working professionals and graduate students on campus with no formal public health education, a strong foundation of knowledge in the five core concept areas in public health: biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences. The courses required for the certificate are the same ones required in the core concept areas for the Master of Public Health (MPH) degree program currently offered at Kansas State University. These five areas meet the Council of Education for Public Health (CEPH) program accreditation standards. The following are the basic or core competencies in each of the five discipline areas.

Biostatistics: collection, storage, retrieval, analysis, and interpretation of health data; design and analysis of health-related surveys and experiments; and concepts and practice of statistical data analysis.

Epidemiology: distributions and determinants of disease, disabilities, and death in human populations; the characteristics and dynamics of human populations; and the natural history of disease and the biologic basis of health.

Environmental health sciences: environmental factors including, biological, physical, and chemical factors that affect the health of a community.

Health services administration: planning, organization, administration, management, evaluation, and policy analysis of health programs.

Social and behavioral sciences: concepts and methods of social and behavioral sciences relevant to the identification and the solution of public health problems.

EFFECTIVE DATE: Fall 2008