

Student Learning Outcomes and Competencies
Emphasis: Infectious Diseases and Zoonoses

The MPH Program is dedicated to assessment of student learning and to appropriate changes in curriculum and courses whenever necessary. At the completion of the degree, the student should be able to meet all the Graduate School’s Student Learning Outcomes (SLOs), the MPH SLOs, along with the MPH Core Competencies and the Emphasis Area Competencies. All courses taken for the degree are expected to meet at least one core or emphasis area competency.

Kansas State University Graduate Student Learning Outcomes

Knowledge	Demonstrate [a] thorough understanding and/or competency in a specific area of emphasis, study, or profession.
Skills	Demonstrate the ability to apply knowledge through critical thinking, inquiry, analysis, and communication to solve problems and to produce scholarly and creative works including but not limited to design, art, performance, [and/or] original research in the form of [a] thesis or dissertation.
Attitudes and Professional Conduct	Exhibit an awareness of their responsibilities (professional integrity, ethical behavior, ability to work with diverse groups of peoples, etc.) and engage in professional conduct towards all constituent groups, including students, faculty, public, etc.

MPH Student Learning Outcomes and Core Competencies Expected of Each MPH Student

MPH SLO: Knowledge and Skills	
Demonstrate these core competencies in each of the five core areas of public health and in at least one area of emphasis.	
Biostatistics Required Course: MPH 701 – Fundamental Methods of Biostatistics (3 hrs)	Apply descriptive and inferential methodologies for testing specific public health or research hypotheses according to the type of study design and measurement scale.
	Apply basic informatics techniques in the acquisition of public health data and in the analysis of survey and experiential designs.
Environmental Health Sciences Required Course: MPH 802 - Environmental Health (3 hrs)	Describe genetic and physiological factors that affect health outcomes following exposure to environmental hazards.
	Explain the general mechanisms of toxicity in eliciting an adverse response to various environmental exposures.
	Describe current environmental risk assessment methods, and be able to specify approaches for assessing, preventing, and controlling environmental hazards that pose risks to human health and safety.
Epidemiology Required Course: MPH 754 - Introduction to Epidemiology (3 hrs) Or MPH 708 - Veterinary Epidemiology (2 hrs) AND MPH 854 - Intermediate Epidemiology (3 hrs)	Properly calculate and use measures of disease, injuries, and death in human populations (e.g., prevalence, incidence, relative risk, attributable risk, population attributable risk, etc.) to describe problem magnitude; and to investigate associations to such consideration as age, gender/sex, race, occupation, social characteristics, diet, and environment.
	Draw appropriate inferences from epidemiologic data, and identify the data’s strengths and limitations.
	Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use, and dissemination of epidemiological data.
Health Services Administration Required Course: MPH 720 - Administration of Health Care Organizations (3 hrs)	Recognize how the roles and interaction between various stakeholders in the healthcare system (including health care providers, other members of the healthcare workforce, consumers of healthcare, etc.) impact the accessibility of healthcare.
	Describe the demographic trends which impact healthcare, and in turn, public health in the United States.
Social and Behavioral Sciences Required Course: MPH 818 - Social and Behavioral Bases of Public Health (3 hrs)	Identify basic theories, concepts, and models from a range of social and behavioral disciplines that are used in public health intervention and policies.
	Identify the causes of social and behavioral factors that affect the health of individuals and populations with specific emphasis on underserved populations.

In addition to the above, each MPH emphasis area has its own set of unique competencies expected of students completing coursework in the emphasis area.

Infectious Diseases and Zoonoses Emphasis Area Competencies

1	<i>Pathogens/pathogenic mechanisms</i>	Understand and be able to describe the ecology and modes of disease causation of infectious agents such as bacteria, viruses, parasites, and fungi.
2	<i>Host response to pathogens/immunology</i>	Describe the current understanding of host immune response to infection and understand the role of vaccination in infectious disease control.
3	<i>Environmental/ecological influences</i>	Understand the influence of space/geography, insect vectors, toxic plants and other toxin sources, as well as infectious agents on infectious disease and food safety.
4	<i>Disease surveillance/quantitative methods</i>	Understand how disease events and risk factors for disease are quantified and compared.
5	<i>Effective communication</i>	Develop and demonstrate effective strategies to communicate public health/infectious disease issues to a variety of audiences.

Infectious Diseases and Zoonoses – Required and Elective Courses

Competency	Requirements and Credit Hours Needed		Select from these Courses
#1 Pathogens/ pathogenic mechanisms	Select 2 or 3 courses	6-7 hours	ASI 540 Principles of Animal Disease Control (3 hrs)
			BIOL 530 Pathogenic Microbiology (3 hrs)
			BIOL 545 Human Parasitology(3 hrs)
			BIOL 546 Human Parasitology Laboratory (1 hrs)
			BIOL 604 Biology of Fungi (3 hrs)
			BIOL 675 Genetics of Microorganisms (3 hrs)
			BIOL 687 Microbial Ecology (3 hrs)
			BIOL 730 General Virology (3 hrs)
			DMP 718 Veterinary Parasitology (4 hrs) (DVM students only)
			DMP 812 Veterinary Bacteriology and Mycology (lecture and lab) (4 hrs)
			DMP 822 Veterinary Virology (3 hrs)
#2 Host response to pathogens/ immunology	Select 1 or 2 courses	3-6 hours	DMP 860 Pathogenic Mechanisms (3 hrs) (alternate years)
			BIOL 670 Immunology (4 hrs)
			BIOL 671 Immunology Laboratory (2 hrs)
			DMP 705 Principles of Veterinary Immunology (3 hrs)
			DMP 850 Domestic Animal Immunology (3 hrs)
#3 Environmental / ecological influences	Select 2 or 3 courses	3-6 hours	DMP 880 Problems in Pathobiology (1-6 hrs)
			BIOL 529 Fundamentals of Ecology (3 hrs)
			DMP 710 Introduction to One Health (2 hrs) (online)
			DMP 770 Emerging Diseases (3 hrs) (intersession)
			DMP 801 Toxicology (2 hrs)
			DMP 806 Environmental Toxicology (2 hrs)
			DMP 816 Trade & Agricultural Health (2 hrs) (online)
			DMP 844 Global Health Issues (3 hrs) (online)
			DMP 888 Globalization, Cooperation & the Food Trade (1 hrs) (online)
			ENTOM 849 Biology of Disease Vectors (3 hrs)
			FDSCI 690 Principles of HACCP (2 hrs) (online)
			FDSCI 730 Overview of Food Safety and Security (2 hrs)
			FDSCI 731 Food Protection and Defense - Essential Concepts (2 hrs) (online)
GEOG 508 Geographic Information Systems I (4 hrs)			
GEOG 608 Geographic Information Systems II (3 hrs) (prerequisite GEOG 508)			
#4 Disease surveillance/ quantitative methods	Select 1 or 2 courses	3-6 hours	DMP 753 Veterinary Public Health (2 hrs) (DVM students only)
			DMP 830 Quantitative Analysis (3 hrs)
			DMP 854 Intermediate Epidemiology (3 hrs)
			DMP 855 Disease Detection, Surveillance and Risk Assessment (3 hrs)
			DMP 871 Molecular Diagnostics of Infectious Diseases (3 hrs)
			DMP 954 Advanced Epidemiology (4 hrs)
			STAT 705 Regression and Analysis of Variance (3 hrs)
			STAT 716 Non-parametric Statistics (3 hrs)
			STAT 717 Categorical Data Analysis (3 hrs)
			STAT 720 Design of Experiments (3 hrs)
STAT 730 Multivariate Statistics Methods (3 hrs)			
#5 Effective communication	Select 1 course	3 hours	AAI 801 Interdisciplinary Process (online Manhattan; face-to-face Olathe) (3 hrs)
			DMP 815 Multidisciplinary Thought and Presentation (3 hrs)
			MC 750 Strategic Health Communication (alternate years) (3 hrs)
			MC 760 Communication and Risk (3 hrs) (alternate years)

Student Accountability for Core and Emphasis Area Competencies

Each student should submit documentation addressing how each of the MPH core competencies and emphasis area competencies were attained. This documentation must be submitted to the student's supervisory committee members before the final presentation/defense.

Capstone/Culminating Experience SLO

At the completion of the MPH coursework and field experience, or thesis and field experience, the student will be expected to meet the following MPH SLO:

MPH SLO: Integration
Demonstrate the ability to integrate knowledge and skills to solve problems and to produce scholarly work in a culminating experience in the form of a thesis, report, and/or community-based field project.

The capstone/culminating experience requirement for the MPH degree is typically completed at the end of the coursework so that a student may apply the knowledge gained from graduate courses. It is met with the following:

- Six credit hours of field experience with a capstone project and a written report and oral presentation of the field experience and project; or
- Six credit hours of public health research and three credit hours of field experience, each with a written report and oral presentation. The written and oral reports may be combined, if approved by the supervisory committee; or
- Two credit hours for a Master's Report and four credit hours of field experience, each with a written report and an oral presentation. The written and oral reports may be combined, if approved by the supervisory committee.

Requirements and Credit Hours Needed		Select from these Courses	
Field Experience Option			
Field Experience	3-6 hours	MPH 840	MPH Field Experience (Infectious Diseases and Zoonoses) Note: Students may enroll in all 6 hours of field experience in one semester or split it between two semesters and enroll in 3 hours of field experience each semester
Thesis Option with Field Experience			
Thesis	6 hours	DMP 899	Master's Research/Thesis (Infectious Diseases and Zoonoses)
Field Experience	3 hours	MPH 840	MPH Field Experience (Infectious Diseases and Zoonoses)

This experience is the culmination of one's graduate education and training that reflects not only on the student's accomplishments, but also on the quality of the program. Field experience should include work at a public health agency or similar organization outside of the normal academic setting and should allow the student to apply the knowledge learned from the core and emphasis area courses.

If completing a thesis, the area of research should be focused on population-based health questions rather than on basic research in a laboratory. This does not preclude doing laboratory analyses of data gathered in populations of animals or humans. A thesis completed as partial fulfillment for the MPH degree must be accepted by the Graduate School, become a single-authored publication and contribute to the body of knowledge in public health.

Summary

Requirement	Credit Requirement	Total
MPH Core Courses required by all emphasis areas	15-17 hours	15-17 credit hours
Infectious Diseases and Zoonoses emphasis area courses	18-22 hours	18-22 credit hours
Field Experience or Thesis and Field Experience	6-9 hours	6-9 credit hours
Total required for MPH degree		42 credit hours

All MPH graduate students must maintain a GPA of 3.0 or above in ALL graduate course work to remain in good standing in the program and to graduate with an MPH degree. Detailed information concerning this requirement may be found on the Graduate School website: <http://www.k-state.edu/grad/>

