

Student Learning Outcomes and Competencies

Emphasis: Food Safety and Biosecurity

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.

Food Safety and Biosecurity Emphasis Area Competencies

1	Food safety and biosecurity	Describe the challenges and solutions for food safety, biosecurity, and defense issues in the food production continuum.
2	Threats to the food system	Categorize specific threats to the food system and scientifically identify how each can be prevented, controlled, and/or mitigated in the food production system.
3	Risk assessment and management	Identify and categorize risks in the food system; Describe approaches to assessing and managing risk in the food system.
4	Food safety policy and the global food system	Describe how food safety and biosecurity policies, globalization, and international trade influence public health.
5	Effective communication	Develop and illustrate effective strategies to communicate public health/food safety issues to a variety of audiences.

Food Safety and Biosecurity Required and Elective Courses

Prerequisite courses: Students without an undergraduate degree in food science or closely related field may be required to complete undergraduate prerequisite courses before being allowed to take emphasis area courses. Prerequisite courses may include: biochemistry; organic chemistry; an introductory course in microbiology; a course in botany, zoology, or biology; mathematics courses (college algebra, calculus, and statistics); and a course in physics.

Requirements and Credit Hours Needed		Select from these Courses	
Required courses	4 hours	FDSCI 730	Multidisciplinary Overview of Food Safety and Security (2 hrs)
		FDSCI 731	Food Protection and Defense – Essential Concepts (2 hrs)
Select 3 to 6 courses	Minimum 6 hours	DMP 855	Disease Detection, Surveillance, and Risk Assessment (3 hrs)
		FDSCI 600	Microbiology of Food (2 hrs) (online version of FDSCI 607)
		FDSCI 690	Principles of HACCP and HARPC (3 hrs) (online + in class)
		FDSCI 750	Food Toxicants (2 hrs) (online)
		FDSCI 753	Risk Assessment for Food, Ag & Vet Med (3 hrs)
		FDSCI 791	Advanced Applications of HACCP Principles (3 hrs) (odd years)
Select 1 to 2 courses	Minimum 2 hours	DMP 816	Trade and Agricultural Health (2 hrs) (online)
		DMP 844	Global Health Issues (3 hrs) (online + May Intercession)
Select 1 to 2 courses	Minimum 3 hours	DMP 815	Multidisciplinary Thought and Presentation (3 hrs)
		MC 750	Strategic Health Communication (3 hrs) (alternate years)
		MC 760	Communication and Risk (3 hrs) (alternate years)
Elective courses Select any remaining hours needed from the previous courses or the following list	0-7 hours	DMP 710	Introduction to One Health (2 hrs) (online)
		DMP 806	Environmental Toxicology (2 hrs)
		DMP 880	Problems in Pathobiology
		DMP 888	Globalization, Cooperation, and Food Trade (1 hr) (online)
		FDSCI 601	Food Microbiology Lab (2 hrs)
		FDSCI 695	Quality Assurance of Food Products (3 hrs) (online + in class)
		FDSCI 751	Food Laws and the Regulatory Process (2 hrs)
		FDSCI 820	Advanced Food Microbiology & Biotechnology (2 hrs) (online summer odd yrs)
		STAT 705	Regression and Analysis of Variance (3 hrs) (in class)

Food Safety and Biosecurity Core Competencies Course Alignment Matrix

MPH Emphasis Food Safety and Biosecurity	Required 4 hrs		Select 3-6 courses Minimum 6 hrs						Select 1-2 courses Min 2 hrs		Select 1-2 courses Min 3 hrs		Elective courses: Select any remaining hrs needed from the previous courses or the following list:									
Competencies and Courses P=Primary Course R=Reinforcing Course	FDSCI 730	FDSCI 731	FDSCI 600	FDSCI 750	FDSCI 753	FDSCI 690	FDSCI 791	DMP 855	DMP 816	DMP 844	DMP 815	MC 750	MC 760	DMP 710	DMP 806	DMP 880	DMP 888	FDSCI 601	FDSCI 695	FDSCI 751	FDSCI 820	STAT 705
1. Food safety and biosecurity	P	P	P	P	R	R	R	R	R	R				R			R	R	R	R	R	
2. Threats to the food system	P	P	R	R		P	P			R				R	R			R	R		R	
3. Risk assessment and management	P	P			P	P	P	P						R	R							
4. Food safety policy and the global food system	R	R			R		R		P	P				R			R					
5. Effective communication	R	R									P	P	P			R						

Reinforces MPH Core Competencies

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 Expected of Each MPH Student

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.
- 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 members.

Requirements and Credit Hours Needed		Select from these Courses	
Field Experience Option			
Field Experience	3-6 hours	MPH 840	MPH Field Experience (Food Safety and Biosecurity) 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	FDSCI 899	Master’s Research/Thesis (Food Safety and Biosecurity)
Field Experience	3 hours	MPH 840	MPH Field Experience (Food Safety and Biosecurity)

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
Food Safety and Biosecurity 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/>