

**University of South Florida, College of Public Health
Department of Epidemiology and Biostatistics
Competencies for Ph.D. with a Concentration in Epidemiology**

1) COPH Doctoral Competencies and Doctoral Program in Epidemiology Competency Matrix

COPH Doctoral Competency	Epidemiology Doctoral Competency	Department Requirements
DOMAIN A: SCIENTIFIC KNOWLEDGE		
1. Critically evaluate and use scientific theories and frameworks relevant to public health	#1: Synthesis of scientific literature #2: Mastery of knowledge in a substantive area	PHC 7039: Doctoral Seminar: Critical Thinking in Epidemiology Focus Area/Substantive Area Courses
2. Synthesize knowledge from a broad range of disciplines in public health	#1: Synthesis of scientific literature #2: Mastery of knowledge in a substantive area	Focus Area/Substantive Area Courses Public Health Related Seminars
DOMAIN B: RESEARCH		
1. Critically analyze research literature	#1: Synthesis of scientific literature	PHC 6016: Epidemiology Methods III Focus Area Courses
2. Develop models for guiding independent research	#4: Formulation of Research Hypotheses #5: Design of Epidemiological Studies #6: Epidemiology Proposal Development	PHC 6016: Epidemiology Methods III PHC 7015: Epidemiology Study Design & Protocol Development PHC 6081: Intermediate SAS
3. Design and carry out original research that contributes to the knowledge base in public health	#4: Formulation of Research Hypotheses #5: Design of Epidemiological Studies #6: Epidemiology Proposal Development #7: Data Collection & Study Management Methods	PHC 6016: Epidemiology Methods III PHC 6017: Design and Conduct of Clinical Trials PHC 7015: Epidemiology Study Design & Protocol Development PHC 7727: Field Methods in Epidemiology PHC 7001: Practical Issues in Epidemiology
4. Demonstrate innovative methods of data collection and analysis	#7: Data Collection & Study Management Methods #8: Statistical Concepts and Analyses	PHC 6016: Epidemiology Methods III PHC 7017: Epidemiology Methods IV PHC 7054: Advanced Research Methods PHC 6017: Design and Conduct of Clinical Trials PHC 7727: Field Methods in Epidemiology PHC 7001: Practical Issues in Epidemiology PHC 7720: Secondary Data Analysis PHC 6055: Survival Analysis PHC 7056: Longitudinal Data Analysis PHC 7053: Generalized Linear Models

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COPH Doctoral Competency	Epidemiology Doctoral Competency	Department Requirements
5. Apply a set of ethical standards in the conduct and dissemination of research	#3: Ethical Conduct of Human Research	PHC 7931: Public Health Research Ethics
6. Work as an effective research team member	N/A	HSC 7267: Professional Foundations: Becoming a Doctoral Student Primary Data Collection Experience
7. Prepare scholarly publications and make oral presentations	#9: Interpretation of Epidemiological Data #10: Effective Communication of Epidemiological Findings #11: Writing Peer-reviewed Publications	PHC 7934: Writing for Scholarly Publication PHC 6934: Secondary Data Analysis
8. Investigate funding sources	#5: Design of Epidemiological Studies #12: Critical Evaluation of Completed & Proposed Epidemiological Research	HSC 7267: Professional Foundations: Becoming a Doctoral Student PHC 7015: Epidemiology Study Design & Protocol Development
9. Develop grant writing skills	#6: Epidemiology Proposal Development	PHC 7015: Epidemiology Study Design & Protocol Development
DOMAIN C: TEACHING		
1. Demonstrate ability to teach a university level course using current pedagogical techniques	#13: Effective Teaching of Epidemiological Concepts and Methods	HSC 7260: Professional Foundations: Teaching Department Teaching Requirement
2. Demonstrate communication skills that facilitate learning by others in formal and informal settings	#13: Effective Teaching of Epidemiological Concepts and Methods	HSC 7260: Professional Foundations: Teaching Department Teaching Requirement

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2) Detailed Listing of Competencies

Ph.D. with a Concentration in Epidemiology
In addition to the overall Doctor of Philosophy degree competencies, graduates with a concentration in Epidemiology will be able to:
<ol style="list-style-type: none">1. Synthesize Scientific Literature: Critically review and evaluate the scientific literature, synthesizing the findings across studies, and developing an informed judgment on the state of knowledge in that area, presenting appropriate implications for public health practice, public policy, and implications for further research.2. Master Knowledge in a Substantive Area: Demonstrate mastery of a substantive area, including knowledge and application of that knowledge in conducting original research related to a specific topic, including the descriptive and analytic epidemiological literature, pathophysiology of disease, policy and public health implications of research3. Ethically Conduct of Human Research: Understand and implement the concepts of ethical conduct of research which involves human subjects, issues of confidentiality, and awareness of particular issues relevant to the conduct of epidemiological studies in special and vulnerable populations.4. Formulate Study Hypotheses: Formulate an original hypothesis or statement of the research problem that will advance scientific knowledge about a topic of public health importance.5. Design Epidemiological Studies: Design epidemiological studies to address questions of public health importance. Understand the advantages and limitations of each design for addressing specific problems, as well as the practical aspects of their uses, including trade-offs.6. Develop Epidemiologic Proposals: Develop an epidemiology research proposal to address a study question (or questions), which includes a scientific and public health rationale for the significance of the study, and detailed methodology to conduct the epidemiological study to answer the question (or questions).7. Collect Data and Manage Epidemiologic Studies: Demonstrate mastery in the implementation and conduct of data collection, for epidemiological studies in a clinical and/or community setting. Develop, implement and assess quality assurance and control measures.8. Apply Statistical Concepts and Analyses: Be a skilled data analyst able to use state-of-the art statistical methods appropriate for the major epidemiology study designs and able to manage various types of variables, including examination of data for the presence of confounding and/or effect modification.9. Interpret Epidemiological Data: Interpret research results from statistical analyses of epidemiological studies, make appropriate inferences based on results, and understand implications of the results in the context of findings from other studies and relevant information and theories from other sciences such as, biology, physics and the social sciences.10. Effectively Communicate Epidemiological Findings: Present the findings from epidemiological investigation in writing and orally to scientific and lay audiences. Including, presentation of findings from epidemiological investigations at national and international meetings in epidemiology and/or in their substantive area.11. Write Peer-Reviewed Publications: Submit the findings of epidemiological research in manuscript form for publication to an external, peer-reviewed journal.12. Critically Evaluate Completed and Proposed Epidemiological Research: Critically review and evaluate scientific manuscripts and epidemiological research proposals.13. Effectively Teach Epidemiological Concepts and Methods: Demonstrate proficiency in explaining fundamental and complex epidemiological concepts and methods, and fundamental concepts and methods in their substantive/focus area in the classroom to undergraduate and/or graduate students.

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3) Association between Department courses and the Competencies

Course	COPH PhD Competencies												
	A		B									C	
	1	2	1	2	3	4	5	6	7	8	9	1	2
	1	2	3	4	5	6	7	8	9	10	11	12	13
Pre-requisite/College Required Core Courses													
PHC 6000: Epidemiology	√	√											
PHC 6050: Biostatistics I	√	√											
And one of the following:													
PHC 6102: Principles of Health Policy & Management	√	√											
PHC 6537: Environmental and Occupational Health	√	√											
PHC 6410: Social & Behavioral Sciences Applied to Health	√	√											
Domain A: Scientific Knowledge													
PHC 7039: Critical Thinking in Epidemiology	√	√											
Focus Area/Substantive Area Courses	√	√		√									
Public Health Related Seminars		√											
Domain B: Research													
PHC 6016: Epidemiology Methods III	√		√	√	√	√							
PHC 7015: Epidemiology Study Design & Protocol Development				√	√					√	√		
PHC 6081: Intermediate SAS				√		√							
PHC 6017: Design and Conduct of Clinical Trials					√	√	√						
PHC 7727: Field Methods in Epidemiology					√	√	√						
PHC 7001: Practical Issues in Epidemiology					√	√	√						
PHC 7017: Epidemiology Methods IV						√	√						
PHC 7054: Advanced Research Methods						√	√						
PHC 7720: Secondary Data Analysis						√		√	√				
PHC 6055: Survival Analysis						√		√					
PHC 7056: Longitudinal Data Analysis						√		√					
PHC 7053: Generalized Linear Models						√		√					
PHC 7931: Public Health Research Ethics			√				√						
HSC 7267: Professional Foundations: Becoming a Doctoral Student								√			√		
PHC 7934: Writing for Scholarly Publication									√		√		
Domain C: Teaching													
HSC 7260: Professional Foundations: Teaching												√	√
Department Teaching Requirement												√	√