D18. Academic Public Health Doctoral Degrees

These students also complete coursework and other experiences, outside of the major paper or project, that substantively address scientific and analytic approaches to discovery and translation of public health knowledge in the context of a population health framework.

These students complete doctoral-level, advanced coursework and other experiences that distinguish the school of study from a master's degree in the same field.

The school defines appropriate policies for advancement to candidacy, within the context of the institution.

Finally, students complete coursework that provides instruction in the foundational public health knowledge at an appropriate level of complexity. This instruction may be delivered through online, in-person or blended methodologies, but it must meet the following requirements while covering the defined content areas.

The school identifies at least one required assessment activity for each of the foundational public health learning objectives.

The school validates academic doctoral students’ foundational public health knowledge through appropriate methods.

1) List the curricular requirements for each non-DrPH doctoral degree in the unit of accreditation, EXCLUDING requirements associated with the final research project. The list must indicate (using shading) each required curricular element that a) is designed expressly for doctoral, rather than master’s, students or b) would not typically be associated with completion of a master's degree in the same area of study.

The school may present accompanying narrative to provide context and information that aids reviewers’ understanding of the ways in which doctoral study is distinguished from master’s-level study. This narrative is especially important for institutions that do not formally distinguish master’s-level courses from doctoral-level courses.

The school will present a separate list for each degree program and concentration as appropriate.

PhD in Biostatistics

The PhD in Biostatistics curriculum differs considerably from the MS in Biostatistics curriculum. Students who enter the PhD in Biostatistics program without a related master’s degree initially complete coursework similar to the MS in Biostatistics in order to ensure a foundation in the subject. However, most students enter the program with some relevant coursework that can be transferred to the PhD degree program, which allows the transfer of up to 30 credits from the master’s degree. Twelve credits of PhD core courses, 18 credits of PhD electives and 21 credits of dissertation coursework are specific for doctoral level students.

<table>
<thead>
<tr>
<th>PhD in Biostatistics</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Biostatistics Courses</td>
<td>12 Credits</td>
</tr>
<tr>
<td>PHC 7066 Large Sample Theory</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7090 Advanced Biostatistical Methods I</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7091 Advanced Biostatistical Methods II</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6068 Biostatistical Computing</td>
<td>3</td>
</tr>
<tr>
<td>Public Health Core</td>
<td>6 Credits</td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Introduction to Public Health</td>
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</table>
### PhD in Biostatistics

<table>
<thead>
<tr>
<th>Consulting Requirement</th>
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<tbody>
<tr>
<td>PHC 6063 Biostatistical Consulting</td>
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<table>
<thead>
<tr>
<th>Biostatistics Electives</th>
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</thead>
<tbody>
<tr>
<td>PHC 7925 Biostatistics Journal Club</td>
<td>1</td>
</tr>
<tr>
<td>PHC 6178 Genetic Data Analysis</td>
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</tr>
<tr>
<td>PHC 6020 Clinical Trials Methods</td>
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<td>GMS 6827 Advanced Clinical Trials Methods</td>
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<tr>
<td>STA 6177 Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7056 Longitudinal Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6707 Analysis of Multivariate Data</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Stochastic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Analytic Methods for Infectious Diseases</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7348 Bayesian Theory Statistics</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Causal Inference</td>
<td>3</td>
</tr>
<tr>
<td>STA 6866 Monte Carlo Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Statistical Learning with Applications in the Health Sciences</td>
<td>3</td>
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<tr>
<td>PHC 6937 Stochastic Epidemic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>STA 6466 Probability Theory I</td>
<td>3</td>
</tr>
<tr>
<td>STA 6427 Probability Theory II</td>
<td>3</td>
</tr>
<tr>
<td>STA 7179 Advanced Survival Analysis</td>
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<tr>
<td>STA 7347 Advanced Inference</td>
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<tr>
<td>STA 7527 Theory of Nonparametric Statistics</td>
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<table>
<thead>
<tr>
<th>Cognate Field Electives</th>
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<td>0-6 Credits</td>
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<table>
<thead>
<tr>
<th>Previous M.S. in Biostatistics/Statistics</th>
<th>Credits</th>
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<tr>
<td>30 Credits</td>
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</table>

<table>
<thead>
<tr>
<th>Dissertation</th>
<th>21</th>
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</thead>
</table>

| Total Credits | 90 |

### PhD in Epidemiology

Several doctoral level courses are specific to the PhD in Epidemiology and are not generally taken by the MS in Epidemiology students. Through review of courses in each curriculum, it was decided to revise the curriculum to remove PHC 7901 Epidemiology Literature Review and Critique and PHC 7902 Scientific Writing for Peer Reviewed Publications for Population Science from the MSE curriculum. Thus, going forward these will be expressly doctoral-level courses.

<table>
<thead>
<tr>
<th>Epidemiology Methods</th>
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<tbody>
<tr>
<td>PHC 6000 Epidemiology Methods I</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6011 Epidemiology Methods II</td>
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</tbody>
</table>

Choose 9 credits from the following courses: 9 Credits

<table>
<thead>
<tr>
<th>Epidemiology Methods</th>
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</thead>
<tbody>
<tr>
<td>PHC 6003 Epidemiology of Chronic Diseases and Disability</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7017 Advanced Epidemiology Methods III</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6016 Social Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7595 Introduction to Molecular Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7594 Genetic Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6517 Public Health Concepts in Infectious Diseases</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6194 Spatial Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7007 Cancer Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7038 Psychiatric Epidemiology</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statistics and Data Management</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 6052 Introduction to Biostatistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6053 Regression Methods for the Health and Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7065 Critical Skills in Epidemiological Data Management</td>
<td>2</td>
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</table>

<table>
<thead>
<tr>
<th>Doctoral Seminar Series</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHC 7727 Grant Writing for Population Health Research</td>
<td>2</td>
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</tbody>
</table>
**PhD in Epidemiology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 7934 Epidemiology Seminar I: Epidemiology Past, Present, Future</td>
<td>2</td>
</tr>
<tr>
<td>PHC 7000 Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods</td>
<td>2</td>
</tr>
<tr>
<td><strong>Writing Series</strong></td>
<td>2 Credits</td>
</tr>
<tr>
<td>PHC 7901 Epidemiology Literature Review and Critique</td>
<td>1</td>
</tr>
<tr>
<td>PHC 7902 Scientific Writing for Peer Reviewed Publications for Population Science</td>
<td>1</td>
</tr>
<tr>
<td><strong>Ethics</strong></td>
<td>2 Credits</td>
</tr>
<tr>
<td>PHC 7427 Ethics in Population Science</td>
<td>2</td>
</tr>
<tr>
<td><strong>Measurement</strong></td>
<td>3 Credits</td>
</tr>
<tr>
<td>PHC 6711 Measurement in Epidemiology and Outcomes Research</td>
<td>3</td>
</tr>
<tr>
<td><strong>Statistics Electives</strong> – choose 6 credits from the following courses</td>
<td>6 Credits</td>
</tr>
<tr>
<td>PHC 6020: Clinical Trial Methods</td>
<td>3</td>
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<tr>
<td>PHC 6059: Introduction to Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937: Introduction to Mixed Methods Research</td>
<td>3</td>
</tr>
<tr>
<td><strong>Epidemiology Electives</strong></td>
<td>18 Credits</td>
</tr>
<tr>
<td><strong>General Electives</strong></td>
<td>15 Credits</td>
</tr>
<tr>
<td><strong>Dissertation Research</strong></td>
<td>12 Credits</td>
</tr>
<tr>
<td>PHC 7979 Advanced Research (Pre-Candidacy)</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7980 Research for Doctoral Dissertation</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td>90</td>
</tr>
</tbody>
</table>

*PHC 6937 Introduction to Public Health is required for students who do not have an MPH degree from a CEPH-accredited program. Credit taken will count towards general elective credit.

**PhD in Public Health, Environmental Health Concentration**

While the MPH and PhD in Public Health programs share the public health core courses, other coursework in the PhD in Public Health Environmental Health concentration is significantly different than the MPH in Environmental Health. The PhD program requires 12 credits of quantitative coursework and 12 credits of foundational research and teaching courses that are not required by the MPH program and are not generally taken by MPH students. Students in the PhD in Public Health program have the option to transfer up to 30 credits of appropriate coursework to the doctoral degree, so a student entering the PhD program after completing the MPH degree would not repeat any coursework.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PhD in Public Health Core</strong></td>
<td>15 Credits</td>
</tr>
<tr>
<td>PHC 6050 Statistical Methods for Health Sciences Research I</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>PHC 6052 Introduction to Biostatistical Methods</td>
<td></td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6313 Environmental Health Concepts in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HSA 6114 U.S. Health Care System</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6410 Psychological, Behavioral, and Social Issues in Public Health</td>
<td>3</td>
</tr>
<tr>
<td><strong>Quantitative Courses</strong></td>
<td>12 Credits</td>
</tr>
<tr>
<td>PHC 6053 Regression Methods for the Health and Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Public Health Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Choose 6 credits from the following courses:</td>
<td>6 Credits</td>
</tr>
<tr>
<td>PHC 6716 Survey Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6059 Introduction to Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Stochastic Epidemic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6000 Epidemiology Methods I</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6011 Epidemiology Methods II</td>
<td>3</td>
</tr>
<tr>
<td><strong>Foundational Research and Teaching Courses</strong></td>
<td>12 Credits</td>
</tr>
<tr>
<td>PHC 6900 Environmental and Global Health Journal Club</td>
<td>1</td>
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</table>
### PhD in Public Health, Environmental Health Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHC 7427 Ethics in Population Science</td>
<td>2</td>
</tr>
<tr>
<td>PHC 7727 Grant Writing for Population Health Research</td>
<td>2</td>
</tr>
<tr>
<td>PHC 6937 Finding Health Research Information and Communicating Science</td>
<td>1</td>
</tr>
<tr>
<td>PHC 6722 Environmental and Global Health Research Methods Rotation</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Supervised Teaching</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>RSD 6900 College Classroom: Teaching Process and Practice</td>
<td></td>
</tr>
</tbody>
</table>

### Concentration Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHC 6702 Environmental Monitoring and Exposure Assessment</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Mechanisms of Environmental Disease¹</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6424 Environmental Policy and Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7307 Quantitative Assessment of Environmental Health Impacts</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6301 Aquatic Systems and Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6304 Environmental Toxicology Applications in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Scientific Communications</td>
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</table>

### Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHC 6050 Statistical Methods for Health Sciences Research I or PHC 6052 Introduction to Biostatistical Methods</td>
<td></td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6313 Environmental Health Concepts in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HSA 6114 US Health Care System</td>
<td>3</td>
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<tr>
<td>PHC 6410 Psychological, Behavioral, and Social Issues in Public Health</td>
<td>3</td>
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### Dissertation Research

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 7979 Advanced Research (Pre-Candidacy)</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7980 Research for Doctoral Dissertation</td>
<td>15</td>
</tr>
</tbody>
</table>

### Total Credits

| Total Credits | 90 |

¹PHC 6937 Mechanisms of Environmental Disease will not be taught until spring 2021.

### PhD in Public Health, One Health Concentration

Only three of the public health core courses are shared between the MHS in One Health and the PhD in Public Health, One Health concentration. Other coursework differs significantly between the programs. The PhD program requires 12 credits of quantitative coursework and 12 credits of foundational research and teaching courses that are not required by the MHS program and are not generally taken by MHS students. Students in the PhD in Public Health program have the option to transfer up to 30 credits of appropriate coursework to the doctoral degree, so a student entering the PhD program after completing the MHS degree would not repeat any coursework.

### PhD in Public Health, One Health Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 6702 Statistical Methods for Health Sciences Research I or PHC 6052 Introduction to Biostatistical Methods</td>
<td></td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6313 Environmental Health Concepts in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HSA 6114 US Health Care System</td>
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</tr>
<tr>
<td>PHC 6410 Psychological, Behavioral, and Social Issues in Public Health</td>
<td>3</td>
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</tbody>
</table>

### Quantitative Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHC 6053 Regression Methods for the Health and Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Public Health Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Choose 6 credits from the following courses:</td>
<td>6 Credits</td>
</tr>
<tr>
<td>PHC 6716 Survey Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6059 Introduction to Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Stochastic Epidemic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6000 Epidemiology Methods I</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6011 Epidemiology Methods II</td>
<td>3</td>
</tr>
</tbody>
</table>

### Foundational Research and Teaching Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 6900 Environmental and Global Health Journal Club</td>
<td>1</td>
</tr>
<tr>
<td>PHC 7427 Ethics in Population Science</td>
<td>2</td>
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</table>
PhD in Public Health, One Health Concentration

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PHC 7727 Grant Writing for Population Health Research</td>
<td>2</td>
</tr>
<tr>
<td>PHC 6937 Finding Health Research Information and Communicating Science</td>
<td>1</td>
</tr>
<tr>
<td>PHC 6722 Environmental and Global Health Research Methods Rotation</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Supervised Teaching</td>
<td>3</td>
</tr>
<tr>
<td>or RSD 6900 College Classroom: Teaching Process and Practice</td>
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Concentration Courses 21 Credits

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<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>PHC 6304 Environmental Toxicology Applications in Public Health</td>
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</tr>
<tr>
<td>PHC 6937 Scientific Communications</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6018 Environmental Ecology of Human Pathogens Entomology</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6515 One Health: Applied Techniques in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6671 Emerging Infectious Diseases in One Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6764 Global Health and Development I</td>
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<td>PHC 6445 Global Health and Development II</td>
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Electives 12 Credits

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>PHC 7979 Advanced Research (Pre-Candidacy)</td>
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</tr>
<tr>
<td>PHC 7980 Research for Doctoral Dissertation</td>
<td>15</td>
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</tbody>
</table>

Total Credits 90

PhD in Public Health, Health Services Research Concentration

The PhD in Public Health, Health Services Research concentration is offered by the same department that offers the MPH in Population Health Management. While the MPH and the PhD in Public Health curricula share the public health core courses, other coursework in the PhD in Public Health, Health Services Research concentration is significantly different than the MPH in Population Health Management. Advanced coursework in the PhD in Public Health, Health Services Research concentration gives students the ability to apply appropriate interventional or observational study designs and corresponding methods to address innovative and important health services research questions. Students in the PhD in Public Health program have the option to transfer up to 30 credits of appropriate coursework to the doctoral degree, so a student entering the PhD program after completing the MPH degree would not repeat any coursework.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD in Public Health Core</td>
<td>15</td>
</tr>
<tr>
<td>PHC 6050 Statistical Methods for Health Sciences Research I</td>
<td>3</td>
</tr>
<tr>
<td>or PHC 6052 Introduction to Biostatistical Methods</td>
<td></td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6313 Environmental Health Concepts in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HSA 6114 U.S. Health Care System</td>
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<tr>
<td>PHC 6410 Psychological, Behavioral, and Social Issues in Public Health</td>
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</table>

Quantitative Courses 12 Credits

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>PHC 6053 Regression Methods for the Health and Life Sciences</td>
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</tr>
<tr>
<td>PHC 6937 Public Health Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6716 Survey Research Methods</td>
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</table>

Choose 3 credits from the following courses: 3 Credits

<table>
<thead>
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<th>Course</th>
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</thead>
<tbody>
<tr>
<td>PHC 6059 Introduction to Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Stochastic Epidemic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7056 Analysis of Longitudinal Data</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7090 Advanced Biostatistical Methods I</td>
<td>3</td>
</tr>
</tbody>
</table>
PhD in Public Health, Social and Behavioral Sciences Concentration

The PhD in Public Health, Social and Behavioral Sciences (SBS) concentration differs from the MPH in SBS. While the MPH and the PhD in Public Health curricula share the public health core courses, as well as other coursework in the PhD in Public Health, SBS is significantly different than the MPH in SBS. SBS Public Health PhD students take 18 core research and professional issues credits, 36 credits of PhD SBS concentration courses, and 18 credits of supervised and advanced research towards the doctoral dissertation. The 7000 level courses that are required by SBS PhD students are geared toward integrating theoretical frameworks, innovative solutions and advanced research methods that address current public health problems. Students in the PhD in Public Health program have the option to transfer up to 30 credits of appropriate coursework to the doctoral degree, so a student entering the PhD program after completing the MPH degree would not repeat any coursework.

<table>
<thead>
<tr>
<th>PhD in Public Health, Social and Behavioral Sciences Concentration</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD in Public Health Core</td>
<td>15 Credits</td>
</tr>
<tr>
<td>PHC 6052 Introduction to Biostatistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6001 Principles of Epidemiology in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6313 Environmental Health Concepts in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>HSA 6114 US Health Care System</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6410 Psychological, Behavioral, and Social Issues in Public Health</td>
<td>3</td>
</tr>
<tr>
<td>Quantitative and Statistical Core Courses</td>
<td>12 Credits</td>
</tr>
<tr>
<td>PHC 6053 Regression Methods for the Health and Life Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6700 Social and Behavioral Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6716 Survey Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>Choose 3 credits from the following courses:</td>
<td>3 Credits</td>
</tr>
<tr>
<td>PHC 6059 Introduction to Applied Survival Analysis</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6937 Stochastic Epidemic Modeling</td>
<td>3</td>
</tr>
<tr>
<td>PHC 6711 Measurement in Epidemiology and Outcomes Research</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7056 Analysis of Longitudinal Data</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7091 Advanced Biostatistics Methods 1</td>
<td>3</td>
</tr>
<tr>
<td>PHC 7091 Advanced Biostatistics Methods 11</td>
<td>3</td>
</tr>
<tr>
<td>Professional Issues</td>
<td>6 Credits</td>
</tr>
<tr>
<td>PHC 6937 Individual Work</td>
<td>2</td>
</tr>
</tbody>
</table>
### Concentration Courses (15 Credits)
- PHC 7427 Ethics in Population Science 2
- PHC 7727 Grant Writing for Population Health Research 2
- PHC 6251 Assessment and Surveillance for Public Health 3
- PHC 7752 Seminar in Instrument Development for Public Health 3
- PHC 6193 Qualitative Data Analysis 3
- PHC 7587 Theory Development and Testing in Behavioral Community Public Health 2
- PHC 7909 Social and Behavioral Science Journal Club 1
- PHC 6405 Theoretical Foundations of Public Health 3

### Electives (21 Credits)
- PHC 7979 Advanced Research (Pre-Candidacy) 3
- PHC 7980 Research for Doctoral Dissertation 15

### Teaching and Research (21 Credits)
- RSD 6900 College Classroom: Teaching Process and Practice 3

### Total Credits
90
2) Provide a matrix, in the format of Template D18-1, that indicates the required assessment opportunities for each of the defined foundational public health learning objectives (1-12). Typically, the school will present a separate matrix for each degree program, but matrices may be combined if requirements are identical.

<table>
<thead>
<tr>
<th>Content</th>
<th>Course number and name</th>
<th>Specific assessment opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Explain public health history, philosophy and values</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 1-6 in ERF D18.</td>
</tr>
<tr>
<td>2. Identify the core functions of public health and the 10 Essential Services*</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 7-8 in ERF D18.</td>
</tr>
<tr>
<td>3. Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population’s health</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 9-10 in ERF D18.</td>
</tr>
<tr>
<td>4. List major causes and trends of morbidity and mortality in the U.S. or other community relevant to the school or program</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam question 11 in ERF D18.</td>
</tr>
<tr>
<td>5. Discuss the science of primary, secondary and tertiary prevention in population health, including health promotion, screening, etc.</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 12-14 in ERF D18.</td>
</tr>
<tr>
<td>6. Explain the critical importance of evidence in advancing public health knowledge</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam question 15 in ERF D18.</td>
</tr>
<tr>
<td>7. Explain effects of environmental factors on a population’s health</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 16-17 in ERF D18.</td>
</tr>
<tr>
<td>8. Explain biological and genetic factors that affect a population’s health</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 18-19 in ERF D18.</td>
</tr>
<tr>
<td>9. Explain behavioral and psychological factors that affect a population’s health</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 20-21 in ERF D18.</td>
</tr>
<tr>
<td>10. Explain the social, political and economic determinants of health and how they contribute to population health and health inequities</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam questions 22-23 in ERF D18.</td>
</tr>
<tr>
<td>11. Explain how globalization affects global burdens of disease</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam question 24 in ERF D18.</td>
</tr>
<tr>
<td>12. Explain an ecological perspective on the connections among human health, animal health and ecosystem health (e.g., One Health)</td>
<td>PHC 6937 Introduction to Public Health</td>
<td>See Intro to PH exam question 25 in ERF D18.</td>
</tr>
</tbody>
</table>

3) Provide a matrix, in the format of Template D18-2, that lists competencies for each relevant degree and concentration. The matrix indicates at least one assessment activity for each of the listed competencies. Typically, the school will present a separate matrix for each concentration.
Note: these competencies are defined by the school and are distinct from the introductory public health learning objectives defined in this criterion.

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Engage in successful collaborations with investigators in the health sciences</td>
<td>PHC 6063 Biostatistical Consulting: Students participate in a group project that consists of learning and teaching statistical methods from the literature on methods needed to analyze data that will be encountered as a consultant but not typically in standard biostatistics courses (e.g., restricted mean survival time to analyze survival data when the proportional hazards assumption is not met). See PHC 6063 Final Project in ERF D18.</td>
</tr>
<tr>
<td>2. Conduct independent research in the development of new biostatistical methodology</td>
<td>PHC 7066 Large Sample Theory: Students take an exam that covers various modes of convergence, techniques for establishing asymptotic normality of various nonparametric estimator, U-statistics, V-statistics, asymptotic normality of maximum likelihood estimators and estimators based on estimating equations, jackknife and bootstrap, large sample tests. See PHC 7066 Final (question 2) in ERF D18.</td>
</tr>
<tr>
<td>3. Apply state-of-the-art biostatistical methodology to address research questions in the health sciences</td>
<td>PHC 7090 Advanced Biostatistical Methods I: A graded presentation is required. Students present on a topic of their choice approved by the instructor that is relevant to estimation and inference or linear modeling. The exams cover Frequentist and Bayesian estimation and inference. See PHC 7090 Final (questions 1-2) in ERF D18.</td>
</tr>
<tr>
<td>3. Apply state-of-the-art biostatistical methodology to address research questions in the health sciences</td>
<td>PHC 7091 Advanced Biostatistical Methods II: Students take an exam that cover solutions of computational problems with health science data using linear, generalized linear models, generalized linear mixed effects models and generalized estimating equations with R. Additionally, they cover interpretation of results in the context of scientific questions, also focusing on limitations. See PHC 7091 Final (questions 1-3) in ERF D18.</td>
</tr>
<tr>
<td></td>
<td>PHC 6068 Biostatistical Computing: Students take an exam that covers data analysis techniques such as dimension reduction, clustering methods, simulation, bootstrapping, linear models, lasso</td>
</tr>
<tr>
<td>Competency</td>
<td>Specific Assessment Opportunity</td>
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</tr>
<tr>
<td>4. Write statistical methodology papers for peer-reviewed statistical and biostatistical journals</td>
<td>PHC 7979 Advanced Research and PHC 7980 Dissertation Research: A dissertation includes an abstract, an introduction, a discussion and typically, at least two additional chapters, each representing approximately one publishable manuscript. Completion of two to three publishable manuscripts is expected before the dissertation defense. One manuscript, on which the student is first author, should already be submitted.</td>
</tr>
<tr>
<td>5. Collaborate on papers for peer-reviewed subject-matter journals in the health sciences</td>
<td>PHC 7090 Advanced Biostatistical Methods I: A graded presentation is required. Students present on a topic of their choice approved by the instructor that is relevant to estimation and inference or linear modeling. Students take exams that cover Frequentist and Bayesian estimation and inference. See PHC 7090 Final (questions 1-2) in ERF D18.</td>
</tr>
<tr>
<td>5. Collaborate on papers for peer-reviewed subject-matter journals in the health sciences</td>
<td>PHC 7091 Advanced Biostatistical Methods II: Students take exams that cover solutions of computational problems with health science data using linear, generalized linear models, generalized linear mixed effects models and generalized estimating equations with R. Additionally, they cover interpretation of results in the context of scientific questions, also focusing on limitations. See PHC 7091 Final (questions 1-3) in ERF D18. These assessments ensure that students are ready to collaborate on real papers for peer-reviewed subject matter journals with a team of health scientists.</td>
</tr>
<tr>
<td>5. Collaborate on papers for peer-reviewed subject-matter journals in the health sciences</td>
<td>PHC 6068 Biostatistical Computing: Students take exams that cover data analysis techniques such as dimension reduction, clustering methods, simulation, bootstrapping, linear models, lasso and ridge regression, generalized linear models, mixed models, data visualization and interpretation, etc. See PHC 6068 Final (questions 1-13) in ERF D18.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Apply epidemiological methods to address critical and/or emerging public health and clinical research issues through the use of:</td>
<td>PHC 7000 Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods: Students complete a final paper that covers methods and analysis of an approved epidemiological topic with an epidemiological aim and hypothesis test.</td>
</tr>
<tr>
<td>Competency</td>
<td>Specific Assessment Opportunity</td>
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</tr>
<tr>
<td>b. Advanced statistical analytic methods for health studies</td>
<td>PHC 7065 Critical Skills in Epidemiological Data Management: Students complete assignments that include 50-100 points worth of coding. Each line of coding has preassigned points ranging from 2.5-10 points. The assignments focus both on data manipulation and on advanced statistical methods.</td>
</tr>
<tr>
<td>c. Data structures and measurement methods for health research</td>
<td>PHC 6711 Measurement in Epidemiology and Outcomes Research: Students complete homework assignments that require critiques of measures.</td>
</tr>
</tbody>
</table>
| d. Depth of knowledge in an area of specialization                        | Written Area Examination: The Written Area Examination may only be taken after successful completion of the Written Preliminary Examination. The examination requires students to demonstrate:  
  • Knowledge of the specific area of expertise of the student  
  • Knowledge of the unique aspects of epidemiology in study designs related to the area of expertise  
  • Ability to think conceptually and clearly, and speak clearly in epidemiological terms about the area of expertise |
| 1. Apply epidemiological methods to address critical and/or emerging public health and clinical research issues through the use of: | Oral Area Examination: Within two weeks of passing the Written Area Exam, students must pass the Oral Area Exam. This one-hour exam, without any PowerPoint or presentation, covers all five questions available for the Written Area Examination. |
| d. Depth of knowledge in an area of specialization                        | Dissertation Proposal: As soon as candidates complete the qualifying exam (Written Preliminary Exam, Written and Oral Area Exams), they are expected to begin work on the dissertation proposal, which consists of:  
  • Abstract—30 lines of text, similar to that of an NIH abstract  
  • Specific Aims – state clearly and concisely what is being proposed, and hypotheses that will be tested  
  • Significance – such as defined by the NIH grant application, with relevance to the field of epidemiology and public health  
  • Preliminary Studies (optional) – that describes what work has already been done as a beta test or leading up to the work to be done  
  • Design and Methods – understanding how the work will be accomplished, with a flow chart and timeline, power calculation, statistical tests to be performed, strengths and limitations. |
### Table D18-2.2 Assessment of Competencies for PhD in Epidemiology

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Literature Cited</td>
<td>Dissertation: Every epidemiology PhD candidate is required to prepare and present a dissertation that shows independent investigation of a topic relevant to the epidemiology discipline and is acceptable in form and content to the Supervisory Committee and to the UF Graduate School. A doctoral dissertation must demonstrate the ability to conceive, design, conduct and interpret independent, original and creative research. It must describe significant original contributions to the advancement of knowledge and must demonstrate the ability to organize, analyze and interpret data.</td>
</tr>
<tr>
<td>2. Apply ethical thinking to a questionable ethics case from the current news</td>
<td>PHC 7427 Ethics in Population Science: Case Presentation. Students choose a case from their own field and subject of interest for presentation to the class. The case presentation should cover: a timeline of alleged events, all facts known, stakeholders, and all germane norms, values, regulations and ethical standards, both considered and possible.</td>
</tr>
<tr>
<td>3. Develop grant proposals and manage research projects</td>
<td>PHC 7727 Grant Writing for Population Health Research: Students complete a grant proposal on a research topic, specific aims and research strategy to passing standard.</td>
</tr>
<tr>
<td></td>
<td>PHC 7000 Epidemiology Seminar II: Critical Evaluation, Research Proposals, and Methods: Students compose a final paper covering methods and analysis of an approved epidemiological topic with an epidemiological aim and hypothesis test.</td>
</tr>
<tr>
<td>4. Write scientific papers for publication in peer-reviewed journals, and communicate research results to stakeholders</td>
<td>PHC 7901 Epidemiology Literature Review and Critique (Journal Club): Students complete a Letter to the Editor assignment involving a critique of a publication.</td>
</tr>
<tr>
<td></td>
<td>PHC 7902 Scientific Writing for Peer Reviewed Publications for Popular Science: Students submit a final paper for publication.</td>
</tr>
</tbody>
</table>

### Table D18-2.3: Assessment of Competencies for PhD in Public Health, Environmental Health

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Evaluate the direct and indirect human and ecological effects of major environmental agents</td>
<td>PHC 6304 Environmental Toxicology Applications in Public Health: Environmental disasters presentation. Students are assigned a historical environmental disaster that involves effects of environmental agents on humans and the environment. Students research the event and prepare a 20-minute presentation that describes the problem, who was impacted and the cleanup process. Students then lead a discussion of the topic with the class.</td>
</tr>
<tr>
<td>Competency</td>
<td>Specific Assessment Opportunity</td>
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<td>------------</td>
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</tr>
<tr>
<td>2. Assess genetic, physiological and psychosocial factors that affect susceptibility to adverse health outcomes following environmental exposure(s)</td>
<td>PHC 6424 Environmental Policy and Risk Management: Risk assessment assignment. Students are given a site and data to conduct a full risk assessment from conceptual site model through risk characterization and management. As part of the assignment, students are assigned a specific future use scenario for the site and must consider which groups are more or less susceptible to the site’s contaminating chemicals.</td>
</tr>
<tr>
<td>3. Analyze scenarios to determine which populations or species may be at risk based on knowledge of general mechanisms of toxicity associated with environmental toxicants, and associated health outcomes to various populations</td>
<td>PHC 6304 Environmental Toxicology Applications in Public Health: Environmental Disasters Presentation. Each student is assigned an environmental disaster that they must research and present how the disaster happened, what chemicals were associated with the disaster, the mechanisms of these chemicals and which populations were affected.</td>
</tr>
<tr>
<td>4. Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and the environment</td>
<td>PHC 6424 Environmental Policy and Risk Management: Students are given a site and data to conduct a full risk assessment from conceptual site model through risk characterization and management. They must provide calculations for the assessment as well as risk management strategies. PHC 6702 Environmental Monitoring and Exposure Assessment: Term paper and presentation. Students select an environmental exposure problem or scenario and provide a formal review of scientific literature related to the exposure scenario including exposure measurement techniques and assessment methods. Student are then expected to provide a description of how they would conduct an exposure assessment for their selected problem, including methods used and justification for the study design.</td>
</tr>
<tr>
<td>5. Develop testable hypotheses and models to evaluate biological and chemical environmental exposures</td>
<td>PHC 7980 Dissertation Research: Each student develops and conducts their own dissertation research project that includes testable hypotheses regarding biological and chemical exposures. PHC 6702 Environmental Monitoring and Exposure Assessment: Term paper and presentation. Students select an environmental exposure problem or scenario and provide a formal review of scientific literature related to the exposure scenario including exposure measurement techniques and assessment methods. Student are then expected to provide a description of how they would conduct an exposure assessment for their selected problem, including methods used and justification for the study design.</td>
</tr>
</tbody>
</table>
### Table D18-2.3: Assessment of Competencies for PhD in Public Health, Environmental Health

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHC 6304 Environmental Toxicology Applications in Public Health: Students design an experiment to assess the toxicity of a chemical that was spilled into a hypothetical lake. They must provide justification for their chosen model, test duration and endpoint.</td>
<td></td>
</tr>
<tr>
<td>5. Develop testable hypotheses and models to evaluate biological and chemical environmental exposures</td>
<td>PHC 7307 Quantitative Assessment of Environmental Health Impacts: Class project – Each student undertakes an individual class project relevant to modeling environmental health impacts and/or disease transmission and control. Students define a clear research question and study design. They then analyze a dataset using methodology learned in the class.</td>
</tr>
</tbody>
</table>

### Table D18-2.4: Assessment of Competencies for PhD in Public Health, One Health

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
</table>
| PHC 6515 One Health: Applied Techniques in Public Health Entomology: Case studies. Students are assigned a case study and are required to prepare an online video presentation to include the following areas:  
  - summary of assigned case based on at least 10 previously published studies  
  - the pertinent research questions relating to the assigned case  
  - scientific hypotheses based on previous findings  
  - empirical methods or experiments to address the case study using a One Health approach. |                                                                                                                                                                                                                                    |
| 1. Communicate a thorough understanding and comprehension of the One Health concept and how it is used to tackle complex public health problems | PHC 6671 Emerging Infectious Diseases in One Health: Student presentation. Students choose an emerging infectious disease outbreak and prepare a presentation on the outbreak and responses with a special emphasis on One Health approaches to response. |
| PHC 7980 Dissertation Research: Each student develops and conducts their own dissertation research project that includes applying the One Health concept to analyze and address emerging issues. | 2. Apply, analyze and synthesize content knowledge in One Health concepts                                                                                                                                                  |
| PHC 6515 One Health: Applied Techniques in Public Health Entomology: Case studies. Students are assigned a case study and are required to prepare an online video presentation to include the following areas:  
  - summary of assigned case based on at least 10 previously published studies  
  - the pertinent research questions relating to the assigned case | 2. Apply, analyze and synthesize content knowledge in One Health concepts                                                                                                                                                  |
### Table D18-2.4: Assessment of Competencies for PhD in Public Health, One Health

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pose innovative and important research questions, informed by systematic reviews of the literature and relevant theoretical and conceptual models</td>
<td>PHC 6706 Scientific Communication in Public Health: Platform Presentation Project. Students develop an oral, platform scientific talk that is 12-15 minutes long (depending on class size) on an approved topic and present it to the class using PowerPoint and other media elements as appropriate. Students are expected to use professional behavior while communicating their research.</td>
</tr>
</tbody>
</table>

3. Demonstrate expected professional behavior, cultural sensitivity, teamwork and appropriate communication when criticizing or defending scientific research

### Table D18-2.5: Assessment of Competencies for PhD in Public Health, Health Services Research Concentration

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pose innovative and important research questions, informed by systematic reviews of the literature and relevant theoretical and conceptual models</td>
<td>HSA 7116 Health Services Organizational Research: Assignment 3 Research Proposal Paper. Students complete a proposal in which they apply one or more organizational theories (from those covered in the course) to a current phenomenon or issue in the health care sector and develop hypotheses based on the particular theory.</td>
</tr>
</tbody>
</table>

1. Pose innovative and important research questions, informed by systematic reviews of the literature and relevant theoretical and conceptual models

<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a conceptual model to specify study constructs for a health services research question and develop variables that reliably and validly measure these constructs</td>
<td>HSA 7708 Health Services Research Methods II: Assignment 3 – Research Paper.</td>
</tr>
</tbody>
</table>

PHC 7980 Research for Doctoral Dissertation: Final Dissertation Paper. Students conduct their dissertation research as proposed, orally defend their results by means of a presentation and produce a final written document.

HSA 7116 Health Services Organizational Research: Assignment 3 – Research Proposal Paper. Students complete a proposal in which
<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific Assessment Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>they apply one or more organizational theories (from those covered in the course) to a current phenomenon or issue in the health care sector and develop hypotheses based on the particular theory. Data elements needed for the proposed study and their potential sources are identified.</td>
<td>PHC 7979 Advanced Research: Dissertation Proposal Paper. Students develop a written dissertation research proposal and orally defend by means of a presentation.</td>
</tr>
<tr>
<td></td>
<td>PHC 7980 Research for Doctoral Dissertation: Final Dissertation Paper. Students conduct their dissertation research as proposed, orally defend their results by means of a presentation and produce a final written document.</td>
</tr>
<tr>
<td>Use knowledge of the structures, performance, quality, policy, and environmental context of health and health care to evaluate health policy.</td>
<td>HSA 7157 Research Foundations of Health Policy: Assignment 1 – Health Policy Analysis Students complete a presentation on the foundations of health policy.</td>
</tr>
<tr>
<td></td>
<td>HSA 7157 Research Foundations of Health Policy: Assignment 2 – Health Policy Intervention Study Students complete a proposal involving a health policy intervention.</td>
</tr>
<tr>
<td>Select appropriate interventional (experimental and quasi-experimental) or observational (qualitative, quantitative, or mixed methods) study designs and corresponding methods to address specific health services research questions.</td>
<td>HSA 7708 Health Services Research Methods II: Assignment 3 Research Paper. This assignment requires students to describe appropriate study design, sampling design and a statistical analysis plan with justification.</td>
</tr>
<tr>
<td></td>
<td>HSA 7116 Health Services Organizational Research: Assignment 3 – Research Proposal Paper. Students write a proposal in which they apply one or more organizational theories (from those covered in the course) to a current phenomenon or issue in the health care sector and develop hypotheses based on the particular theory. Students identify an appropriate study design to use for their research proposal.</td>
</tr>
<tr>
<td></td>
<td>HSA 7936 Seminar in Health Care Costs and Financing: Final Project – Economic evaluation proposal. Students develop a research proposal utilizing an economic evaluation study design, while following the NIH format for R03 grant submissions.</td>
</tr>
<tr>
<td></td>
<td>PHC 7980 Research for Doctoral Dissertation: Final Dissertation Paper. Students conduct their dissertation research as proposed, orally defend their results by means of a presentation and produce a final written document.</td>
</tr>
<tr>
<td>Competency</td>
<td>Specific Assessment Opportunity</td>
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<tr>
<td>---------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>5. Use appropriate analytical methods to clarify associations between variables and to delineate causal inferences</td>
<td>HSA 7708 Health Services Research Methods II: Assignment 3 Research Paper. This assignment allows students to propose appropriate analytical methods to examine their own research questions. It assesses the student’s ability to use appropriate analytical methods with justification.</td>
</tr>
<tr>
<td></td>
<td>HSA 7116 Health Services Organizational Research: Assignment 3 Research Proposal Paper. Students write a proposal in which they apply one or more organizational theories (from those covered in the course) to a current phenomenon or issue in the health care sector and develop hypotheses based on the particular theory. Students identify an appropriate statistical methodology to use for their research proposal.</td>
</tr>
<tr>
<td></td>
<td>PHC 7980 Research for Doctoral Dissertation: Final Dissertation Paper. Students conduct their dissertation research as proposed, orally defend their results by means of a presentation and produce a final written document.</td>
</tr>
<tr>
<td>6. Effectively communicate the findings and implications of health services research</td>
<td>HSA 7116 Health Services Organizational Research: Assignment 1 Topic Teaching. Students conduct weekly seminars to synthesize, interpret and critique assigned readings on each theory and related empirical work, leading and pacing the discussion by means of an in-class presentation.</td>
</tr>
<tr>
<td></td>
<td>HSA 7437 Advanced Health Economics: Assignment 1 – Required Article Readings Essays. This assignment requires students to communicate the key implications from each article reading and submit a good question for discussion in class.</td>
</tr>
<tr>
<td></td>
<td>PHC 7980 Research for Doctoral Dissertation: Final Dissertation Paper. Students conduct their dissertation research as proposed, orally defend their results by means of a presentation and produce a final written document.</td>
</tr>
<tr>
<td>Competency</td>
<td>Specific assessment opportunity</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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| 1. Use social and behavioral science theories to inform a research question and research design. | PHC 7587 Students present their proposed theoretical model (including at least one psychosocial construct and a public health-related outcome) and a proposed analysis plan for testing this model. This presentation must include (1) a background/literature review, (2) a justification for the proposed model, (3) an analysis plan with justification provided on how this plan will appropriately test the model, and (4) hypothesized results (presented visually in tabular/figure formats). Students then lead a class discussion regarding their model/analysis plan. This presentation/discussion must cover the following:  
  a. An overview of the proposed theory, including a theoretical statement and necessary theoretical/operational definitions, and operational linkages.  
  b. A model of the theory (presented visually).  
  c. A discussion of potential measurement and methodological challenges relevant to the final construct(s).  
  d. An overview of the planned analysis plan, including a discussion of potential strengths/limitations of this approach and potential alternative approaches. |
| 2. Propose innovative and important research questions that advance public health knowledge through social and behavioral science concepts and theories. | PHC 7727 Grant Writing Skills for Clinical and Health Research: Students are required to understand and correctly prepare an NIH grant application. The following are evaluated as part of the course requirement:  
  a. Research topic  
  b. Specific Aims  
  c. Research Strategy  
  d. Biosketch  
  e. Training Plan |
<table>
<thead>
<tr>
<th>Competency</th>
<th>Specific assessment opportunity</th>
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<tr>
<td>f. Letters of support</td>
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<td>g. Presentation of the proposal</td>
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<td>h. Completed F31 or K Grant Package</td>
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<tr>
<td>i. Peer Feedback Forms</td>
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<td>j. Participation</td>
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<td>PHC 7980 Research for Doctoral Dissertation: This competency is assessed through the doctoral</td>
<td>This competency is assessed through the doctoral dissertation proposal following admittance to</td>
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<td>dissertation proposal following admittance to candidacy. Doctoral candidates must develop a</td>
<td>candidacy. Doctoral candidates must develop a written proposal in the NIH RO1 format and provide</td>
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<td>written proposal in the NIH RO1 format and provide this to their doctoral committee. Following</td>
<td>this to their doctoral committee. Following committee review of the proposal, students must</td>
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<td>committee review of the proposal, students must complete an oral presentation and defend the</td>
<td>complete an oral presentation and defend the proposal for committee approval.</td>
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<td>proposal for committee approval.</td>
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<tr>
<td>3. Select appropriate social and behavioral science study designs and research methods (</td>
<td></td>
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<td>qualitative, quantitative, or mixed methods) to address social and behavioral science public</td>
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<td>health research questions.</td>
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<td>PHC 6193 Qualitative Data Analysis: PhD students use their own qualitative data to to apply</td>
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<td>what they have been learning in the course. This project is completed in different parts</td>
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<td>throughout the semester:</td>
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<td>Part A. Research Questions</td>
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<td>Part B. Reflexivity Statement</td>
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<td>Part C. Theoretical Framework</td>
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<td>Part D. Methods</td>
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<td>Part E. Results</td>
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<td>Part F. Reflection</td>
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<td>3. Select appropriate social and behavioral science study designs and research methods (</td>
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<td>qualitative, quantitative, or mixed methods) to address social and behavioral science public</td>
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<td>health research questions.</td>
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<td>PHC 7980 Research for Doctoral Dissertation: As part of the doctoral dissertation students</td>
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<td>must develop multiple social and behavioral science study designs with accompanying</td>
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<td>research methods (qualitative, quantitative, or mixed methods) to address social and</td>
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<td>behavioral science public health research questions. Students must submit a written</td>
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<td>dissertation based on UF graduate school guidelines.</td>
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<td>4. Effectively communicate the findings and implications of social and behavioral science</td>
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<td>public health research.</td>
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<td>PHC 7907 Social and Behavioral Science Journal Club: Students must prepare and present four</td>
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<td>social and behavioral scientific journal articles. The four articles that are presented should</td>
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<td>be in the following areas:</td>
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<td>a. Psychology</td>
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<td>b. Sociology</td>
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<td>c. Anthropology</td>
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<td>d. Other (economics, political science, geography, etc.)</td>
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</table>
4) Identify required coursework and other experiences that address the variety of public health research methods employed in the context of a population health framework to foster discovery and translation of public health knowledge and a brief narrative that explains how the instruction and assessment is equivalent to that typically associated with a three-semester-credit course.

**PhD in Biostatistics**

The entire curriculum of the Biostatistics PhD program is designed to address the variety of biostatistical public health research methods employed in the context of a population health framework. All of the courses listed in D18-2.1 have this goal.

**PhD in Epidemiology**

Multiple three-credit courses in the PhD in Epidemiology curriculum are public health research methods courses, including PHC 6000 Epidemiology Methods I, PHC 6011 Epidemiology Methods II, PHC 6052 Introduction to Biostatistical Methods, PHC 6053 Regression Methods for the Health and Life Sciences, PHC 6711 Measurement in Epidemiology and Outcomes Research and PHC 7065 Critical Skills in Epidemiological Data Management.

**PhD in Public Health, all concentrations**

The PhD in Public Health curriculum requires students in the four concentrations to complete 12 credits of quantitative coursework covering public health research methods. Course options include PHC 6000 Epidemiology Methods I, PHC 6011 Epidemiology Methods II, PHC 6053 Regression Methods for the Health and Life Sciences, PHC 6059 Introduction to Applied Survival Analysis, PHC 6700 Social and Behavioral Research Methods, PHC 6716 Survey Research Methods, PHC 6937 Stochastic Epidemic Modeling, PHC 7056 Analysis of Longitudinal Data, and PHC 7090/7092 Advanced Biostatistical Methods 1 and 2.

5) Briefly summarize policies and procedures relating to production and assessment of the final research project or paper.

*Per the UF Graduate School,* “Each doctoral candidate must prepare and present a dissertation that shows independent investigation and that is acceptable in form and content to the supervisory committee and to the Graduate School. The work must be of publishable quality and must be in a form suitable for publication, using the Graduate School’s format requirements. The student and supervisory committee are responsible for level of quality and scholarship. Graduate Council requires the Graduate School Editorial Office, as agents of the Dean of the Graduate School, to review theses and dissertations for acceptable format, and to make recommendations as needed.”

**PhD in Biostatistics**

A doctoral dissertation must demonstrate the ability to conceive, design, conduct and interpret independent, original and creative research. It must describe significant original contributions to the advancement of knowledge and must demonstrate the ability to organize, analyze and interpret data. A dissertation includes an abstract, an introduction, a discussion and typically at least two additional chapters, each representing approximately one publishable manuscript. Completion of two to three publishable manuscripts is expected before the dissertation defense. After submitting the dissertation and completing all other work prescribed for the degree, the candidate is given a final oral
examination by the supervisory committee on campus. The dissertation defense is closed to other students and to faculty not on the supervisory committee.

**PhD in Epidemiology**
Students may opt for a traditional dissertation format or a three journal article format. A draft copy of the whole dissertation must be given to the dissertation committee at least one month prior to the defense. All committee members must provide written feedback to the student and the research mentor at least two weeks prior to the defense. The final oral dissertation defense is open to faculty, staff, students and family/friends. The dissertation defense begins with a 45-minute succinct presentation by the candidate, followed by up to 20 minutes of questions from supervisory committee members, then up to 10 minutes of questions from other faculty members. Guests are then asked to leave, and the defense continues with the supervisory committee only. The committee may vote: Pass – with or without minor revisions that the committee chair will review and pass; Incomplete – with major revisions that will require all committee members to review and finalize; or Fail – which means that even major revisions will not make the dissertation acceptable.

**PhD in Public Health, Environmental Health/One Health**
The doctoral dissertation is an independent and original research project that is conducted by the student with the approval and ongoing consultation of their doctoral committee. The final examination consists of a public seminar. The dissertation document typically contains five chapters including an extensive literature review pertinent to the overarching research area, three research chapters that are integrated into the overarching dissertation effort and a final discussion chapter that integrates the student’s discussion of all components of the research, above and beyond what might be publishable, (i.e., providing an opportunity to think “further out of the box” about ramifications and future directions than typically allowed in a journal publication). The student is required to give a public formal dissertation seminar followed by an examination by the dissertation committee. The written dissertation and its oral defense is evaluated by all members of the dissertation committee.

**PhD in Public Health, Health Services Research**
Upon admission to doctoral candidacy, students in the Health Services Research concentration prepare and present a dissertation that shows independent investigation and is acceptable in form and content to the supervisory committee and to the Graduate School. The PhD final exam consists of an oral defense of the research results described in the doctoral dissertation. Copies of the student’s dissertation must be given to the supervisory committee members at least two weeks in advance of the final examination. An announcement of the examination is sent at least one week prior to the date of examination to faculty members in the college inviting them to attend. At least four graduate faculty members, including all members of the supervisory committee, must be present at the oral portion of the final examination. Only the official members of the supervisory committee may sign the dissertation signature pages.

**PhD in Public Health, Social and Behavioral Sciences**
After successful completion of the dissertation proposal defense, students in the Social and Behavioral Sciences concentration develop the final dissertation. A copy of the dissertation is submitted to the supervisory committee no later than two weeks before the final dissertation defense. The final defense is open to faculty, staff and students. The doctoral candidate gives a one-hour presentation of the dissertation work followed by a closed question and answer session with the supervisory committee.

6) Provide links to handbooks or webpages that contain the full list of policies and procedures governing production and assessment of the final research project or paper for each degree school.

- UF Graduate Catalog
- UF Graduate Student Handbook
- UF Graduate Editorial Office
The PhD in Public Health, Social and Behavioral Sciences handbook can be found in ERF D18-6.

7) Include completed, graded samples of deliverables associated with the advanced research project. The school must provide at least 10% of the number produced in the last three years or five examples, whichever is greater.

Samples of deliverables can be found in ERF D18-7.

8) Briefly explain how the school ensures that the instruction and assessment in introductory public health knowledge is generally equivalent to the instruction and assessment typically associated with a three semester-credit course.

Students who enter the PhD in Biostatistics or PhD in Epidemiology programs without an MPH degree from a CEPH-accredited school or program of public health must take PHC 6937 Introduction to Public Health, which assesses each of the public health knowledge requirements. Students who enter any concentration in the PhD in Public Health program without an MPH degree from a CEPH-accredited school or program of public health must take the core MPH courses listed in Table D1-1 that cover the public health knowledge areas as well as the courses listed in D2-2 that cover the public health foundational competencies.

9) Include the most recent syllabus for any course listed in the documentation requests above, or written guidelines for any required elements that do not have a syllabus.

The following can be found in ERF D18-9:
- Syllabi
- HSA 6940 Evaluation Form
- PHC 7979 Advanced Research Contract
- PHC 7980 Dissertation Research Contract

10) If applicable, assess strengths and weaknesses related to this criterion and plans for improvement in this area.

Strengths:
- The PhD programs in the college are designed to prepare researchers and scholars, and the curricula reflect strong emphasis on research methods and other competencies that individuals in these positions require.
- The students complete doctoral-level, advanced coursework, as well as an independent, substantive dissertation, both of which distinguish the program of study from the master’s in the same field.
- All policies for advancement to candidacy are consistent with the policies for PhD programs at the University of Florida.
- PhD students complete coursework in foundational public health knowledge.
- Each public health doctoral program in the college has a dedicated program director who oversees the administration of the program and ensures that all policies and procedures set forth by the Graduate School and the program are followed.
- PhD students are required to complete an annual Individual Development Plan to set and achieve short and long-term goals and student progress is tracked in each program.
• Department curriculum committees review and update curricula as needed to ensure that the coursework provides strong preparation for students to be successful in the field after graduation.

Weaknesses:
• There is overlap in required coursework for the MS and the PhD in Epidemiology.
• Core requirements for the four concentrations in the PhD in Public Health are not consistent. This occurred because each concentration was added at a different time and developed by different faculty members.

Plans for improvement:
• Two courses formerly required for both MS and PhD in Epidemiology curricula will be included only in the PhD curriculum in the future. The process for approval of this change has already been initiated.
• In May 2020, the associate dean for educational affairs started monthly meetings with the directors of the PhD in Public Health programs. One of the tasks for this group is to specify core requirements across concentrations.