MPH Project/Thesis Program Handbook

EPIB 786: Capstone Project in Public Health (3 credits)

EPIB 799: Master’s Thesis Research (6 credits)

August, 2014
I. General Information

All Master of Public Health students are required to complete either a project (EPIB 786, 3 credits) or a thesis (EPIB 799, 6 credits). The MPH project option allows for two elective courses (3-credits each) during the course of the program, whereas the thesis option allows for 1 elective course (3-credits).

Together the MPH project OR thesis with the MPH internship (EPIB 785) comprise the capstone experience. They must be completed during the final semesters of the MPH program and only after all other required coursework is completed. Elective coursework may be taken concurrently with the internship and project/thesis.

If the thesis or project is not completed during the registered time period students must be registered for at least 1-credit of the thesis (EPIB799) or 1-credit of Independent Study (EPIB798) in the case of an MPH project each semester until the work is completed and defended. Students may also register for portions of the total credit hours in each semester while working on it. An incomplete is submitted for any EPIB 799 credit(s) taken until the thesis is completed. If the MPH project (EPIB 786) is not completed in the semester for which the student registered, an incomplete contract must be processed. Students enroll for EPIB 786 or EPIB 799 under the section number of their faculty advisor.

When designing the project/thesis students should review the MPH competencies for Epidemiology and Biostatistics. Students must address each competency between the internship and project/thesis. Students should work with their advisor to identify how each competency will be met between the two capstone activities.

II. The MPH with Project Option

The purpose of the final project is to provide the student with a culminating capstone experience where she/he applies the knowledge and skills learned in the MPH program to a specific public health issue or problem. The final project illustrates the student's understanding of epidemiologic and/or biostatistics methods, principles, and processes, as well as her/his ability to actively apply this knowledge and demonstrate acquisition of the necessary skills. The final project must also adequately demonstrate MPH degree competencies (listed in appendix). Under the supervision of the student’s advisor, the student will conduct independent work on a project related to either the epidemiology or biostatistics specialization.

The MPH project is an independent project separate from the internship and current work experiences. However, a student may identify a project based on their internship as long as it is a totally separate and independent activity. For example, if you are preparing a report for your internship you cannot use the same report for your project. Any student who wants to complete his/her internship and project at the same location or on a similar topic must clearly state in their project proposal how the two experiences are distinctly different. If a student is conducting a project at his/her
workplace, the project must be outside the framework of regular employment duties and responsibilities.

A. Designing the MPH Project

**Selecting a Project Topic.** The MPH project must be completed in your final semester of the MPH program. The topic must be relevant to the field of public health in either epidemiology or biostatistics. Project topics and scope are mutually agreed on with the student, advisor, and the project examining committee. Biostatistics projects may include using biostatistics methods to determine associations between exposure(s) and outcome(s) or analysis of trends in a public health outcome of interest. Epidemiologic projects may include using epidemiologic methods to determine if associations between exposure(s) and outcome(s) exist or evaluating population groups at risk for public health outcomes

Example MPH project topics include:

- **Literature Review:** this involves the analysis of an important public health problem through a survey of current literature on the topic. Components of the review include a description of the problem, an assessment of the problem and its magnitude, evaluation of its causes and determinants, and a discussion of prevention and intervention strategies.

- **Research Report:** this involves the collection, analysis, and/or interpretation of data to address a public health problem. The project could include sections on the research question, study design, data collection procedures, data analysis, interpretation, and significance of findings.
  - **Secondary Data Analysis:** This option is an analysis of an existing data set. Please note that the appropriate IRB approval may need to be obtained for any project that uses data gathered from human subjects. Even in cases where the data is de-identified, a determination should be sought from the IRB office. Final deliverables might be a research brief or fact sheet.
  - **Primary Data Analysis:** Work for the MPH capstone can also involve the collection of data. Data collection for capstone is usually in the context of an ongoing study, but it is also possible (although not recommended) for MPH students to initiate an original study under the guidance of an EPIB faculty member. In the latter case, the student should allow substantial lead time for research planning and IRB approval. This option may also take more than one semester to complete.

**Developing the Project Proposal:** After selecting a project topic, the student will prepare a written proposal that details what is to be accomplished and how it will be done. Approval from both the advisor and from the student’s Project Examining Committee is necessary before the student may begin work on the project.
The components of a project proposal should include, at minimum:

Chapter 1: Introduction
• Purpose of the project
• Significance of the project
• Review of relevant literature
• Relevance to public health and epidemiology or biostatistics
• EPIB MPH competencies to be addressed

Chapter 2: Methods
• Description of the project and project deliverables
• A statement on the relationship of the project to the internship experience
• Methods to be used in completing the project
• Project time line

**Requesting Approval of the Project Proposal:** The Project Examining Committee consists of at least 2 graduate faculty members from the Department of Epidemiology and Biostatistics. One of these must be the faculty advisor and the second member should be chosen in consultation with the advisor. With faculty advisor approval, the student may invite a third member (UMD faculty or non-UMD faculty, e.g. an NIH employee) to be part of the Project Examining Committee. The EPIB Graduate Director (or Department Chair) is responsible for approving all committees.

**Students must formally present and defend their proposal to the Project Examining Committee no later than December 1 for spring graduation, and May 1 for fall graduation.** The student must submit a copy of his/her proposal at least 10 working days in advance of the meeting. He/she must also post an abstract of the study and information about the meeting time, place and date 10 working days before the meeting on the departmental bulletin board and list serve. The proposal defense meeting is between the student and his/her committee members and is not an open meeting.

The presentation and defense of the proposal must be in person with the student and all Project Examining Committee present. If there is an unforeseeable circumstance in which a committee member cannot make the presentation, that committee member may attend by teleconference. All committee members must be physically present for the defense. The committee may approve the proposal without revision, provisionally approve the proposal contingent on revision, or fail the proposal. Revisions can be approved by written (e-mail is acceptable) or oral communication with committee members. A failed proposal means the project is not acceptable and must be redone and presented again to the project examining committee in person. This second attempt must take place within the next two weeks of the semester or the following semester. If the project is not approved the second time, the student is dismissed from the program. No proposal can be approved until all committee members grant written approval.

Once the committee approves a project proposal, the members of the committee will sign the *SPH Proposal Approval Form*. The faculty advisor will then forward this to the MPH Director of Graduate Studies, who will sign the proposal approval form and
place it in the student’s file. All changes to the proposal must be approved within three
weeks of the first day of classes in the semester in which the student intends to
complete the project.

**Human Subjects Approval:** If the project involves human subjects, IRB
approval should be requested only after the proposal has been approved by the Project
Examining Committee. The student’s faculty advisor is the actual IRB applicant on
behalf of the student. The student may prepare the IRB application under the advisor’s
direction, but the advisor must take the ultimate responsibility for the student’s work with
respect to protection of human subjects. Any student that collects data from human
subjects (qualitative or quantitative) must obtain IRB approval before collecting any
data. For complete details, see **POLICIES AND PROCEDURES PERTAINING TO RESEARCH/PROJECTS INVOLVING HUMAN SUBJECTS**, available at

**Citations:** References and citations should follow the National Library of
Medicine’s Citing Medicine format (http://www.ncbi.nlm.nih.gov/books/NBK7256/)
since that is the format that a large number of journals use (including many
epidemiology and public health journals)--see Uniform Requirements for Manuscripts
Submitted to Biomedical Journals from the International Committee of Medical Journal
Editors (http://www.icmje.org/urm_main.html).

When reporting their own research findings and methods, students should aim as much
as possible to be consistent with major biomedical research reporting guidelines
(http://www.nlm.nih.gov/services/research_report_guide.html). For example, guidelines
for reporting research findings and methods exist for observational studies
(http://www.strobe-statement.org/Support.html) and clinical trials (http://www.consort-
statement.org/)."

**B. Completing the MPH Project**

After the project proposal has been approved (and Human Subjects approval
obtained if required), the student may begin work on the project. It is expected the
project will be conducted according to what was approved by the Project Examining
Committee. If substantive changes to that proposal are sought, approval from the
examining committee is required. The student must consult with the faculty advisor to
determine which changes are substantive and require committee approval.

The student is required to prepare a written report upon completion of the project,
as evidence of scholarly writing ability. “Scholarly writing ability” is the ability to present
in a clearly organized paper, with proper scholarly documentation, evidence of original
research and/or critical analysis, and/or evaluation. Other “deliverables” for the project
should also be included. This report is provided to the Project Examining Committee for
final review.
C. Defending the final MPH Project

The final step in completing the MPH project is to pass an oral defense conducted by the Project Examining Committee. The oral defense meeting is a closed meeting between the student and his/her committee.

Completed MPH project reports must be defended in a face-to-face meeting with the committee members. The project report must include a variation on the outline below. Most students will be conducting analysis, if your project does not fit this outline please work with your advisor to develop an outline that better fits your work:

Title Page
- MPH Project
- Title
- Date
- Committee Members (Advisor first)

Chapter 1: Introduction
- Purpose/aims of the project
- Significance of the project
- Review of relevant literature
- Relevance to public health and epidemiology or biostatistics

Chapter 2: Methods
- Description of Sample
- Description of variables and how they were measured
- Methods used in completing the project

Chapter 3: Results
- Findings from the analysis (includes tables, figures, etc.)

Chapter 4: Discussion
- Comparison of results with other studies
- Strengths and limitations of the study
- Conclusions

Appendix
- Actual Project Timeline
- IRB Approval/Waiver
- Statement of project and how it is different from the internship experience
- Table describing the EPIB MPH BIOS or EPDM competencies addressed in the project and how each was met

Committee members must receive the final report at least 10 working days in advance of the final project defense to the committee.

The MPH project will be evaluated on the following criteria (and other criteria as appropriate).

1. Organization, clarity, rigor
2. Inclusion of pertinent information (includes appendices)
3. Appropriate application of MPH competencies
4. Relevance to epidemiology or biostatistics
5. Timeliness
The Project Examining Committee may approve the project without revision, provisionally approve contingent on revision, or fail the project. Revisions can be approved by e-mail communications without the need for a formal committee meeting. A failed project means that the project is not acceptable and must be redone and presented again in-person to the committee in a formal meeting. This may require that the student return the next semester to repeat the project. If the student again fails the project, he/she is dismissed from the program. The project is not approved until all committee members grant their approval with their signature. When final approval is granted, the project examining committee will acknowledge this in writing on the form titled MPH-MHA Project Evaluation and forward their results to the Director of Graduate Studies. Following final approval, the student must provide one hard copy and an electronic copy of the project to the Director of Graduate Studies. One copy of the project will be placed in the Department for examples that future students may refer to it as an example.

The student will then present their approved project during the Department of Epidemiology and Biostatistics project presentation day held at the end of the semester. Each student should prepare a 10-15 minute oral presentation describing their project methods and results. An announcement stating the place and time of the oral defense and the project abstract must be posted on the departmental bulletin board and list serve. Students should complete the Graduate Research Meeting form with all the information for the announcement and send it to the departmental coordinator.

**Final Defense & Graduate Forms Deadline:** The final oral defense and any changes that need to be made must be completed by the first week in May or December. You do NOT have until the last day of class or until finals week. This policy is in place because the graduate school requires that you turn in your Certification of Master’s Degree without Thesis Form (available at [www.gradschool.umd.edu](http://www.gradschool.umd.edu)) the first week of May or December (the month you intend to graduate). The Certification of Master’s Degree without Thesis Form states that you have completed all degree requirements. Therefore, your project must be completed by the time the form is due to the graduate school. Go to [http://www.gradschool.umd.edu/current_students/deadlines_for_graduate_students.html](http://www.gradschool.umd.edu/current_students/deadlines_for_graduate_students.html) for the current Graduate School deadlines for graduating students.

**Note:** Students are not required to submit a copy of the completed project to the Graduate School.
III. The MPH with Thesis Option

The MPH thesis is a capstone experience and must be completed after all other required coursework is completed. Electives may be taken concurrently with completion of the Thesis. MPH students considering a research-oriented career, or who plan to continue on for a doctoral degree, are strongly advised to do a master's thesis. The six credit-hour thesis (EPIB 799) replaces the EPIB 786 MPH project (3 credits) and one of the two electives (3 credits) that are needed to meet the 42-credit MPH degree. The student must still complete the 3-credit internship (EPIB 785) in addition to the thesis. University of Maryland Thesis and Dissertation Style Guides and Templates can be found online at www.gradschool.umd.edu. Click on Forms and Publications.

A. Designing the Thesis Research Project

Selecting a Thesis Topic: The thesis begins with a research question about some aspect of epidemiology or biostatistics that a student may wish to answer. The purpose of the thesis is to design, conduct, and evaluate an original, independent research study to answer the research question.

Developing the Thesis Proposal: After selecting a thesis topic, the student in consultation with his/her faculty advisor prepares a written proposal that details what is to be accomplished and how it will be done. The final structure of this proposal follows published University guidelines as referenced above. Students should begin to develop their thesis proposal the semester before they plan on defending their final thesis. A sample template for the proposal is included in the Appendix. Information on formatting references is also found in the Appendix.

Requesting Approval of the Thesis Proposal: A Thesis Examining Committee of three faculty members must approve the thesis proposal. All three members must be members of the Graduate Faculty of the University of Maryland. One of these three must be the student's faculty advisor, who chairs the committee. In addition to the chair, at least one other member of the thesis examining committee must be a member of the Department of Epidemiology and Biostatistics.

When the proposal is ready for review, the student will schedule a meeting with the Thesis Examining Committee. The meeting should take place no later than December 1 for spring graduation in the spring, and May 1 for fall graduation. The student must submit a copy of her/his proposal to the examining committee at least 10 working days in advance of the meeting. He/she must also post an abstract of the study and information about the meeting time, place and date 10 working days before the meeting on the departmental bulletin board. Students should complete the SPH Graduate Research Meeting form with all the information needed for the announcement. At the proposal meeting, the document may be approved as is, approved with certain changes, or rejected. In the latter two cases, the student will revise the proposal and submit the proposal to the chair of the committee. If needed, a second formal in-person meeting may be required. NOTE: Students are limited to two formal proposal meetings.

Once the proposal is approved, committee members will provide written approval in the form of signatures on the SPH Proposal Approval Form. The thesis advisor forwards this form to the MPH Director of Graduate Studies, who will sign the form and
place it in the student's file. If the research thesis involves human subjects, university human subjects approval must be obtained only after the proposal has been approved by the Thesis Examining Committee and before data collection can begin. For complete details, see POLICIES AND PROCEDURES PERTAINING TO RESEARCH/PROJECTS INVOLVING HUMAN SUBJECTS available online (http://www.umresearch.umd.edu/IRB/index.html).

B. Completing the Research

After the project proposal has been approved (and Human Subjects approval obtained if required), the student may begin work on the project. It is expected the project will be conducted according to what was approved by the Project Examining Committee. Before making any substantive changes to that proposal, approval from the examining committee is required. The student must consult with their faculty advisor to determine which changes are substantive and require committee approval.

C. Defending the Thesis

The final step in completing a Masters thesis is to successfully pass an oral defense conducted by the Thesis Examining Committee, ideally the same committee that approved the thesis proposal. Again, the chairperson and at least one member of the Thesis Examining Committee must be from the Department of Epidemiology and Biostatistics.

This committee must first be approved by the Graduate School, using the form NOMINATION OF THESIS OR DISSERTATION COMMITTEE (available at www.gradschool.umd.edu, click on Forms and Publications and then click on Graduate School Forms). Note the deadline for submitting this form is 60 days prior to the final defense. Once they have approved the Thesis Examining Committee, the Graduate School will issue and send to the Department the "Report of Examining Committee" form. The oral defense meeting must be scheduled at least 10 working days in advance of the meeting with examining committee members. Again, 10 working days prior to the meeting, the student must give each member of the examining committee and the Director of Graduate Studies a finished copy of the thesis manuscript to review, and post the signed study abstract on the departmental bulletin board. Students should complete the SPH Graduate Research Meeting form with all the information needed for the announcement. Any member of the faculty or any graduate student may attend the oral defense meeting, which is typically held in the department conference room.

Three things can happen at the oral defense: the thesis can be accepted as is, can be rejected, or can be accepted on the condition that certain changes are made within a specified time frame. When final approval is granted, the Thesis Examining Committee will sign and submit the "Report of Examining Committee" form to the Graduate School. After passing the oral defense, the student must submit an electronic copy of his/her thesis to the Graduate School (submit on-line at www.gradschool.umd.edu/etd/) and one hard copy to the MPH Director of Graduate Studies.
D. Format


References and citations should follow the National Library of Medicine’s Citing Medicine format (http://www.ncbi.nlm.nih.gov/books/NBK7256/) since that is the format that a large number of journals use (including many epidemiology and public health journals)--see Uniform Requirements for Manuscripts Submitted to Biomedical Journals from the International Committee of Medical Journal Editors (http://www.icmje.org/urm_main.html).

When reporting their own research findings and methods, students should aim as much as possible to be consistent with major biomedical research reporting guidelines (http://www.nlm.nih.gov/services/research_report_guide.html). For example, guidelines for reporting research findings and methods exist for observational studies (http://www.strobe-statement.org/Support.html) and clinical trials (http://www.consort-statement.org/)."
MPH Project/Thesis Frequently Asked Questions

1. For MPH projects, can we turn in IRB approval the semester BEFORE graduation? For example, if we plan to graduate in May, can we submit the project proposal and IRB proposal a semester before?

You can only submit to the IRB once your examination committee has approved your proposal. Your examination committee can only approve your proposal when you are registered for either thesis or project credits.

2. What are some of the pros and cons of choosing a project over a thesis or choosing a thesis over a project?

If you plan on conducting research or pursuing a doctorate, a thesis will better prepare you for future work in research. Completing a thesis will allow you to engage in a formal research process, which may include submitting a manuscript for publication.

3. What does the MPH project and/or thesis presentation entail? Is it simply a basic overview of the project?

The defense of your proposal and then the final oral defense for approval of your final project/thesis have a similar format. You will be asked to provide an initial, brief presentation of about 10 minutes that summarizes the key aspects of your MPH project/thesis. You are then questioned by your committee members as they see fit about your work. You should provide all the key details that allow an understanding and valid assessment of your project or thesis. Please refer to the MPH guidelines for presenting the project/thesis.

Who typically attends these meetings?

Typically, your committee members and anyone you personally invite will attend. However, since announcements are publicly posted prior to your defense, anyone that is interested in attending may do so.

Can we expect a large group or just a few people to be there?

Probably a small group.

4. When would a good time be to discuss our project/thesis with our advisor?

You should begin to discuss your project ideas with your advisor in the beginning of the semester before you will conduct your project/thesis (ie., the last semester of your MPH program) so that you have time to get everything in order for your work in the last semester.
5. When should we officially present the project/thesis, start the IRB process, etc.?

The guidelines stipulate that your project/thesis proposal must be completed and approved by your committee no later than December 1 for spring graduation or May 1 for fall graduation. As this is a capstone experience, the project is during your last semester. The thesis should span your last two semesters. You must schedule your final project defense at least 10 days in advance for a project, and 10 days in advance for a thesis. Also an announcement must be placed on the departmental graduate bulletin board at least 10 days in advance for final defense of a project and 10 days in advance for final defense of a thesis. Also remember, you must submit a NOMINATION OF THESIS OR DISSERTATION COMMITTEE form with the Graduate School 60 days prior to your final defense. Once your proposal is approved, if appropriate, you must obtain IRB approval for the project.

6. What is the nature of a successful MPH project/thesis? Does it need to include data analysis, meta analysis, etc.?

A successful MPH project/thesis demonstrates the goal competencies and skills of the degree. If you could have done the same MPH project before you entered the program, it is not a successful MPH project. If on the other hand, a successful MPH project exhibits theoretical and/or methodological competencies expected of an MPH, and has challenged you to your limits, it is probably a very good project/thesis.

7. How would one go about finding an advisor?

Your academic advisor is your MPH project/thesis advisor.

What role does our advisor play in the project?

Reviews and approves your work. He or she may also serve in a mentoring capacity depending on the situation.

Is my advisor purely a guiding force, or should he/she collaborate with me in some way?

Your advisor is to be your mentor and provide guidance regarding the valid execution of your project/thesis and your evaluator. He/she is not your collaborator as this should be your independent work and demonstrate your personal competency and capacity.

8. What is the general timeframe (from start to finish) of the project?

Project is to be conducted during the final semester.

Thesis is to be conducted during the final two semesters.
9. What can we do for the project that isn’t human subjects related (not having to go through the IRB)?

The IRB is not to be feared. It is a good experience for students to go through the IRB process. But if you do not collect data from human subjects, IRB is not required.

10. How long is the typical project/thesis proposal?

10-15 pages.

11. How long are the final written reports?

25-50 pages.

12. Since the oral defense can reject the proposal or approve it with certain changes, how early in the process should this be done?

For the project, the proposal should be defended no later than the end of the third week of their final semester in their MPH program.

For the thesis, the proposal should be defended no later than December 1 for spring graduation and May 1 for fall graduation.

13. Is it possible for a project to be rejected and for the student to be unable to graduate?

Yes. This is an evaluated activity and if the student does not demonstrate MPH competency, it is the faculty’s responsibility not to graduate them.
APPENDIX

1. Thesis Proposal Outline

2. SPH MPH Competencies Capstone Planning Form
   a. Epidemiology
   b. Biostatistics

3. Checklist for Project/Thesis Required Departmental, SPH, and Graduate School Forms

Go to our Department of Epidemiology and Biostatistics’ website [https://sph.umd.edu/department/epib](https://sph.umd.edu/department/epib) and Graduate School’s website [http://www.gradschool.umd.edu](http://www.gradschool.umd.edu) for the most current forms and deadlines.
Department of Epidemiology and Biostatistics
MPH Thesis Proposal Outline

Proposals should be about 12-15 pages double spaced. As you prepare for your proposal defense, remember that the defense should be scheduled in the semester prior to completing the thesis. So if you plan on graduating in the spring, your proposal should be defended no later than December 1; if you plan on graduating in the fall, your proposal should be defended no later than May 1.

I. Introduction (1 page)

II. Research Question/Specific Aims (1/2 – 1 page)
   a. List the broad, long term objectives and what the proposed research is intended to accomplish.
   b. Why is what you propose important?
   c. List 2-6 specific aims which are used to organize the background and significance preliminary studies, and design/methods sections.
   d. State hypotheses to be tested for each aim.
   e. EXAMPLE FORMAT
      Text
      Overall goal of the project
      Hypothesis to be tested
      Bullet Points
      Population/animal model to be studied
      Data to be collected or intervention used
      Dependent variable to be measured
      Analysis of data
      Accomplishments expected at the end of the project

III. Background (Lit Review – Answer the “So what” question) (3-5 pages)
   a. Why is research study so important?
   b. Critically evaluate existing knowledge
   c. Specifically identify gaps that the project is intended to fill
   d. Relate the specific aims to long term relevance
   e. EXAMPLE FORMAT
      i. What is known about the condition or disease in the population being studied?
      ii. What is known about the independent variables being studied?
      iii. How well is the dependent variable usually measured?
      iv. What analyses have been performed by others to date?

IV. Research Design and Methods* (5-8 pages)
   a. Overall Study Design
   b. Description of the Participants and criteria for selection
   c. Data collection (if conducting); Data source (if secondary analysis)
   d. Dependent Variable Definition
   e. Description of Variables
   f. Data analysis
   g. Human Subjects
   h. Study strengths and limitations
   i. Timeline

V. Public Health Significance (1/2 – 1 page)

VI. MPH Competencies Addressed in Thesis (1/2 – 1 page)
By the end of the MPH in Epidemiology program, students will be able to:

**Epidemiology Common Core Competencies**

1. Identify vital statistics and other key sources of data for epidemiological purposes.
2. Describe a public health problem in terms of magnitude, person, time and place.
3. Discuss the principles and limitations of public health screening programs.
4. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
5. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
6. Apply the basic terminology and definitions of epidemiology.
7. Calculate basic epidemiology measures.
8. Communicate epidemiologic information to lay and professional audiences.
9. Differentiate among the criteria for causality.
10. Draw appropriate inferences from epidemiologic data.
11. Describe epidemiologic study designs and assess their strengths and limitations.
12. Evaluate the strengths and limitations of epidemiologic reports.

**Epidemiology Cognate Competencies**

13. Calculate advanced epidemiology measures.
15. Demonstrate skills in public health data collection and management.
16. Design interventions to reduce prevalence of major public health problems.
17. Demonstrate program administration and organizational leadership.
By the end of the MPH in Biostatistics program, students will be able to:

**Biostatistics Common Core Competencies**

1. Describe the role biostatistics serves in the discipline of public health.
2. Describe basic concepts of probability, random variables, and commonly used statistical probability distributions.
3. Distinguish among the different measurement scales or types of variables and select appropriate descriptive statistical methods for summarizing public health data.
4. Select appropriate inferential statistical methods to answer research questions relevant to public health research.
5. Conduct descriptive and inferential statistical analyses that are appropriate to different basic study designs used in public health research.
6. Interpret results of statistical analyses found in public health studies.
7. Critically review and summarize statistical analyses presented in public health literature.
8. Perform appropriate sample size and power calculations to ensure that the study is sufficiently powered to achieve the scientific aims.
9. Use a basic software package to describe, explore, and summarize data as well as perform the basic conventional statistical procedures.

**Biostatistics Cognate Competencies**

10. Identify limitations in public health studies.
11. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use, and dissemination of public health data.
12. Demonstrate skills in public health data collection and management.
13. Identify statistical approaches to address threats to validity in epidemiologic studies.
14. Communicate results of statistical analyses to lay and professional audiences.
# Department of Epidemiology and Biostatistics

## Checklist of Required Forms for Thesis/Project/Dissertation Meetings

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<thead>
<tr>
<th>Meeting</th>
<th>Project</th>
<th>Thesis</th>
<th>Dissertation</th>
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<td><strong>Proposal Defense</strong></td>
<td>• SPH Proposal and Defense Meeting Announcement (student)</td>
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<td>• Certification of Master's Degree without Thesis (student - see deadline)</td>
<td>• Report of Examining Committee Form (advisor – see deadline)</td>
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<td>• SPH MPH Epidemiology/Biostatistics Capstone Faculty Evaluation (student)</td>
<td>• Electronic Thesis and Dissertation Publication (student - see deadline)</td>
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<td>• MPH Evaluation Rubric (advisor)</td>
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*All completed forms should be filed in the student’s file with the Director of Graduate Studies*