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Welcome!
Department of Biostatistics & Epidemiology

Lisa Chasan-Taber, ScD
Department Chair
Arnold 401
lct@schoolph.umass.edu

Deb Osowski
Administrative Assistant
Arnold 415
dosowski@schoolph.umass.edu
# Biostatistics & Epidemiology Department and Biostatistics Program Directory

<table>
<thead>
<tr>
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<tr>
<td>CHASAN-TABER, Lisa</td>
<td>Professor, Department Chair Biostats &amp; Epi</td>
<td>401 ARND</td>
<td>5-1664</td>
<td><a href="mailto:lct@schoolph.umass.edu">lct@schoolph.umass.edu</a></td>
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<tr>
<td>OSOWSKI, Deborah</td>
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<td>5-4603</td>
<td><a href="mailto:dosowski@schoolph.umass.edu">dosowski@schoolph.umass.edu</a></td>
</tr>
<tr>
<td>SKILLINGS, Anne</td>
<td>Research/ PH Administrative Assistant</td>
<td>424 ARND</td>
<td>5-1312</td>
<td><a href="mailto:askillings@schoolph.umass.edu">askillings@schoolph.umass.edu</a></td>
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<tr>
<td>STAMPS, Paula</td>
<td>Professor Emerita, GPD</td>
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<td>5-6880</td>
<td><a href="mailto:stamps@schoolph.umass.edu">stamps@schoolph.umass.edu</a></td>
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<td>ALKEMA, Leontine</td>
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<td>420 ARND</td>
<td>5-4601</td>
<td><a href="mailto:lalkema@schoolph.umass.edu">lalkema@schoolph.umass.edu</a></td>
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<tr>
<td>BALASUBRAMANIAN, Raji</td>
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<td>7-0277</td>
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<td>Assistant Professor</td>
<td>410 ARND</td>
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<td><a href="mailto:chihyunlee@umass.edu">chihyunlee@umass.edu</a></td>
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<td>PEKOW, Penelope</td>
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<td>406 ARND</td>
<td>5-1872</td>
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<td>QIAN, Jing</td>
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<tr>
<td>REICH, Nicholas</td>
<td>Associate Professor</td>
<td>425 ARND</td>
<td>5-4534</td>
<td><a href="mailto:nick@schoolph.umass.edu">nick@schoolph.umass.edu</a></td>
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<tr>
<td>CHASAN-TABER, Scott</td>
<td>Lecturer</td>
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<td>n/a</td>
<td><a href="mailto:scottct@schoolph.umass.edu">scottct@schoolph.umass.edu</a></td>
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<td>CORNELL, Matthew</td>
<td>Research Fellow</td>
<td>412 ARND</td>
<td>n/a</td>
<td><a href="mailto:cornell@umass.edu">cornell@umass.edu</a></td>
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<tr>
<td>CRONK, Vivan</td>
<td>Grants &amp; Contracts</td>
<td>429 ARND</td>
<td>5-4538</td>
<td><a href="mailto:vcronk@umass.edu">vcronk@umass.edu</a></td>
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<tr>
<td>EVANS, Valerie</td>
<td>Biostatistician</td>
<td>429 ARND</td>
<td>5-3812</td>
<td><a href="mailto:yeveans@umass.edu">yeveans@umass.edu</a></td>
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<tr>
<td>GOLDWATER, Eva</td>
<td>Biostatistician</td>
<td>424 ARND</td>
<td>5-1881</td>
<td><a href="mailto:eva.goldwater@umass.edu">eva.goldwater@umass.edu</a></td>
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<tr>
<td>MAZAR, Alissa</td>
<td>Program Manager</td>
<td>429 ARND</td>
<td>7-0603</td>
<td><a href="mailto:amazar@umass.edu">amazar@umass.edu</a></td>
</tr>
<tr>
<td>ZORN, Martha</td>
<td>Data Manager</td>
<td>429 ARND</td>
<td>5-4538</td>
<td><a href="mailto:mzorn@schoolph.umass.edu">mzorn@schoolph.umass.edu</a></td>
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# How to Get Help

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deb Osowski (Dept. Administrator)</td>
<td>Arnold 415 413-545-4603 <a href="mailto:dosowski@schoolph.umass.edu">dosowski@schoolph.umass.edu</a></td>
</tr>
<tr>
<td>Diane Wolf (Admissions Specialist)</td>
<td>Arnold 102 413-545-2861 <a href="mailto:dwolf@schoolph.umass.edu">dwolf@schoolph.umass.edu</a></td>
</tr>
<tr>
<td>Paula Stamps (Grad Program Director)</td>
<td>Arnold 311 413-545-6880 <a href="mailto:stamps@schoolph.umass.edu">stamps@schoolph.umass.edu</a></td>
</tr>
<tr>
<td>IT Support (Computing, Emails)</td>
<td>Arnold 208 413-545-2779 <a href="mailto:sphhshelp@umass.edu">sphhshelp@umass.edu</a></td>
</tr>
<tr>
<td>Naoko Ishida (International Students)</td>
<td>70 Butterfield Terrace 413-545-2843 <a href="mailto:nishida@ipo.umass.edu">nishida@ipo.umass.edu</a></td>
</tr>
</tbody>
</table>

Contact **Deb Osowski** if you have questions regarding:
* Visa/Tax/I-9 Information
* RA/TA Appointment information
* Procedures for Getting Paid/Payroll
* RA/TA Office Assignment and Keys
* Room Reservations
* Course Schedule
* Course Registration (including Add/Drop dates)
* Department Seminars
* Student Travel Support

Contact **Diane Wolf** if you have questions regarding:
* Degree Time limits and Extensions
* Procedures and Timeline for MS Degree Completion
* Procedures and Timeline for Doctoral Comprehensive Exam
* Procedures and Timeline for Doctoral Dissertation Defense
* Procedures and Timeline for Degree Completion and Graduation

Contact **Paula Stamps** if you have questions regarding:
* Monitoring of Progress
* Student Grievance Procedures

Contact **IT Support** if you have questions regarding:
* E-mail accounts, server access, other services

Contact **Naoko Ishida** if you have questions regarding:
* Visa/Tax/I-9 Information
# 1. At a Glance

## 1.1 Academic Calendar

Please find the academic calendar here: [https://www.umass.edu/registrar/calendars/academic-calendar](https://www.umass.edu/registrar/calendars/academic-calendar)

## 1.2 At a Glance Links - General

<table>
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<td>Biostatistics Program Home Page</td>
<td><a href="https://www.umass.edu/sphhs/biostatistics">https://www.umass.edu/sphhs/biostatistics</a></td>
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<td>University of Massachusetts/Amherst Academic Calendar</td>
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<td>University of Massachusetts/Amherst Graduate School Home Page</td>
<td><a href="https://www.umass.edu/gradschool/">https://www.umass.edu/gradschool/</a></td>
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<td>University of Massachusetts/Amherst Graduate Student Handbook</td>
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<td>University Health Services</td>
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## 1.3 At a Glance Links - Scholarships, Financial Aid and Employment Opportunities

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<td><a href="http://www.umass.edu/umfa/">http://www.umass.edu/umfa/</a></td>
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## 1.4 At a Glance Links: Doctoral, MS, and MPH Degrees – Tracking Forms (as of Sep 2018)

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<td>Master’s Degree (30-45 credits)</td>
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## 2. Important Information for New Students

### 2.1 Checklist: Your First Week

|   | **Attend School of Public Health & Health Sciences (SPHHS) New Student Orientation:** |
|   | **Schedule Appointment with your Academic Advisor**  
You should have received an email from Deb Osowski with the name of your assigned advisor. |
|   | **Obtain UMass Student ID (UCard)**  
UMass Amherst UCard Office (168 Whitmore)  
[http://www.umass.edu/ucard/](http://www.umass.edu/ucard/) |
|   | **Obtain UMass NetID and E-Mail**  
UMass Office of Information Technology (Lederly Graduate Research Center, A109)  
[http://www.umass.edu/it/accounts](http://www.umass.edu/it/accounts) |
|   | **Shop For Classes (check academic calendar for deadline to add/drop with “no record”)**  
https://www.spire.umass.edu/psp/heproda/?cmd=login&languageCd=ENG& |
|   | **(Employees Only) Complete New Graduate Student Employee Resources Hiring Packet**  
This employment form must be completed 2 weeks prior to the start of your assistantship  
[http://www.umass.edu/gradschool/funding-support/graduate-assistantship-office/hr-information-orientation](http://www.umass.edu/gradschool/funding-support/graduate-assistantship-office/hr-information-orientation) |

See also, University of Massachusetts Graduate School, “New Student To-Do List” at  
[https://www.umass.edu/gradschool/sites/default/files/Updated%20New%20Student%20To-Do%20List.pdf](https://www.umass.edu/gradschool/sites/default/files/Updated%20New%20Student%20To-Do%20List.pdf)

### 2.2 UMass Student ID (UCard)

[https://www.umass.edu/ucard/](https://www.umass.edu/ucard/)

This is your official University of Massachusetts picture identification and can be used in several ways:
- On-campus debit card
- Off-campus discount cart
- Dining services meal card
- College library card
- Pioneer Valley Transport Authority (PVTA) bus pass
- Recreational facilities access card

### 2.3 UMass NetID and E-Mail

[http://www.umass.edu/it/accounts](http://www.umass.edu/it/accounts)

Your NetID is your official University of Massachusetts primary user name and is used for:

- UMass E-Mail
- UMass SPIRE
- UMass Campus Network

### 2.4 Student Insurance and Health Services

[https://www.umass.edu/uhs/insurance/shbp](https://www.umass.edu/uhs/insurance/shbp)

### 2.5 International Students and Scholars

[http://www.umass.edu/ipo/iss](http://www.umass.edu/ipo/iss)
3. Other Student Resources

3.1 Financial Aid

Financial aid may be available through either the University or through individual Departments. There are several possibilities for obtaining financial support, including graduate assistantships (i.e., research or teaching assistantships), the Dean’s PhD Fellowship program, or other scholarships (e.g., the Corinne A. Johnson Memorial Scholarship). Information about financial aid opportunities at SPHHS can be found at the following website: https://www.umass.edu/sphhs/graduate-programs/graduate-financial-aid. See also the University Financial Aid website, which has detailed information on these and other financial aid opportunities (e.g., federal loan programs): http://www.umass.edu/umfa/

Students who obtain a graduate assistantship usually work 10-20 hours per week and are paid according to a union negotiated pay scale. Further, graduate assistantships that are at least 10 hours per week include a benefit of tuition and fee waivers for at least one semester. Whether the fee waiver is for one or two semesters depends upon the number of hours worked (e.g., as of 2014, students working 20 hours/week for a full semester qualify for a full year tuition waiver). Depending upon the student’s background and skill set, they may qualify for assistantships in other departments/schools as well (e.g., nursing, nutrition, psychology); check these departmental websites for possible opportunities.

Offers of financial aid are made in accordance with a priority system defined as follows (highest to lowest):

- Projects with continuing research/teaching assistant positions
- First (1st) year students promised financial aid
- Doctoral students in their first four (4) years of study
- Second (2nd) year Master’s students
- First (1st) year Master’s students

Useful Links

| School of Public Health & Health Sciences – Graduate Student Financial Aid |
|-----------------------------|---------------------------------------------|
| https://www.umass.edu/sphhs/graduate-programs/graduate-financial-aid |

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</table>
3.2 Travel Funding

Travel funds to defray the cost of attending professional scientific meetings are available to graduate students through several sources:

The Department of Biostatistics and Epidemiology: Students who are presenting their research at a meeting, in either an oral or poster presentation, are eligible for up to $500 per academic year. Students who are not presenting at the meeting are eligible for reimbursement of up to $200 per academic year. To apply for these funds, students should submit a BioEpi Student Travel Grant application (Appendix) to the Biostatistics and Epidemiology Department Chair. Students receiving the funds should keep a copy of this signed form and all travel receipts.

UMass Graduate School: Funding of up to $300/student also is available through the Graduate School for students who will be presenting their research at a conference. The Graduate Program Director for the Department of Biostatistics and Epidemiology administers these funds. Funds are usually awarded on a first come-first serve basis, so it is important to submit a request for these funds as soon as your abstract has been accepted for presentation.

Mentor: Travel funds also may be available through the student’s research mentor; please be sure to check with your faculty mentor regarding funding for travel.

Logistics
For all travel, prior to the trip, students must complete an online pre-travel registry using their UMass username and password (https://travelregistry.umasscs.net/).

Students should then complete a Travel Reimbursement Form, which requires all original receipts, and can be found at: https://www.umass.edu/sphhs/sites/default/files/SPHHS Travel and Expense Reimbursement Form 010117_3.pdf

See Deb Osowski, the BioEpi Administrator, for any questions related to travel reimbursement.

Postdoctoral fellows are ordinarily not eligible for the Biostatistics and Epidemiology Department travel funds, as their travel funding would typically come from their mentor’s research grant. However, if funding is still needed, their faculty mentor may request of the Biostatistics Program that an exception to this policy be made.

Useful Links

| Department of Biostatistics & Epidemiology Student Travel Grant Application |
|-----------------------------|--------------------------------------------------|
| https://www.umass.edu/sphhs/graduate-programs/graduate-financial-aid |

| University of Massachusetts/Amherst Graduate School Student Travel |
|-----------------------------------------------|--------------------------------------------------|
| https://www.umass.edu/gradschool/funding-support/travel-grants |

| Online Pre-Travel Registry Form |
|---------------------------------|--------------------------------------------------|
| (https://travelregistry.umasscs.net/). |

| Travel Reimbursement Form |
|---------------------------|--------------------------------------------------|
| https://www.umass.edu/sphhs/sites/default/files/SPHHS Travel and Expense Reimbursement Form 010117_3.pdf |
3.3 Teaching Experience and Funding

Obtaining teaching experience is important for doctoral students, depending on the desired career path, and in some cases is encouraged for master’s students as well. There are a number of opportunities to become a teaching assistant (TA) either for courses taught by the Biostatistics and Epidemiology Department, or as part of the undergraduate program in public health. There are also occasional opportunities to serve as either Teaching Assistant (TA) or as an instructor for courses offered online through the University/SPHHS continuing education program.

When teaching assistants (TAs) are needed for any Biostatistics or Epidemiology course, their availability is posted on the following website for one week: https://www.umass.edu/sphhs/career-opportunities

We recommend you bookmark this website. Application instructions are provided on the website. Most teaching assistantships are for 10 hours per week for a semester. If you are interested in serving as a teaching assistant (TA) for a specific course, we encourage you to email the instructor directly to let them know and to find out if any opportunities are upcoming.

3.4 Research Experience and Funding

We strongly encourage that every graduate student obtain research experience. Research assistantship (RA) funding is generally available through a specific faculty member’s research grant. Available research assistantships (RAs) are also posted on the SPHHS financial-aid website https://www.umass.edu/sphhs/career-opportunities. Also, if you are particularly interested in the research carried out by a specific faculty member, we encourage you to contact that faculty member directly to find out about any current or pending research funding opportunities. (Note, there may also be unfunded opportunities available that, although they do not provide financial support, may provide you with valuable research experience).

The National Institutes of Health also fund pre-doctoral training for doctoral students, e.g., through F31 Fellowships. See the link below to explore these potential, though very competitive, grant opportunities. Also, interested students should be sure to discuss this potential option with their advisor. http://grants.nih.gov/training/F_files_nrsa.htm

3.5 Human Subjects Research Ethics Training

Students doing research that involves human subjects are required to obtain human subjects training. Check with your supervisor for details. Typically, RAs are required to complete the Collaborative Institution Training Initiative (CITI) course, Group I. Biomedical Research Investigators and Key Personnel. This can be accessed through UMass, here https://webauth.umass.edu/idp/profile/SAML2/Redirect/SSO;jsessionid=1p72ixw4d839ow2u46gbqy?execution=e1s1. Be sure to include @umass.edu when entering your NetID.

3.6 University of Massachusetts/Amherst Policies and Procedures on Academic Dishonesty

All students are expected to adhere to guidelines of University of Massachusetts regarding academic honesty. A copy of these guidelines is available online at

http://www.umass.edu/honesty/

The University of Massachusetts/Amherst Senate Document 89-026 defines academic dishonesty as including but not limited to:
Cheating – intentional deceit, trickery, or breach of confidence, used to gain some unfair or dishonest advantage in one’s academic work.

Fabrication – intentional falsification or invention of any information or citation in any academic exercise.

Facilitating dishonesty – knowingly helping or attempting to help someone else commit an act of academic dishonesty.

Plagiarism – knowingly representing the words or ideas of another as one’s own work in any academic exercise.

Submitting in whole or in part, without citation, prewritten term papers of another or the research of another (including but not limited to such materials sold or distributed commercially).

3.7 University of Massachusetts/Amherst Policies and Procedures for Student Grievances

All students are entitled to seek formal resolution of an academic grievance. These are handled by the Office of the Provost according to the following procedures and no other procedures may be followed:
http://www.umass.edu/registrar/sites/default/files/Academic_Grievance_Procedures.pdf

Ombuds Office (Room 823, Campus Center)
Academic Honesty and Grievance Office (613 Goodell Building)

Students considering filing a formal grievance are encouraged to schedule a confidential meeting with the Department Chair first:

Dr. Lisa Chasan-Taber
Arnold House, Room 401
Tel. 413-545-1664
lct@schoolph.umass.edu
4. Doctoral (PhD) Degree

For doctoral students in biostatistics, the course of study is focused on developing a sound understanding of the theory and practice of biostatistics, especially as it applies to public health and biomedical research. Graduates of our doctoral program are well prepared for positions at academic institutions and for positions in health and health-related agencies and private industry where research is the focus.

4.1 Degree Requirements

Course work and Dissertation Research. Doctoral degree requirements include a minimum of 57 credits distributed as follows (more information is available on the tracking form):

- **39 credits** in major concentration of biostatistics, including STAT 607-608, and at least three credits of a doctoral seminar; and
- **18 credits** of dissertation research

Comprehensive Examination. PhD students may take the comprehensive exam when they feel prepared to do so. This exam typically covers material from STAT 607, 608, 705 as well as 2-3 biostatistics courses. The exact content and format may vary from year to year and students will be informed before the beginning of the fall semester of the exact courses covered by the following summer’s exam and of the format. Students may retake any portion of the comprehensive exam one time. Two failures of any portion are grounds for dismissal from the program.

Dissertation Prospectus. Upon successful completion of the comprehensive exams, students prepare a dissertation prospectus that is presented orally to the student’s dissertation committee and other members of the department. The written prospectus must be approved by the student's dissertation committee and the Graduate Program Director before being submitted to the Graduate School. For details, see section 4.6 below.

4.2 Residency Requirement

The entire program (coursework plus dissertation) is designed to be completed in four to five academic years. The actual length of time depends to a large extent on the student's ability to complete the prospectus and subsequent dissertation research.

The Statute of Limitations (SOL) for PhD study is determined by the University’s Graduate School at the time of admission. The University residence requirements states that during the SOL period, the student must be registered as a full-time student (9 or more course credits) for at least two consecutive semesters.

Information regarding academic status can be found at the website for the Graduate School in the Frequently Asked Questions section (http://www.umass.edu/gradschool/current-students/faq), in the Graduate Student Handbook:
Definition “full-time.” In brief, students enrolled in ≥ 9 credits/semester are considered full-time. In addition, doctoral students are considered full time if they: 1) are preparing for the comprehensive exams; or 3) have passed their comprehensive exams, are paying program fees, and are working on their dissertation; in these instances, the student’s faculty advisor needs to certify in writing to the Graduate Program Director that the work is equivalent to the effort of a full time student for each applicable semester.

### 4.3 Advising and Monitoring of Progress

**Advising.** All entering students will be assigned an academic advisor prior to starting the program. During the first two years of the program, students are encouraged to seek out and identify a research advisor who will then serve as primary advisor. Upon successful completion of the comprehensive examinations (including at least 20 credits of course work), the primary (research) advisor becomes the chair of the student’s dissertation committee. The research advisor assignment is made by mutual agreement and typically reflects common research interests and active research projects to which the student may contribute. Students must have obtained research experience (rotation or RA) prior to requesting a research advisor.

**Monitoring of Progress.** The Graduate School requires a yearly progress review. Thus, students are required to meet with their advisor/dissertation chair, minimally, at least once a year and to document this on their tracking form.

### 4.4 Sample Schedule

**Year-by-year breakdown of credits, suggested:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Credits</th>
<th>Cumulative</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>20</td>
<td>20</td>
<td>Coursework: 3 courses each semester + seminar</td>
</tr>
<tr>
<td>Second</td>
<td>20</td>
<td>40</td>
<td>Coursework: 3 courses each semester + seminar</td>
</tr>
<tr>
<td>Third</td>
<td>12+</td>
<td>52+</td>
<td>Beginning thesis work: electives, independent studies, dissertation credits.</td>
</tr>
<tr>
<td>Fourth, ...</td>
<td>12+</td>
<td>64+</td>
<td>Should be all dissertation credits from here on out.</td>
</tr>
</tbody>
</table>

### 4.5 How to Prepare for Your Doctoral Comprehensive Exam

**Date offered.** The comprehensive exam typically occurs in the second half of June, with students notified of specific dates before the beginning of the fall semester each year.

**Format.** Typically, although not always, the exam will include two parts focusing on theory and applications, respectively.

**PART 1** is a 3-hour, in-class and closed book test. **PART 2** is a take-home exam. Students will have 1 week to complete the exam.
Resources. An information session is typically held in September. A study packet consisting of previous exams and solutions will be available to students.

### 4.6 Procedures for Dissertation Proposal and Final Defense

**Dissertation Proposal**

Every PhD candidate must prepare a written prospectus and give an oral presentation to the Dissertation Committee. While the timing and content of the prospectus may vary considerably between candidates, typically, candidates present their prospectus once they have completed about one third of their thesis and have a draft or outline of the rest of the thesis. The decision to present the prospectus should be a joint decision between the candidate and the thesis advisor.

**Format.** It is highly recommended that the student follow the guidelines presented in the Graduate School’s *Guidelines for Master’s Theses and Doctoral Dissertations* even when preparing the dissertation proposal: [http://www.umass.edu/gradschool/sites/default/files/thesis_and_dissertation_guidelines.pdf](http://www.umass.edu/gradschool/sites/default/files/thesis_and_dissertation_guidelines.pdf)

Additionally, the Office of Information Technology offers workshops on formatting that may be helpful in preparing the proposal and final version of the dissertation. General advice on formatting and information on workshop can be found on the OIT website at: [http://www.oit.umass.edu/support/workshops-training/format-a-thesis-or-dissertation-ms-word-general-advice](http://www.oit.umass.edu/support/workshops-training/format-a-thesis-or-dissertation-ms-word-general-advice).

**Oral Presentation/Defense.** Students are required to give an oral presentation of the proposed research described in the Written Dissertation Proposal. The presentation should highlight key elements of the written proposal. The formal presentation (assuming no interruptions) should take approximately 45 minutes. Following the presentation and a general question period, non-committee members will be asked to leave the room and students are required to field questions from the dissertation committee members. It is expected that the oral presentation plus defense should take approximately two hours, after which students will be asked to leave the room to allow the members of the dissertation committee to decide among the following grade options: pass, pass with conditions, or fail. Following that decision, the committee will ask the student to return in order to discuss their decision and provide comments and constructive feedback on the presentation and proposed research plan. It is expected that no more than two attempts at this stage will be required for a student who expects to earn a doctoral degree.

**Final Defense**

**Expectations.** A PhD dissertation in biostatistics is expected to include three published or publishable chapters. The content can include a mix of sophisticated applications of statistical methods, methodological development, and theoretical innovation.
Scheduling the Defense. When the committee chair affirms a consensus among the committee members that the project is essentially completed and is ready for the defense, the chair fills out and signs the Dissertation Defense Notification Form. The student can then take the signed form to the Department Administrator and request that the defense be scheduled. Please note:

- graduate program director must be notified at least five weeks in advance of the defense date;

- graduate school needs to be notified at least five weeks in advance;

- announcement must go to the graduate program director and include: names of committee members, title of dissertation, time, date and room of dissertation defense; and

- date, time and location of the defense must be advertised to the public for at least 1 week.

Who May Attend the Dissertation Defense. The Graduate School requires that every member of the Dissertation Committee be present for the examination, or the defense must be rescheduled and re-announced in the same manner. The dissertation defense is public. Departmental faculty member and students are welcome to attend.

The Dissertation Defense Process. The Graduate School requires that all members of the committee must be present for the defense to be held (exceptions may be granted by the thesis chair and the graduate program director for committee members to attend via video-conference). Each committee member shall have received a "final" polished version of the dissertation at least a week before the defense. The committee chair oversees the proceedings of the defense. The student is expected to present, generally in about 45 minutes, a synopsis of the key elements of the project, especially emphasizing methods, analytical approach, results, limitations, and the significance of the results. Usually, questions of information or clarification are asked during the presentations, but matters of substance are held for the question period.

Outcomes of the Dissertation Defense. When the presentation is finished, the chair directs the question period. Upon completion of the question period, the committee then meets in private to discuss the student’s performance and votes for a pass or not. To pass, the candidate must receive a unanimous vote. Committee members may recommend additional minor changes to the dissertation at this time, as some new issue may have been raised during the dissertation defense question period.

Signature Pages. The student should bring one copy of the Dissertation Signature Page printed on acid-free paper (regular printer paper is generally acid-free and adequate for these purposes) to the defense, which will be signed by all committee members indicating that the student has passed the defense. If only minor changes are required in the final version of the dissertation, then most members of the committee are willing to sign the cover sheets at that time. The dissertation committee chair signs the cover sheet only when the final copy of the corrected dissertation is received. The Graduate Program Director will then sign the cover sheet after the committee chair.

The student should also bring a copy of the Notification of Completion of Dissertation Defense Form to the defense. Upon completion of a successful defense, the committee members sign the form. The student then returns the completed form to the Departmental office. In addition, the Committee Chair must send notification by email regarding the successful Dissertation Defense to the Department's Graduate Program Director, who will then provide formal notification to the Graduate School that you have successfully defended your dissertation.

Submission of the Dissertation. After the Dissertation defense is successfully passed, students should work with their Dissertation chair to complete any additional revisions required by the committee. After the chair has determined that the final draft is acceptable and signs the Signature Page, the student should submit the dissertation to the Graduate School electronically through Scholarworks. Information on the submission process may be found at: http://www.umass.edu/gradschool/current-students/masters-degree-requirements-and-thesis-information/electronic-thesis-submission-pro
# 4.7 Checklist: Graduation

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<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Review the <strong>Checklist for Doctoral Degree Form</strong> and verify that you have met all of the requirements for graduation. This checklist can be found on the Graduate School website.</td>
</tr>
<tr>
<td>2.</td>
<td>Pay the commencement and placement fees at the Graduate School Office of Degree Requirements.</td>
</tr>
<tr>
<td>3.</td>
<td>Fill out the yellow <strong>Doctoral Degree Eligibility Form</strong> from the Office of Degree Requirements. You may wish to list only those courses needed to fulfill the degree requirements. The Eligibility Form must be reviewed and signed by the Departmental Graduate Program Director who certifies that you have met all the degree requirements. The form will then be signed by the Department chair.</td>
</tr>
<tr>
<td>4.</td>
<td>Fill out a final copy of the <strong>Biostatistics PhD Tracking Form</strong>, which will serve as an archive copy of your record with us. The <strong>Tracking Form</strong> and the <strong>Degree Eligibility Form</strong> for the Graduate School should both be filled out as soon as the dissertation defense is scheduled. Do not delay until the last moment.</td>
</tr>
<tr>
<td>5.</td>
<td>Submit your dissertation to the Graduate School through Scholarworks, following procedures described on their website at <a href="http://scholarworks.umass.edu/theses">http://scholarworks.umass.edu/theses</a> and <a href="https://www.spire.umass.edu/psp/heproda/?cmd=login&amp;languageCd=ENG&amp;">https://www.spire.umass.edu/psp/heproda/?cmd=login&amp;languageCd=ENG&amp;</a>.</td>
</tr>
<tr>
<td>6.</td>
<td>Submit one original copy of your signed <strong>Dissertation Signature Page</strong> printed on acid-free paper to the Graduate Student Service Center.</td>
</tr>
<tr>
<td>7.</td>
<td>Provide a digital copy of the final draft of your dissertation to each member of your committee.</td>
</tr>
</tbody>
</table>
5. Master’s and Accelerated Master’s (MS) Degree and Master in Public Health (MPH) Degree

**MS Degree.** The Master of Science (M.S.) in Biostatistics at UMass-Amherst provides students with a training in modern computational approaches to solving real-world problems with statistical science. Recent graduates have received Fulbright Fellowships, gone on to study PhD programs (e.g. Biostatistics, Genomic Sciences, Bioinformatics, and Epidemiology), or work in the growing data-science industry (e.g. at Google Verily, Travelers Insurance, MassMutual, Sony PlayStation, Intel, numerous biomedical start-ups).

The M.S. program has three “tracks” that accommodate and provide the appropriate training for students with different backgrounds in mathematics, statistics, and other related fields. Depending on the track that is right for you, student’s trajectories through the program typically range from as little as 12 months (two semesters plus a summer) to two full academic years (not including summers, which some students use to gain work experience in internships). See section 5.2 below for a complete description of the three tracks.

**MPH Degree.** The Master in Public Health (MPH) degree in biostatistics is an option for individuals who already possess an advanced professional degree in a health field (M.D., D.V.M., D.D.S., D.O.), or a health-related master's degree and at least three years of experience directly relevant to biostatistics, or a bachelor's degree and a minimum of five years of experience relevant to biostatistics and public health. The program prepares individuals with an advanced professional degree to undertake meaningful teaching, research, and service roles in the fields of medicine and public health. Graduates of this program are expected to understand the role that statistics play in helping to identify and resolve contemporary health problems, assist in the planning and implementation of health-related studies, and undertake analysis and draw appropriate conclusions from the collected data. In addition to the five public health core courses, the M.P.H. student completes a core of four biostatistics courses, electives, a practice experience, and a culminating experience of an M.P.H. project or capstone course.

### 5.1 Degree Requirements

**MS Degree.** The degree program is generally completed in two to four semesters. A range between 30 and 45 credits is required, including either a 6-credit thesis or a qualifying exam. The requirements are distributed as follows:

- **15 credits** foundational pre-requisites, as needed, depending on prior course work
  - Introductory Biostatistics/Statistics (e.g. **BIOSTATS 540**); and
  - Regression (e.g. **BIOSTATS 650**); and
  - Statistics/Probability (e.g. **STAT 515 & 516**); and
  - Computing (e.g. **STAT 597**)

- **6 credits** of public health core, including
  - **EPI 630** Principles of Epidemiology; and
  - ONE (1) of the following
    - **EHS 565** Environmental Health Practices; or
    - **HPP 601** Application of Social & Behavioral Theories in Pub Hlth Interventions; or
    - **HPP 620** Introduction to the US Health Care System

- **12 credits** of biostatistics core, including
- BIOSTATS 691F Data Management and Analysis Using SAS; and
- THREE (3) of the following
  * BIOSTATS 690JQ Applied Statistical Learning; and/or
  * BIOSTATS 697G Bayesian Computation in Biostatistics; and/or
  * BIOSTATS 743 Categorical Data Analysis; and/or
  * BIOSTATS 740 Mixed Models & Longitudinal Data; and/or
  * BIOSTATS 748 Applied Survival Analysis

**Up to 12 credits** of electives; e.g. - in biostatistics, statistics, epidemiology, computer science

**6 Credits** of culminating experience. Choose one:
- Comprehensive Exam (0 credits) plus two (2) additional courses (6 credits); or
- MS Thesis (6 credits)

**MPH Degree.** The degree program can be completed in three academic semesters of full-time study and a 10-week practice experience. In addition to the five public health core courses, the M.P.H. student completes a core of four biostatistics courses, electives, a practice experience, and a culminating experience of an M.P.H. project or capstone course. The M.P.H. degree may be completed in three semesters plus the intervening summer. A minimum of 42 credits is required.

**15 credits** of public health core:
- BIOSTATS 540 Introductory Biostatistics;
- EPI 630 Principles of Epidemiology
- EHS 565 Environmental Health Practices;
- HPP 601 Application of Social & Behavioral Theories in Pub Hlth Interventions; and
- HPP 620 Introduction to the US Health Care System

**12 credits** of biostatistics core:
- EPI 632 Applied Epidemiology;
- BIOSTATS 640 Intermediate Biostatistics (or BIOSTATS 650 Regression);
- BIOSTATS 691F Data Management and Analysis Using SAS; and
- BIOSTATS 690JQ Applied Statistical Learning

**6 credits** of biostatistics electives

**Minimum 3 credits** other electives

**3 credits** practicum

**3 credits** culminating experience. Choose one:
- MPH Project and Oral Presentation; or
- 1 Additional course and an oral exit examination

**Transfer Credits (MS and MPH).** A **total of 12 credits** may be transferred from other sources, combined. Additionally:
For credits to be considered for transfer, students must have earned a grade of B or better, and cannot have applied the credits to a previous degree. All requests for transfer credits need to be discussed and approved with your academic advisor, who may request a copy of the syllabus prior to making a final decision. If possible, request for transfer credits should be made prior to registering for the course, to prevent the student investing time and resources in a class that does not meet program criteria.

Independent Studies (MS and MPH). Independent studies are offered at the discretion of faculty. Independent studies can be taken for 1 – 3 credits, in accordance with the number of contact hours associated with each level of credit. Working together, students and faculty should prepare a contract with expectations clearly specified. Independent study is generally taken toward satisfying the “Electives” or “Other Elective” and should be noted as such in the tracking form.

5.2 Suggested Course Sequence

MS Degree

Prerequisites for admission to any MS track
To be accepted into any of the tracks of the MS program, students must have completed a course in multivariate calculus. A course in linear algebra is preferred but not strictly required.

Description of the three “tracks”
“Math/Stat Track”
This track is designed for undergrad mathematics or statistics majors, or others who have had substantial prior statistical training.

- 30 credits (~10 courses)
  - 6 credits: Public health core classes (Epidemiology + one more)
  - 12 credits: Biostats core (e.g. Categorical Data Analysis, Survival Analysis)
  - 12 credits: Electives (e.g. Biostats, Math/Stat, Epi, CompSci courses)

- If a student chooses to do a thesis, this track can be completed in two semesters and a summer. The thesis is taken as 6 credits towards the pool of “elective” credits.

“Traditional Track”
This track is designed for students with little or no prior coursework in statistics. Students must fulfill the 30 credits in the “Math/Stat track” as well as 15 credits in “foundational pre-requisites” that include Intro Biostats, Intro to programming in R, Mathematical Statistics and Probability, and a course in regression analysis.

“Accelerated Track”
This track is designed for students at the five colleges who are (1) eligible for the “Math/Stat track” and (2) can graduate with 6-12 additional credits (above and beyond what is needed for their bachelor’s degree) that can be applied towards the MS program. Students apply for this program in their junior year and work with a Biostatistics faculty advisor to craft a personalized program of study that prepares them for graduating with credits that can be applied towards the “Math/Stats” track described above. In this case, students may enter their first year of grad school with as few as 18 credits to complete to obtain the MS degree.

Recommended course sequence for Math/Stat Track students
5.3 (MPH Degree) How to Do Your Practicum

MPH students in Biostatistics, Community Health Education, Environmental Health, Epidemiology, Health Policy & Management, Nutrition MPH on-line, Public Health Practice, and the Worcester MPH Program are required to complete a three credit practice experience (200 hours) as part of their degree requirements. The practicum experience may be paid or unpaid. Students are expected to be proactive in finding a practicum placement; however Biostatistics and Epidemiology faculty can offer suggestions and may have local contacts that are suitable.

Plan Your Practicum. Typically, the practicum experience is done during the summer between the first and second year. If you do your practicum in the summer, you must register through Continuing Education.

Full details of how to do the practicum are provided in a separate handbook, elsewhere. Please contact your faculty advisor for clarification.

5.4 (M.S. Degree) How to Prepare for Your MS Comprehensive Exam

All M.S. Biostatistics students who are not writing an thesis are required to pass the Exam to graduate.

Date Offered. The comprehensive exam is offered each February. Students who opt to take this exam will not receive credit for this exam and must take electives to fill out their required credits.

The exam typically consists of 4 questions, with the exact format and courses covered emailed to all M.S. students prior to the start of the fall semester each year. In the past, one question is drawn from the material covered in each of (1)-(4) listed below:

(1) BIOSTATS 540 (Introductory Biostatistics)
(2) BIOSTATS 650 (Regression)
(3) STAT 515 (Statistics I)
(4) STAT 516 (Statistics II)

The exam typically has been a 3-hour in-class and closed book test.

How to Prepare. A study packet consisting of previous exams with solutions and study materials for BIOSTATS 540 will be available with Deb Osowski.
5.5 How to Do a MS Thesis/MPH Project Option

Students should register for three credits of **BIOSTAT 699: Master’s Thesis** (MS Students) or **BIOSTAT 696D: Independent Study – MPH Problem** (MPH Students) during the second year of class work, generally during the spring semester. Students should arrange to register for credits using the specific BIOSTAT 699/BIOSTAT 696D designation assigned to their Committee Chair/Project Chair, and register for credits as Pass/Fail.

It is expected that the thesis will have a strong theoretical foundation, and will demonstrate the student's competence in applying theory and appropriate methodology to investigating a problem. Mastery of methodology, including the understanding of the strengths and limitations of the research, has a greater emphasis than developing new information. The faculty considers the process of carrying out the study, and the integration of knowledge by the student, to be more important than the findings.

**Coming Up With a Topic.** Students should start considering possible thesis topics by the end of their second semester. The student considers possible topics based upon areas of personal interest, practicum or internship experience, discussions with other students, and with faculty. One's academic advisor and/or other faculty may be approached for help in exploring possible topics. Talking with your advisor and/or potential Thesis/Project Committee Chair is a good place to start. A review of MS theses recently completed by other students will help give you an idea of the range of acceptable projects. Examples of recent MS Theses can be found on the Library website at: [http://scholarworks.umass.edu/theses/](http://scholarworks.umass.edu/theses/)

**Assembling the Committee**  Once the specific topic is decided upon, the student should ask a faculty member to be chair of the thesis committee. As the topic is developed further, the student selects other committee members in conjunction with the chair. If the committee chair is not the same as the academic advisor, then the chair automatically assumes the role of the academic advisor and the student's advising folder should be transferred to the committee chair.

The MS thesis committee will have at least two Biostatistics faculty; the MPH project committee will have at least one Biostatistics faculty. The chair must be a tenure-system member of the faculty in Biostatistics at the Amherst campus. Graduate faculty from other campus Departments, or health agency adjunct faculty, are often useful contributors to a committee depending upon the topic.

Adjunct faculty, if they have a graduate level appointment, are eligible to serve as voting members of a committee but may not serve as chair of a committee if the student is registered through the Amherst campus. Other related professionals may serve on the committee and may be listed as a consultant on the cover page, but have no vote at the time of the defense even though they are expected to attend the defense.

Once the Committee has been determined, MS Students must complete the **MS Thesis Committee Nomination Form** (included in the appendices and on the department website) and submit this to their Committee Chair, who will then submit it to the Graduate Program Director. There is no similar form for MPH students.

**Format for the Thesis/Project Proposal.** There is no formal format requirement for the proposal; however, is highly recommended that the student follow the guidelines presented in the Graduate School’s **Guidelines for Master’s Theses and Doctoral Dissertations** even when preparing the first draft.

**Scheduling the MS Thesis/MPH Project Defense.** For both the **MS Thesis** and **MPH Project**, the timing for scheduling the defense will vary year to year based upon the date that **Degree Eligibility Forms** and **Tracking**
Forms are due to the Graduate School. Students should provide a complete draft of their thesis to their committee at least 10 days prior to the deadline for scheduling of the defense. Faculty members then have 10 days to review the thesis and determine whether the project is generally ready for defense. At this stage, Faculty may provide minor comments that they expect to be addressed prior to the defense. However, if major changes are required at this stage, it may not be possible to schedule a defense in time to meet the May graduation deadline.

When the committee chair affirms a consensus among the committee members that the thesis/project is essentially completed and is ready for the defense, the student should work with the Department Administrator to schedule the defense. Please note, the defense must be scheduled two weeks in advance. At least one week after the thesis defense is built into the schedule to allow for final revisions or changes to the thesis prior to submission to the Graduate School, and to allow for rescheduling of the defense in the event that an emergency situation arises.

Please be advised that the faculty have nine-month appointments and are not obligated to be available during June, July, or August. Also, in your planning you should query the faculty about any sabbatical or leave of absence plans.

The Defense. The project defense is public. Departmental faculty member and students are welcome to attend. First year students are encouraged to attend MS thesis defenses, as they will be underdoing similar projects the following year. Note that the Graduate School requires that all members of the committee must be present for the defense. Each committee member shall have received a “final” version of the thesis at least a week before the defense. The committee chair oversees the proceedings of the defense. The student is expected to present, generally in about 40 minutes. Usually, questions of information or clarification are asked during the presentations, but matters of substance are held for the question period.

When the presentation is finished, the chair directs the question period. Upon completion of the question period, the committee then meets in private to discuss the student’s performance and votes for a pass or not. To pass the defense, the candidate must receive a unanimous vote. If the committee is not unanimous in voting to pass the candidate, the student is considered to have not passed the thesis defense at this time.

The student is allowed one chance to re-defend the thesis/project at a later date. The thesis committee will determine the minimum amount of time the student must wait to re-defend the thesis/project, as well as the latest possible date the thesis may be re-defended. The chair will present the candidate with a new timeline for revision, review and rescheduling the defense. Please note, given the timeline required by the Graduate School, it is generally unlikely that a student who does not pass a defense in the spring will be able to re-defend and graduate for the May graduation date. In this situation, the earliest likely graduation date will be August. In the interim, the student will receive an INC for BIOSTATS 699/BIOSTATS 696D. This designation will be changed upon re-defense of the thesis/project.

Committee members may recommend additional minor changes to the written thesis/project at this time, as some new issue may have been raised during the thesis defense question period.

Students defending an MS Thesis should bring 3 copies of the MS Thesis Signature Page (3 copies), printed on acid-free paper to the defense, which will be signed by all committee members indicating that the student has passed the defense. If only minor changes are required in the final version of the thesis, then most members of the committee are willing to sign the cover sheets at that time. The committee chair signs the cover sheet only when the final copy of the corrected thesis is received. The Graduate Program Director will then sign the cover sheet after the committee chair.
The student should also bring a copy of the Notification of Completion of MS Thesis Defense Form. Upon completion of a successful defense, the committee members sign the form. The student then returns the completed form to the Departmental office. This sheet initiates the Department's Graduate Program Director's formal notification to the Graduate School that you have successfully defended your thesis. The Graduate Registrar then automatically records your BIOSTATS 699 grade as a Pass.

**Students defending an M.P.H Project** should bring one copies of the MPH Project Signature Page printed on acid-free paper to the defense, which will be signed by all committee members indicating that the student has passed the defense. If only minor changes are required in the final version of the project, then most members of the committee are willing to sign the cover sheets at that time. The project committee chair signs the cover sheet only when the final copy of the corrected project is received. The Department Chair will then sign the cover sheet after the committee chair. Your committee chair will then communicate your grade for BIOSTATS 696D to the Department Administrator for submission.

Submission of MS Thesis/MPH Project. After the defense is successfully passed, students should work with their committee chair to complete any additional revisions required by the committee. After the chair has determined that the final draft is acceptable and signs the Signature Page, the student should submit the thesis to the Graduate School electronically through Scholarworks. Information on the submission process may be found at: [http://www.umass.edu/gradschool/current-students/masters-degree-requirements-and-thesis-information/electronic-thesis-submission-pro](http://www.umass.edu/gradschool/current-students/masters-degree-requirements-and-thesis-information/electronic-thesis-submission-pro)
### 5.6 Checklist: Graduation

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<tr>
<td><strong>1.</strong></td>
<td>Download the Checklist for Master’s Degree Form and verify that you have met all of the requirements for graduation. This form can be found on the Graduate School website at: <a href="http://www.umass.edu/gradschool/sites/default/files/checklist_for_masters_degrees.pdf">http://www.umass.edu/gradschool/sites/default/files/checklist_for_masters_degrees.pdf</a></td>
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<td><strong>2.</strong></td>
<td>Pay the commencement and placement fees at the Graduate School Office of Degree Requirements.</td>
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<td><strong>3.</strong></td>
<td><em>(MS Degree)</em> Fill out the yellow <strong>Master’s Degree Eligibility Form</strong> from the Office of Degree Requirements. You may wish to list only those courses needed to fulfill the degree requirements. All the courses you have taken will still show up on the transcript, but courses beyond the requirements can often be transferred directly into any Doctoral program pursued in the future, but only if they were not listed for your degree requirements. The Eligibility Form must be reviewed and signed by the Department Graduate Program Director who certifies that you have met all the degree requirements. The form will then be signed by the Department chair.</td>
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<tr>
<td><strong>4.</strong></td>
<td>Fill out a final copy of the <strong>Biostatistics MS/MPH Tracking Form</strong>, which will serve as an archive copy of your record with us. The <strong>Tracking Form</strong> and the <strong>Degree Eligibility Form</strong> for the Graduate School should both be filled out as soon as the dissertation defense is scheduled. Do not delay until the last moment.</td>
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<td><strong>5.</strong> <strong>MS Students – final steps</strong>&lt;br&gt;a.</td>
<td>Submit your thesis to the Graduate School through Scholarworks, following procedures described on their website at <a href="http://scholarworks.umass.edu/theses">http://scholarworks.umass.edu/theses</a></td>
</tr>
<tr>
<td><strong>6.</strong> <strong>MPH Students – final steps</strong>&lt;br&gt;a.</td>
<td>Submit one original copy of your signed <strong>MS Thesis Signature Page</strong> printed on acid-free paper to the Graduate Student Service Center.</td>
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<td>c. Provide a hard copy of the final draft of your thesis in a modest binder to each member of your committee.</td>
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<tr>
<td><strong>5.</strong></td>
<td><strong>MPH Students – final steps</strong>&lt;br&gt;a. Submit one original copy of your signed <strong>MPH Project Signature Page</strong> printed on acid-free paper to the Department.</td>
</tr>
<tr>
<td></td>
<td>b. Provide a hard copy of the final draft of your project in a modest binder to each member of your committee.</td>
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