



UNIVERSITY *of* MARYLAND  
SCHOOL OF MEDICINE

GRADUATE PROGRAM IN LIFE SCIENCES

PROGRAM  
IN EPIDEMIOLOGY &  
HUMAN GENETICS

**STUDENT &  
FACULTY  
HANDBOOK  
2023-2024**

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## 1. HISTORY OF HANDBOOK UPDATES

### Modifications in July 2022

Sections	Brief Description of Modification
2	Updated Molecular Epidemiology Track leader to Jason Bailey
9.8	Updates to Proposal Defense section
8	Updated courses in biostatistics

### Modifications in July 2022

Sections	Brief Description of Modification
2	Updated MS Clinical Research director to Jennifer Albrecht and Epidemiology Track leader to Alan Rathbun
6.2	Changed length of TA requirements, added clarifications about who can approach a student, potential for graduate school funding of TAs, and suggestions for what students and faculty can do if concerns.
8	Changes to required courses for molecular epidemiology students (Tables 1 and 3)

### Modifications in January 2021

Sections	Brief Description of Modification
9.12	Addition of the mandatory first-author publication requirement from GPILS

### Modifications in October 2019

Sections	Brief Description of Modification
2	Changed Colin Stine to Shannon Takala Harrison as Molecular Epidemiology Track Leader.
9.6/9.7, and edits to 9.7	Combined abstract and General Research Plan into pre-proposal as agreed upon at the October GPC meeting.
9.7 and throughout	Changes in website links to graduate school forms.
9.8	Removed "If the GRP is approved mid-semester and the student is enrolled in PREV898, the student can have those credits converted to PREV 899 credits by contacting the Graduate School ( <a href="mailto:gradinfo@umaryland.edu">gradinfo@umaryland.edu</a> )" as no longer allowed.
9.8.1	Made changes to allow all faculty to be present and ask questions during closed part of the proposal defense.

### Modifications in March 2019

Sections	Brief Description of Modification
5.13	Updated changes to PhD requirements for MD/PhD students in Epidemiology and Human Genetics.

### Modifications in October 2018

Sections	Brief Description of Modification
5.12	Update the vacation and leave time section to match the current UMB Graduate School Policy.

### Modifications in July 2018

Sections	Brief Description of Modification
2	Added Jonathan Shinnick as Academic Coordinator and changed Jennifer Albrecht to Leader (removed Samer El Kamary).

### Modifications in May 2018

Sections	Brief Description of Modification
Tables 1 and 3	Removal of requirements for PREV648 and PREV668 in MS in Epidemiology (Epidemiology track), as these courses may no longer be offered, and most terminal MS students do not take them. Also removed suggested courses as this degree is only a terminal or joint degree.
Tables 1,2, 3	Change of registration for CIPP 907 from optional to required, with a note that the course must be retaken every 4 years while enrolled.
Table 2	Change HGEN 750 to GPILS 750 to reflect current course preface. Corrected name of GPLS 717 to Genomics of Model Species and Humans.
Table 1	Reduction of optional credit by 2 to reflect inclusion of CIPP requirement.
Throughout	Change of MS in Human Genetics to MS in Human Genetics and Genomic Medicine, to reflect approval from Chancellor in February 2018.
Page 8	Removal of Jessica Kelley as program administrator (she resigned in January 2018).
9.6	Specifying the sections of the abstract more clearly. Removed reference to readers approving dissertation and moved to dissertation defense section.
7.1	Corrected submission information for payment by grants.

**Modification in October 2017**

<b>Sections</b>	<b>Brief Description of Modification</b>
6.4	Other seminars and workshops section added.

**Modifications made to the August 2017 version for the 2017-2018 version:**

<b>Sections</b>	<b>Brief Description of Modification</b>
2	Mona Baumgarten was replaced by Ann Gruber-Baldini as of February 1, 2017 and Mary-Claire Roghmann was replaced by Kristen Stafford as of July 7, 2017. Added Jennifer Albrecht as acting track leader. Email addresses were also updated due to move in epi to som.
8, Table 1, Table 3	MS Clinical research course change (633 now 2 credits and 706 removed as requirement).
9.2,9.3, Table 5	Comprehensive examination changes (substantial) for epidemiology and molecular epidemiology track students based on feedback from comps committee.
9.4	Clarified that rotations apply to full-time students only.

**Modifications made to the August 2015 version for the 2016-2017 version:**

Sections	Brief Description of Modification
All	Changes were made to ensure consistent use of terminology, to re-order sections in a more logical way, and to make the document more concise and less redundant. These edits are not enumerated because they apply only to the style and organization of the document and not to changes in program requirements or policies.
All	Previously, some Graduate School forms appeared on both the Graduate School website and the program's website. To avoid confusion, we will remove Graduate School forms from the program's website. In this version of the handbook, all links to Graduate School forms go to the Graduate School website.
All	To avoid redundancy and possible inconsistencies, descriptions of policies that are entirely governed by the Graduate School have been shortened or removed from the handbook. In these cases, references to the appropriate Graduate School documents are provided.
3, Tables 1 and 2, 10, 10.1.3	We have clarified that the MS in Epidemiology and Preventive Medicine has been phased out. There are now two MS degrees, the MS in Epidemiology and Clinical Research with two tracks (one in Epidemiology and one in Clinical Research) and the MS in Human Genetics. All three MS degrees now have a 30-credit course requirement. Both tracks in the MS in Epidemiology and Clinical Research have a thesis and a non-thesis option. Students taking the non-thesis option complete Research Practicum I and II in lieu of the thesis. The MS in Human Genetics has only a thesis option.
4.1	We have clarified that once the student is in the thesis or dissertation phase, the research advisor also fulfills the role of academic advisor.
4.2	We have added expectations regarding secure use of technology, use of university email accounts, updating of student databases such as MedScope, completion of all components of the annual progress report, and completion of course evaluations.
5.1	We have added clarifications about Graduate School deadlines and have clarified that deadlines are not altered by leaves of absence or part-time status.
5.2	We have added instructions for requesting leave of absence, for requesting transition from full-time to part-time status or vice versa, and for registering for a course at another University System of Maryland campus.
5.4, 5.5, 5.6	Numerous clarifications have been added to the sections on course waivers and course transfers. If approval from the course master is required, it should be obtained prior to (not after) requesting the Program Director's approval.
5.10	We have added a recommendation that students use plagiarism detection software to avoid unintentional plagiarism in their Dissertation Proposal and dissertation.
6.2	We have clarified that student teaching is required for PhD students in the Epidemiology and Molecular Epidemiology Tracks (regardless of funding source and regardless of full-time/part-time status) and is recommended for PhD students in the Human Genetics Track. The expectation is approximately five hours per week on average, starting in the fall semester of the second year. We have provided more details on how TAs are matched to courses.
6.3	We have clarified the purpose of the original data collection requirement (for PhD students in the Epidemiology and Molecular Epidemiology Tracks) and have provided criteria for approval.
7	<p>Instructions for submitting funding-related paperwork have been clarified and updated. We have clarified that:</p> <ul style="list-style-type: none"> <li>• Self-funding for PhD students is an option only for part-time students.</li> <li>• International PhD students may not qualify for all sources of funding.</li> <li>• Mentors may assign up to 20 hours per week of work that is not related to the student's progression toward a degree and all the remaining time (except that devoted to coursework and teaching assistantships) must be devoted to the student's research.</li> <li>• Students should share the Mentor Support Information Sheet with potential dissertation mentors.</li> <li>• Mentors must cover the cost of stipend, tuition and health insurance and may (but are not required to) cover the cost of student fees and auxiliary benefits.</li> </ul>
7, 9.1, 9.4	We have clarified that graduate research assistantship support is for 16 months and ends at the end of December (not the end of February) of the student's second year in the program.

Table 1	<p>The following changes were made.</p> <ul style="list-style-type: none"> <li>• PREV 617 was deleted as this course is no longer offered.</li> <li>• The course name for PREV 648 was corrected.</li> <li>• PREV 706 is now offered in the spring semester and is no longer a four-day course.</li> <li>• A new course, PREV 710 (required for the MS, Clinical Research Track), was added.</li> <li>• PREV 803 is offered in the spring (not the fall) semester.</li> <li>• The research ethics requirement for the MS (Epidemiology Track) and the PhD (Epidemiology and Molecular Epidemiology Tracks) is met by CIPP 907 (not for credit) or equivalent. The research ethics requirement for the MS (Clinical Research Track) is met by CIPP 907 or CIPP 909 (for credit).</li> <li>• Molecular biology and human physiology courses are no longer a degree requirement.</li> <li>• The minimum number of elective credits for the PhD Epidemiology Track was changed from 7- 8 to 8.</li> <li>• A note was added reminding students that some courses may not be offered every year and that they should check each semester's course offerings.</li> <li>• Reference to concentration coursework credits for the MS (Clinical Research Track) was deleted.</li> </ul>
Table 2	<p>The following changes were made.</p> <ul style="list-style-type: none"> <li>• HGEN 711 and HGEN 717 were corrected and are now PREV 711 and GPILS 717, respectively.</li> <li>• GPILS 718 was added as an elective.</li> <li>• The research ethics requirement is met by CIPP 907 (not for credit) or equivalent for both MS and PhD students.</li> <li>• A note was added reminding students that some courses may not be offered every year and that they should check each semester's course offerings.</li> </ul>
Tables 3 to 7	We have added tables to display the typical sequence of required courses for the MS and PhD, non- course degree requirements for the MS and PhD, the program's recommended timeline for completion of the PhD degree, and the Graduate School's deadlines for completion of the PhD degree.
9.1	We have clarified that, for students in the PhD program, there are required courses and a minimum number of elective credits but there is no specific requirement regarding the total number of credits. We have removed the list of pre-approved electives.
9.3	<p>We have clarified that:</p> <ul style="list-style-type: none"> <li>• For the Epidemiology and Molecular Epidemiology PhD Tracks, it is the Program Director, not the Graduate Program Committee, who appoints the comprehensive exam committee.</li> <li>• For the Human Genetics PhD Track, the track leader appoints the committee.</li> <li>• Exam results are sent individually to the students who took the exam. The results are no longer announced publicly.</li> <li>• The exam can only be repeated once.</li> <li>• Part-time students are not required to take the exam in January of the second year.</li> </ul>
9.4	In the Epidemiology and Molecular Epidemiology Tracks, there are now three five-month (not six-month) rotations. Modifications regarding the required number of rotations may be approved by the student's track leader on a case-by-case basis.
9.6, 10.1.1	More details about the purpose and suggested structure of the Research Abstract have been added
9.6	We have clarified requirements regarding the composition of the dissertation committee and that, when submitting the Research Abstract, the student should indicate the Graduate Faculty status of each member of the proposed dissertation committee. If substantial changes are made to the research plan or dissertation committee after the Research Abstract has been approved, a revised abstract must be submitted.
9.7, 10.1.2	We have clarified that the General Research Plan should be no longer than 10 pages for all the PhD tracks and that no more than three General Research Plans are reviewed at a given Graduate Program Committee meeting. New procedures have been added regarding oral presentation of the General Research Plan at the Graduate Program Committee meeting.
9.7, 9.9, 9.10	Recommendations regarding the format and frequency of meetings between the student and the dissertation committee have been added.
9.7.1	We have added the following question to the criteria for the GRP: Is the student's proposed work distinct from that of the rest of the research group with which the student is working?
9.7.2, 10.1.2	Formatting instructions for the GRP have been added.
9.9	We have removed the recommendation that the dissertation proposal should be at least 30 pages long and have added rough guidelines for the number of pages for each section.



9.9.1	We have added a recommendation that the student inform the Academic Coordinator as soon as a date has been identified for the Proposal Defense so that a room can be reserved and announcements distributed. We have added clarifications about the conduct of the defense and the role of the GPC member. We have specified that if the student fails, he or she may be allowed to repeat the Proposal Defense.
9.10.1	We have recommended campus resources to help students with their writing skills.
9.11, 9.12	Suggestions have been added to help PhD students prepare for graduation and for the conduct of the Dissertation Defense. We have clarified that, if the student fails, he or she may be allowed to repeat the Dissertation Defense.
10.1	We have removed the requirement that MS students must submit the Research Abstract and GRP at least one semester before graduation.
10.1.2	We have clarified that the GPC reviews MS students' GRPs.
10.1.4	Changes have been made to the guidelines for selection of the MS thesis committee.
10.1.5	Details have been added regarding the conduct of the MS Thesis Defense.
10.2.1	Suggestions have been added to help MS students prepare for graduation.
11, 11.1, 11.2	Changes have been made regarding the composition of the dissertation committee of students in the dual degree programs, in the application process, and in the process for approving the dissertation committee.
11.2.1	Changes were made to the course requirements for students in the PHSR dual degree program.

Note: In general, policy changes are effective immediately for all current and future students. However, if an existing policy is replaced by a new policy that is more stringent, current students may continue to operate under the previous policy.

## 2. INTRODUCTION

These guidelines are specific to the graduate program in Epidemiology and Human Genetics (EHG) and are intended to supplement but not override the policies of the Graduate School of the University of Maryland, Baltimore and the Graduate Program in Life Sciences (GPILS). All students must observe the policies described in the Graduate School's most recent graduate catalog and on its website (<http://www.graduate.umaryland.edu>) and the policies presented on the GPILS website (<http://lifesciences.umaryland.edu>).

We encourage students or faculty members who have questions after reviewing this handbook to speak with any of the following members of the program's staff and leadership:

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### 3. PROGRAM DESCRIPTION

The graduate program in EHG within GPILS at the University of Maryland School of Medicine offers a diverse array of integrated opportunities to develop skills for discovering how population, molecular, and genetic variations relate to health and disease. These skills are essential for translating new basic research findings into clinical practice and applying them to public health. New findings from epidemiology and human genetics research consistently make the news. Students in this program become leaders in improving the health of local, regional, and global populations. The program combines traditional areas of biomedical, genetic, clinical, and community studies with opportunities to learn and apply observational, biostatistical, molecular, and genomic tools in their investigations.

The PhD program consists of three tracks: Epidemiology, Molecular Epidemiology, and Human Genetics, each with a tailored program of study. There are two MS degrees, the MS in Epidemiology and Clinical Research with two tracks (one in Epidemiology and one in Clinical Research) and the MS in Human Genetics. Dual degree programs enable students to earn an MS degree in combination with one of several PhD programs. More information on the program and tracks is available on the program's website (<http://lifesciences.umaryland.edu/epidemiology/>).

**The PhD in Epidemiology and Human Genetics (Epidemiology Track)** allows students to acquire advanced knowledge, skills, and experience in completing independent epidemiological research in a biomedical setting. This track has a strong quantitative focus, necessary for providing students with the tools needed to conduct world-class research on epidemiologic topics and to participate in multidisciplinary research in a broad range of specialties.

**The PhD in Epidemiology and Human Genetics (Molecular Epidemiology Track)** is designed for students who wish to undertake research that combines molecular, genetic, and epidemiologic techniques and to apply these technologies to the understanding of risk factors for disease transmission or acquisition. Students in this track are provided with a solid knowledge base in epidemiology and biostatistics, while also gaining the laboratory and informatics skills needed to incorporate genomic or other molecular data into their research.

**The PhD in Epidemiology and Human Genetics (Human Genetics Track)** provides broad training for students wanting to understand human genetic variation and its relation to health and disease. Students first receive an overview of human genetics (molecular, biochemical, clinical, cytogenetics, and genetic epidemiology/genomics) and then specialize in their particular areas of interest.

**The MS in Epidemiology and Clinical Research (Epidemiology Track)** is designed to offer an MS degree to students pursuing a PhD in Gerontology or Pharmaceutical Health Services Research as part of our dual degree programs. Also, students wishing to leave the Epidemiology and Human Genetics PhD program can opt to get the MS in lieu of their PhD.

**The MS in Epidemiology and Clinical Research (Clinical Research Track)** is designed specifically to meet the needs of the clinician or clinician-in-training by providing a combination of coursework and research experiences needed for a successful career in clinical investigation. Students may select from multiple concentration areas: epidemiologic research, patient-oriented research, outcomes/health services research, human genetics, and research ethics.

**The MS in Human Genetics and Genomic Medicine** is designed for students contemplating careers in human genetics, especially as it relates to health and disease. This track includes coursework, seminars, and supervised research culminating in a thesis.

**Dual Degrees:** The EHG program offers a dual degree for students enrolled in the Gerontology or Pharmaceutical Health Services Research doctoral programs. Doctoral students in these programs may earn an MS in Epidemiology and Clinical Research (Epidemiology Track) in addition to their PhD degrees.

## **4. EXPECTATIONS**

### **4.1. Expectations of Academic Advisors**

Upon entering the graduate program, students are initially mentored by the leader of their MS or PhD track. Students later identify a research advisor who mentors them through their MS thesis or PhD dissertation project and who chairs their thesis or dissertation committee. Once the student is in the thesis or dissertation phase, the research advisor also fulfills the role of academic advisor. Note that, if the research advisor is not affiliated with the EHG program, the student must also have an academic advisor from within the program.

The role of the academic advisor is to serve as a resource for students on academic matters. Initially, this includes helping with orientation to the program, course selection, identifying potential rotations, and choosing a research topic and research advisor. Specific expectations for academic advisors are provided below.

- The academic advisor should be available to answer the student's questions in person, by email, or by telephone. The academic advisor should meet with the student regularly, no less often than once per semester.
- The academic advisor should assist the student with course selection and planning. This includes ensuring that the student takes all courses required for his or her track and selecting electives that are appropriate for the student's research and career goals.
- Academic advisors should be familiar with the student's timeline and milestones so that they can provide guidance and assess the student's progress in courses, rotations, identification of a research topic and research advisor, and progression through thesis or dissertation research.
- The academic advisor should review the student's grades after each semester. Many classes have prerequisites that include having performed satisfactorily in previous courses. Academic advisors should assure that students are meeting these requirements.
- The academic advisor should help the student focus his or her interests and suggest research opportunities and faculty members who could serve as rotation mentors and dissertation advisors.

### **4.2. Expectations of Students**

All members of our professional community, including students, are expected to maintain a high level of professionalism in terms of communication, behavior, and dress, and to treat faculty, staff, and fellow students with respect. Concerns about the program should be communicated in a respectful and professional manner. Physical surroundings should be kept clean and in order, especially when sharing space with other individuals. In addition, students are expected to:

- Follow all School of Medicine policies regarding the secure use of technology (<http://www.medschool.umaryland.edu/IS/Policies--Procedures>).
- Reply promptly to email from faculty and administrative staff. (Note that all important campus related email will be sent to the student's @umaryland.edu or @som.umaryland account.)
- Notify the Program Director, Track Leader, Academic Coordinator, course instructors, and mentors if there is a change in email address or other contact information.
- Post a vacation message when they plan to be away from email for more than twenty-four hours.
- Respond promptly to requests for information including regular updates to student tracking databases like MedScope.
- Complete all components of the annual progress report (Student Progress Report Form, Individual Development Plan, NIH biosketch, and curriculum vitae), review it with their academic advisor, and submit it before the deadline.
- Attend scheduled classes, meetings, departmental seminars, and journal clubs.
- Inform instructors if they must miss a class.
- Arrange weekly schedule and vacation schedule with their rotation mentor or research advisor.
- Provide anonymous course evaluations at the end of every course taken.

## 5. POLICIES AND PROCEDURES

### 5.1. Performance and Progress

The Graduate School requires that students in the MS and PhD programs maintain a minimum grade point average (GPA) of 3.0 on a 4.0 scale and must obtain a grade of B or higher in all courses that are required for their track. Students must register for every fall and spring semester, unless on a leave of absence that has been approved by the student's academic advisor and the Program Director. For the MS degree, all requirements must be completed no later than five years from the first semester of enrollment. For the PhD degree, students must be admitted to candidacy no later than five years from the first semester of enrollment and no later than two full semesters before graduation. PhD students must graduate no later than four years following admission to candidacy. For further details, please visit the Graduate School website (<http://www.graduate.umaryland.edu/Policies/>) and click on the link for "Academic Performance and Progress in Master of Science Programs" or "Policy on Academic Performance and Satisfactory Progress in University of Maryland Baltimore PhD Programs".

The deadlines for completion of the MS and PhD degrees are not altered by leaves of absence or by a student's part-time status.

### 5.2. Registration

All graduate students are responsible for registering for classes each fall and spring semester unless a leave of absence has been approved. There are several steps to the registration process:

- Students should schedule a meeting with their academic advisor at least eight weeks before the start of each fall and spring semester.
- During the meeting with the academic advisor, students should discuss the courses that they intend to take during the upcoming semester. Academic advisors should sign the student's Course Registration Request Form (<https://lifesciences.umaryland.edu/epidemiology/Student-Resources/>) to indicate their approval of the proposed coursework.
- Student registration through the online registration system is locked by default. Once the academic advisor has approved the coursework for the following semester, the Course Registration Request Form should be submitted to the Academic Coordinator. Registration will then be unlocked.
- Students must log on to the Student User Friendly System (SURFS) website (<http://www.umaryland.edu/surfs/>) to complete the registration process at least six weeks before the start of the semester.
- Students who wish to request a leave of absence should submit a Leave of Absence Request (<https://graduate.umaryland.edu/Forms/>) to the Academic Coordinator at least six weeks before the start of the semester for which the leave is being requested.
- Students who wish to transition from full-time to part-time status, or vice versa, should contact the Program Director and Academic Coordinator at least six weeks before the start of the semester to request approval for the transition and, if necessary, to schedule a meeting to discuss the student's situation.

Students wishing to register for a course at another University System of Maryland campus should complete the Application for Inter-Institutional Enrollment ([https://graduate.umaryland.edu/media/Graduate-School/Documents/Enrollment-and-Registration/InterInstitutional\\_Enrollment\\_Form.pdf](https://graduate.umaryland.edu/media/Graduate-School/Documents/Enrollment-and-Registration/InterInstitutional_Enrollment_Form.pdf)) and submit the form to the Graduate School. If the course is a requirement for the student's program, the student must obtain the approval of the Program Director in addition to that of his or her academic advisor. Students wishing to register for a course outside the University System of Maryland (whether or not it is a course that is required for the student's program) must obtain the approval of the Program Director in addition to that of his or her academic advisor.

Please note that if a student has an outstanding balance with Student Accounts, he or she will not be able to register. GRA students are not permitted to register for a course with the grade of Audit (AU).

### **5.3. Course Grades**

A letter grading system is used for PREV courses, with grades assigned as whole letter grades only (A through F with no +/- grades). Course grades are based on the assessment by the instructor, as outlined in each course syllabus. Students must receive a grade of A (4.0 grade points) or B (3.0 grade points) in all courses required for their track, must receive a D (1.0 grade point) or higher in elective courses, and must maintain an overall GPA of 3.0 or higher. A grade of pass/fail shall apply to the following courses: PREV 799, PREV 898, PREV 899.

### **5.4. Course Transfers and Waivers**

No more than six credits (or two courses) of graduate-level coursework taken from other regionally accredited institutions may apply toward a master's degree at UMB. The courses being requested for transfer must have been completed within the five-year limit for completing the master's degree at UMB. The UMB graduate program must agree (approve and certify) that the requested transfer credit is appropriate to, and acceptable in, the student's program. Students must have earned grades of B or better in such courses to be considered for transfer, and the course(s) may not have been used to complete a prior degree. Approved courses and related credits are transferred, grades are not.

The Graduate School does not require or accept transfer of credit for courses taken at other institutions for doctoral students. Courses taken at other regionally accredited institutions that are approved by the UMB graduate program are listed on the Application for Admission to PhD Candidacy at the time of admission to candidacy. These courses do not appear on the University of Maryland, Baltimore transcript but, if approved by the program or department, may be used as partial fulfillment of the doctoral student's degree program completion requirements.

### **5.5. Course Waivers**

The MS and PhD programs are competency-based. Required and elective courses are designed to help the student meet these competencies. However, students may waive a course if they have already met the competency through an equivalent course or training.

Any course may be waived except for research credits required for completion of the degree. The number and type of courses that may be waived are considered on a case-by-case basis. Waiver requests are subject to review and approval by the program (but not by the Graduate School). In addition, any previously completed course proposed as equivalent to a specific EHG program course must have been taken at the graduate level, must have been completed by the student no more than five years prior to admission to the program, and must have resulted in a grade of B or higher.

For the PhD degree, waived courses do not need to be replaced with another course. For the MS degree, waived courses do not reduce the total number of credits needed to graduate. Therefore, the waived course must be replaced with an equal number of credits from other courses that are agreed upon by the student and academic advisor.

### **5.6. Transferring or Waiving a Class**

Prior to requesting a course transfer or waiver, the student should discuss the proposed course transfer or waiver with her/his academic advisor. The student and advisor should consider how the transfer or waiver, if granted, would affect the rest of the student's education, including success on the comprehensive exam. While reducing the number of courses required to graduate can be beneficial the student should consider whether transferring or waiving a course might increase the difficulty of higher level classes and whether important material could be missed that may, in the end, slow the student's progress to completing the degree.

All requests to transfer or waive credits must be approved by the EHG Program Director. Program Director approval is obtained by sending an email message to the Program Director explaining the rationale for the request. The Program Director responds by email to approve or deny the request.

Requests to transfer credits for the MS degree must be approved by the Graduate School. To obtain approval, the student should submit a Transfer Credit Request form to the Graduate School (<https://graduate.umaryland.edu/Forms/>). Official transcripts of the courses for which transfer credit is requested must accompany the request. Requests to waive credits for the MS and PhD degrees do not need to be approved by the Graduate School.

If the request to transfer or waive credits involves the replacement of a specific course, the student should contact the course master for the course in question and explain the basis for requesting the transfer or waiver. A copy of the syllabus for the previous course or other materials demonstrating the student's relevant knowledge or training should be provided and used as the basis for describing equivalence between the EHG course and the previous course or training. If the course master agrees that the previous coursework or experience is equivalent to the EHG course in question, he/she approves the request by emailing the student, with copies to the Academic Coordinator, the student's Track Leader and academic advisor (if not the Track Leader), and the Program Director. Approval from the course master should be obtained before requesting the Program Director's approval.

Regardless of the type of request, copies of all forms and email correspondence must be provided to the Academic Coordinator so that the appropriate documentation can be retained in the student's file.

A summary of the procedures for transferring and waiving credits is shown below. Required procedures are marked with an "X".

	<b>Transfer (to replace specific course)</b>	<b>Transfer (not to replace specific course)</b>	<b>Waive (to replace specific course)</b>	<b>Waive (not to replace specific course)</b>
<b>Approval of Program Director</b>	X	X	X	X
<b>Approval of course master</b>	X		X	
<b>Graduate School approval (MS only)</b>	X	X		
<b>Copies to Academic Coordinator</b>	X	X	X	X

### **5.7. Independent Study**

Independent study courses allow students to receive credit for an in-depth study of a topic that is beyond the scope of a regular course or that is devoted to an area not available in the regular curriculum. A single student or small group (no larger than four students) works closely with a faculty member as a scholarly team. Although the students can work collaboratively, the faculty member must be the primary teaching resource. The expectation is an average of three hours of work per credit for each week of the semester, spent working independently or with the faculty member. Students may take a maximum of six credits of independent study courses. Students complete an independent study proposal form with all participating students listed, which is approved by the faculty sponsor and Program Director. A copy of the approved proposal form must be sent to the Academic Coordinator at least two weeks prior to the start of the semester in which the course will take place. The form can be found on the program website (<http://lifesciences.umaryland.edu/epidemiology/Student-Resources/>).

### **5.8. Non-Degree Coursework**

Non-degree status is for students who are not pursuing a degree but who are seeking to enhance their knowledge by completing one or more graduate courses. Should the student subsequently be admitted to the program, the credits earned as a non-degree student may be transferred, subject to approval by the Program Director. However, no more than six credits may be transferred to the degree.

### **5.9. Change in Course Registration**

Students wishing to add, change, or drop a class must obtain the Program Director's signature before submitting a Change in Registration Request form to the Graduate School (<https://www.graduate.umaryland.edu/Forms/>). Policies regarding changes in course registration appear on the request form, in the Graduate Catalog (<http://www.graduate.umaryland.edu/policies/>) and in the Graduate School's academic calendar and deadlines (<http://www.graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>). The student must provide copies of all registration-related paperwork to the Academic Coordinator.

### **5.10. Academic Misconduct**

Academic misconduct (whose definition includes but is not limited to fabrication, falsification, plagiarism, cheating, improprieties of authorship, and facilitating academic dishonesty) is not tolerated. Students who engage in such activities are subject to penalties as outlined on the Graduate School website (<http://www.graduate.umaryland.edu/Policies/>).

To avoid unintentional plagiarism, the program recommends that students analyze their Dissertation Proposal and dissertation drafts using a plagiarism detection software program before finalizing the document. This is a way to avoid unintentionally including text without the proper citations.

### **5.11. Appeals**

The Graduate School provides a mechanism for reviewing course grades alleged to be arbitrary or capricious. Students who receive a grade that they believe does not reflect performance in the course should review information available at <http://www.graduate.umaryland.edu/Policies/>. The Graduate School also provides a mechanism for appealing academic dismissal. Students who believe they have been unfairly dismissed should review information available at <http://www.graduate.umaryland.edu/Policies/>.

The Ombuds Committee was created by the Graduate School for the purpose of resolving disagreements between a graduate student and the graduate program with which he or she is involved. The EHG program encourages students to use the mediation services of the Ombuds Committee if they become involved in a dispute that cannot be successfully resolved at the program level. A step-by-step list of procedures for utilizing the Ombuds Committee can be found at <http://www.graduate.umaryland.edu/Policies/>.

### **5.12. Vacation and Sick Leave for Graduate Research Assistants**

Students should discuss the time to be devoted to GRA activities, sick time, vacation time, etc with their mentor. As stated in the Graduate Assistant Policies and Guidelines ([https://graduate.umaryland.edu/media/Graduate-School/GSA/Documents/GA\\_Guide2019-2020.pdf](https://graduate.umaryland.edu/media/Graduate-School/GSA/Documents/GA_Guide2019-2020.pdf)), students are eligible for a minimum amount of vacation or sick leave. However, individual mentors may have their own policies which may allow flexibility. The granting of these benefits is at the discretion of the mentor.

### **5.13. MD/PhD Students**

In acknowledgement of coursework taken during medical training, we will waive the following course requirements for MD/PhD students:

#### Epidemiology/Molecular Epidemiology Tracks

- Waive Chronic and Infectious Disease Epidemiology (PREV 716 and 749) – Epidemiology students
- Waive elective credits (6 credits for Epidemiology students and 9 credits for Molecular Epi students)
- Exempt from the requirement to act as a teaching assistant.

#### Human Genetics Track

- Waive GPLS 601



## 6. REQUIREMENTS

### 6.1. Journal Club and Seminar Requirements

Journal Clubs and departmental seminars provide valuable educational opportunities for students. All MS and PhD students are expected to attend seminars and Journal Clubs on a regular basis.

#### 6.1.1. Department of Epidemiology and Public Health Bi-Weekly Grand Rounds

This series features speakers on a wide range of topics in epidemiology and public health. Students in the Epidemiology and Molecular Epidemiology Tracks are expected to attend at least 60 percent of departmental seminars. Students should sign the attendance sheet as attendance is taken into consideration during the annual review of the student's progress.

#### 6.1.2. PPGM Seminar Series

The Program for Personalized and Genomic Medicine sponsors this seminar series, which meets monthly and features an invited speaker. All Human Genetics PhD and MS students are expected to attend.

#### 6.1.3. Human Genetics Seminar

All Human Genetics MS and PhD students are expected to participate in Human Genetics Seminar (HGEN 608) weekly every spring and fall semester, regardless of whether they are enrolled or presenting during that semester.

#### 6.1.4. Human Genetics Journal Club

The Human Genetics Journal Club meets bi-weekly during the fall and spring semesters. All Human Genetics PhD and MS students are expected to attend, and most are asked to present.

#### 6.1.5. Department of Epidemiology and Public Health Journal Club

The Department of Epidemiology and Public Health Journal Club meets weekly during fall and spring semesters on Mondays at noon. Articles are available through a dedicated site on Blackboard.

MS students are expected to present once per year and to attend at least 90 percent of Journal Club meetings. PhD students in their first two years of study are expected to present once per year and to attend at least 80 percent of Journal Club meetings. PhD students beyond their second year in the program are expected to mentor a new student through the preparation and presentation process and are encouraged, but not required, to attend. The list of student presenters and student mentors is emailed to students at the beginning of each semester.

### 6.2. Teaching Assistant Requirement

Student teaching is required for PhD students in the Epidemiology and Molecular Epidemiology Tracks and is recommended for PhD students in the Human Genetics Track. Teaching assistants (TAs) are an essential component of the program's teaching mission. Being a TA gives students valuable teaching experience and reinforces their understanding of course material. Assisting faculty with teaching is a part of university citizenship, just as service on student thesis and dissertation committees is part of university citizenship for faculty members.

Full-time PhD students in the Epidemiology and Molecular Epidemiology Tracks should expect to spend an average of approximately five hours per week as a TA starting in the fall semester of the second year and continuing every semester (fall, spring, and summer) through their third year, although students will not necessarily be asked to serve as a TA every semester. If asked, students may agree to serve as a TA before the fall semester of the second year for a course that they have already taken or waived. Students are not required to be a TA for more than 4 courses total. Students may opt to do additional TA assignments if they desire. In addition, funding for TA positions with more extensive involvement may be available from the Faculty Center for Teaching and Learning (<https://www.umaryland.edu/fctl/programs/graduate-teaching-assistants/>). Both faculty and students can apply for funding for TA appointments.

### **6.2.1. TA Assignment Procedure**

1. Instructors who will teach courses in an upcoming semester send their request for TAs to the Academic Coordinator. Course instructors may specify a preference for a specific student TA although it may turn out to be impossible to assign the preferred student to that course.

The Academic Coordinator and Program Director match requests for TAs with available students, considering:

- Instructor and student preferences
  - Student's expertise (having taken the course or waived it based on previous knowledge)
  - Number of times student has previously served as a TA
  - Other circumstances: Students who would like to be exempted from TA service for a given semester because of constraints related to research, travel, part-time status or other circumstances must inform the Academic Coordinator and Program Director at least six weeks before the beginning of the semester in question. Students who are granted an exemption for a given semester may be asked to take on additional TA duties in other semesters.
2. The list of TA assignments is emailed to current students and instructors. The email message will include an excerpt from this handbook describing the obligations and conditions (including the average time commitment) that are expected of the TA and the course director.
  3. Students or instructors who wish to request changes should contact the Academic Coordinator and Program Director immediately. Requests for changes will be honored to the degree possible.
  4. At the end of the semester, the TA and the instructor both complete brief evaluation forms assessing the TA experience and submit the forms to the Academic Coordinator. (<https://lifesciences.umaryland.edu/epidemiology/Student-Resources/>).
  5. Instructors should not directly solicit students to be TAs, but may give their preferences to the Academic Coordinator.
  6. Students who encounter any problems with their TA assignment should contact the Academic Coordinator or Program leader.

### **6.2.2. TA Responsibilities**

If students find that their duties as TAs are not helping them to develop their teaching skills, they should discuss possible changes in teaching duties with the course instructor. Duties should require no more than approximately five hours per week on average and may include, but are not limited to:

1. Grading homework, exams, quizzes, and projects
2. Holding office hours or consultation sessions
3. Leading laboratory, discussion, recitation, or review sessions
4. Guest lecturing
5. Planning activities including contacting guest speakers, organizing course materials, or developing assignments and review materials
6. Providing support for web-based courses

### **6.2.3. Course Instructor Responsibilities**

1. Course instructors are expected to ensure that TA activities do not take more than about five hours per week, on average, to perform.
2. Instructors are expected to provide the opportunity within the course for the TA to learn and apply university-level teaching skills, e.g., course planning and development, lecturing, course management.
3. Instructors who encounter any problems with their TA student should contact the Academic Coordinator or Program leader.

### **6.3. Original Data Collection Requirement**

Because of the importance of understanding the validity of data in epidemiologic research, students in the Epidemiology and Molecular Epidemiology Tracks must, as a requirement for their degree, document that they have had experience with the collection of primary data.

Students should submit a detailed description of their past or proposed original data collection experience to the Academic Coordinator for review by the Track Leaders and Program Director. The form used to request approval of the data collection experience can be found at

<http://lifesciences.umaryland.edu/epidemiology/Student-Resources/>. A broad range of experiences are eligible for approval as long as they fit the following general criteria:

- The experience involves the collection of laboratory data, epidemiologic data, or clinical research data.
- The experience is obtained as part of a research rotation or other research involvement, but not in a formal course or for academic credit.
- The nature and scope of the experience allows the student to appreciate the challenges involved in collecting primary data and to be sensitive to potential errors in secondary data sets.

### **6.4. Other Workshops and Seminars**

In addition to the program Journal Club and Seminar Requirements (section 6.1), it is also required that students attend a NRSA Grant Writing Workshop (or the equivalent) during their time as a student. Attendance at an alternate grant writing seminar must be obtained from the program director.

In addition, workshops or seminars in the following areas are highly recommended and attendance will be tracked on yearly Progress Reports: careers in science, scientific leadership and project management, getting research published, presenting research, networking, writing a curriculum vitae, writing accountability groups, and individual career counseling.

## **7. DOCTORAL STUDENT FUNDING**

Students in the PhD program can receive financial support through several mechanisms, including graduate research assistantships awarded by GPILS, training grant funds, research grant funds, employer funding, or self-funding (part-time students only). International students may not qualify for all sources of funding.

GRA support is available only for the student's first three semesters and includes tuition, stipend, and health insurance. By December 1 of the student's second year in the program, students with GPILS support must transition to another source of funding and the research mentor or a training grant takes over funding of the GRA (tuition, stipend, and health insurance). Students who have completed the GPILS Summer Bridge Program and whose funding begins in the July preceding their first year must transition to research mentor or training grant funding by October 1 of their second year in the program.

Rotation and dissertation mentors may assign up to twenty hours per week of work that is not related to the student's progression toward a degree. The student's remaining time (except that devoted to coursework and teaching assistantships) must be devoted to the student's own research. For further information, go to <http://www.graduate.umaryland.edu/Costs-and-Aid/Graduate-Assistantships/>.

To ensure clear communication about expectations, students should share the Mentor Support Information Sheet with any faculty member who is a potential dissertation mentor. The information sheet is available from the Academic Coordinator.

### 7.1. Tuition Remission and Payment by Grant Forms

Tuition may be remitted for up to 10 credits per fall and spring semesters, and not counting the non-billable ABGA 900 credits. If a student needs to register for credit during the summer semester, tuition cannot be remitted according to the Graduate School's policy.

During the first 15 months, graduate student assistants are responsible for completing and submitting an [online tuition remission form](#) each fall and spring semester before the [Tuition Remission deadline](#). It is important that these forms be submitted on time. Late forms result in account holds and registration problems. If a first or second year student is on graduate school funds, payments for tuition will be completed by their payroll representative through an [Internal Payment Form](#). If at any time a student is unaware of their funding source, they should contact the Academic Services Specialist to inquire.

After 15 months, and once a student transitions to being funded by a mentor, the mentor's funding administrator should be listed as the supervisor on the online tuition remission form. The Tuition Remission Form will then be automatically routed to the funding administrator to complete the form with an account code for payment.

**Internal Payment Forms (to pay for fees and health insurance):** An [Internal Payment Form](#) must be completed prior to both the fall and spring semesters **in order for the student to receive health insurance coverage**. Students must register for classes to generate a bill which students are responsible for providing to their mentor's funding administrator. The funding administrator will use this bill to determine amounts owed for health insurance and student fees. An internal payment form must be completed and submitted by the mentor's funding administrator at least 4 weeks before the start of the semester. Payment of registration fees and benefits will be covered by the mentor once a student has chosen a lab, in which case, these costs may be included on the internal payment form.

All other fees and auxiliary benefits (e.g., dental and vision insurance) are the responsibility of the graduate student, although some mentors may choose to cover the cost of these fees and benefits.

## 8. COURSEWORK

A summary of the required courses for the PhD in Epidemiology and Human Genetics, the MS in Epidemiology and Clinical Research, and the MS in Human Genetics and Genomic Medicine is provided in Tables 1 and 2. Table 3 shows typical sequences for required courses. Course descriptions are available in the Graduate Catalog on the Graduate School website (<http://www.graduate.umaryland.edu/policies/>).

**Table 1. Course Requirements for the MS in Epidemiology and Clinical Research and the PhD in Epidemiology and Human Genetics (Epidemiology and Molecular Epidemiology Tracks)**

Course Number and Name	Semester Offered	Credits	MS in Epidemiology and Clinical Research		PhD in Epidemiology and Human Genetics	
			Epidemiology Track	Clinical Research Track	Epidemiology Track	Molecular Epidemiology Track
PREV 600 Principles of Epidemiology	Fall	3	✓	✓	✓	✓
PREV 616 Introduction to Clinical and Translational Research at UMB*	Summer	2		✓		
PREV 619 Introduction to SAS	Fall	1	✓	✓	✓	✓
PREV 620 Principles of Biostatistics	Fall	3	✓	✓	✓	✓
PREV 633 Legal and Regulatory Issues in Clinical Research	Fall	2		✓		
PREV 659 Observational Studies in Epidemiology	Spring	3	✓		✓	✓
PREV 710 Clinical Research Project Design and Implementation	Spring	2		✓		
PREV 711 Genetic Epidemiology	Spring	3				✓
PREV 716 Chronic Disease Epidemiology	Summer	3			✓	
GPLS 716 Genomics and Bioinformatics	Spring	3				✓
GPLS 718 Programming for Bioinformatics	Spring	3				✓
PREV 720 Statistical Methods in Epidemiology	Spring	3	✓	✓	✓	✓
PREV 721 Regression Analysis ( <i>half-semester course</i> )	Fall	2			✓	
PREV 723/-789.3 Statistical Methods for Causal Inference and Machine Learning ( <i>half-semester course</i> )	Fall	2			✓	
PREV 730 Intro to R	Fall	1			✓	✓
GPLS 728 Genomic Data Science	Fall	3				✓
PREV 747 Research Practicum I	Spring	3	✓**	✓**	✓	✓
PREV 748 Research Practicum II	Summer	2	✓**	✓**	✓	✓
PREV 749 Infectious Disease Epidemiology: A Global Perspective	Fall	3			✓	
PREV 758 Health Survey Research Methods	Fall	3			✓	
PREV 780 Molecular Epidemiology	Fall	3				✓
PREV 801 Longitudinal Data Analysis	Spring	3			✓	
PREV 803 Clinical Trials and Experimental Epidemiology	Spring	3			✓	
CIPP 907 Research Ethics or CIPP 909 Responsible Conduct of Research	Spring/Fall	1-2	✓	✓	✓	✓
Minimum Number of Elective Credits			Variable	Variable	6	9
Dissertation Research Credits (PhD) (PREV 899)I			-	-	12 (minimum)	12 (minimum)
Thesis Research Credits (MS – thesis option) (PREV 799)			6 (minimum)	6 (minimum)	-	-
Thesis Research Credits (MS – non-thesis option)			0	0	-	-
Total Credits Required for Degree			30	30	Variable	Variable

Required courses

\* PREV 616 is an annual week-long course that meets from 9 am to 4 pm, usually during the first week in August.

\*\* Students in the MS in Epidemiology and Clinical Research (both tracks) may complete Research Practicum I and II (non-thesis option) or they may complete a Master's thesis and register for at least six thesis research credits (PREV 799) (thesis option).

Notes:

- Students should check course syllabi for possible prerequisites.
- Some courses (including PREV 711, PREV 780) may not be offered every year. Students and advisors should check with the Academic Coordinator for each semester's course offerings.

**Table 2. Course Requirements for the MS in Human Genetics and Genomic Medicine and the PhD in Epidemiology and Human Genetics (Human Genetics Track)**

Course Number and Name	Semester Offered	Credits	MS in Human Genetics and Genomic Medicine	PhD in Epidemiology and Human Genetics (Human Genetics Track)
HGEN 601 Basic Human Genetics I	Fall	4	✓	✓
HGEN 602 Basic Human Genetics II	Spring	4	✓	✓
HGEN 608 Human Genetics Seminar	Fall and Spring	1	✓*	✓*
GPLS 716 Genomics and Bioinformatics	Spring	3	✓	✓
GPLS 601 Mechanisms in Biomedical Sciences	Fall	8		✓
PREV 619 Introduction to SAS and PREV 620 Principles of Biostatistics	Fall	4	✓**	✓**
PREV 621 Biostatistical Methods	Fall	3	✓**	✓**
PREV 600 Principles of Epidemiology	Fall	3	✓***	✓***
HGEN 701 Human Cytogenetics	Spring	2	✓***	✓***
PREV 711 Genetic Epidemiology	Spring	3	✓***	✓***
GPLS 717 Genomics of Model Species and Humans	Fall	2	✓***	✓***
GPLS 718 Programming for Bioinformatics	Spring	2	✓***	✓***
HGEN 720 Genetics and Metabolism	Fall	2	✓***	✓***
HGEN 728 Clinical Genetics I	Fall	2	✓***	✓***
HGEN 731 Clinical Genetics II	Spring	2	✓***	✓***
GPILS 750 Topics in Molecular Medicine	Fall	2	✓***	✓***
HGEN 760 Clinical Cancer Genetics	Spring	2	✓***	✓***
PREV 780 Molecular Epidemiology	Fall	3	✓***	✓***
CIPP 907 Research Ethics or CIPP 909 Responsible Conduct of Research	Spring/Fall	1-2	✓	✓
Elective Credits****			Variable	Variable
Minimum Number of Research Credits			6	12
Total Credits Required for Degree			30	Variable

✓ Required course

\* Students taking the MS in Human Genetics and Genomic Medicine must attend HGEN 608 every fall and spring semester but they do not register for credit in the fall semester of Year 1 or the spring semester of Year 2. They must present once during each of the semesters for which they register for credit. PhD students in the Human Genetics Track must attend HGEN 608 every fall and spring semester, do not register for credit in the fall semester of Year 1, and must register for credit for at least four semesters beginning in the spring semester of Year 2. They must present once during each of the semesters for which they register for credit.

\*\* Students must select either PREV 619 and PREV 620, or PREV 621. Students should consult their academic advisor for guidance about course selection.

\*\*\* Students must select two or more of the courses marked with a triple asterisk.

\*\*\*\* The number of elective credits depends on which courses are selected from among those marked with a triple asterisk.

Notes:

- Students should check course syllabi for possible prerequisites.
- Some courses (including HGEN 701, PREV 711, HGEN 720 and PREV 780) may not be offered every year. Students and advisors should check with the Academic Coordinator for each semester's course offerings.

**Table 3. Typical Sequence of Required Courses**

Track	Fall, Year 1	Spring, Year 1	Summer, Year 1*	Fall, Year 2	Spring Year 2	Summer Year 2*	Fall Year 3*
PhD (Epidemiology Track)	PREV 600 PREV 619/730 PREV 620 PREV 749	PREV 659 PREV 720 PREV 747	PREV 716 PREV 748	PREV 721 PREV /789.3 PREV 758 Elective	PREV 801 PREV 803 CIPP907 Elective		
PhD (Molecular Epidemiology Track)	PREV 600 PREV 619/730 PREV 620 PREV 780	PREV 659 PREV 720 PREV 747 CIPP 907	PREV 748	Electives (9 credits)	PREV 711 GPLS 716 GPLS 718		GPLS 728
PhD (Human Genetics Track)**	GPLS 601 HGEN 608***	HGEN 602 HGEN 608*** GPLS 716		HGEN 601 HGEN 608*** PREV 620 and PREV 619, or PREV 621	HGEN 608*** CIPP 907		
MS (Clinical Research Track)	PREV 600 PREV 616 PREV 633	PREV 710 CIPP 909		PREV 619 PREV 620	PREV 720 PREV 747****	PREV 748****	
MS in Human Genetics**	HGEN 601 HGEN 608*** PREV 620 and PREV 619, or PREV 621	HGEN 602 HGEN 608*** GPLS 716		HGEN 608***	HGEN 608*** CIPP 907		

\* PhD students supported by a graduate research assistantship should contact the Academic Coordinator for instructions on summer registration.

\*\* PhD students in the Human Genetics Track and students taking the MS in Human Genetics and Genomic Medicine must take at least two other courses from among 11 marked with a triple asterisk in Table 2.

\*\*\* Students taking the MS in Human Genetics and Genomic Medicine must attend HGEN 608 every fall and spring semester, but they do not register for credit in the fall semester of Year 1 or the spring semester of Year 2. They must present once during each of the semesters for which they register for credit. PhD students in the Human Genetics Track must attend HGEN 608 every fall and spring semester, do not register for credit in the fall semester of Year 1, and must register for credit for at least four semesters beginning in the spring semester of Year 2. They must present once during each of the semesters for which they register for credit.

\*\*\*\* Students taking the MS in Epidemiology and Clinical Research (both tracks) take PREV 747 and PREV 748 only if they have selected the non-thesis option.

Notes:

- This table shows typical sequences. Students should customize the sequence in light of their own situation (e.g., courses transferred or waived).
- In addition to required courses, students may be required to take elective courses and to register for research credits.
- Students in all degree programs must take at least one ethics course. See Tables 1 and 2 for details. These courses must be retaken every four years after initial completion.
- Some courses may not be offered every year. Students should check with the Academic Coordinator for each semester's course offerings.

## 9. THE PHD DEGREE

### 9.1. Curriculum

Students in the PhD program must take a certain number of required courses, a minimum number of elective credits, and a minimum number of dissertation credits. However, there is no specific requirement regarding the total number of credits.

It is expected that most of the coursework will be completed during the first two years of the program. In addition to coursework, students will also complete their research rotations during the first sixteen months of the program. Note that the sixteen-month period starts with the beginning of the Summer Bridge Program, if applicable.

Students should use the information in Tables 1-3 to plan their course sequence. New students and advisors are encouraged to develop a grid showing all semesters of the student's first two years in the program and to fill in which required and elective courses will be taken in each semester.

Note that students are required to have registered for 12 dissertation research credits (PREV 899) by the time they graduate. Students should estimate their graduation date and register for the appropriate number of dissertation research credits per semester to make sure that they have at least 12 credits before graduation.

### 9.2. PhD Milestones and Timeline

A summary of milestones (other than course requirements) that must be completed by PhD students is in Table 4.

**Table 4. Non-Course Degree Requirements for the PhD in Epidemiology and Human Genetics**

Requirement	Approval	Epidemiology Track	Molecular Epidemiology Track	Human Genetics Track
Rotations	Student's Track Leader	✓	✓	✓
Teaching assistantships	Program Director	✓	✓	(✓)
Comprehensive Examination	Comprehensive Examination Committee	✓	✓	✓
Pre-proposal	Graduate Program Committee	✓	✓	✓
Dissertation Proposal Defense	Student's dissertation committee	✓	✓	✓
Dissertation Defense	Student's dissertation committee	✓	✓	✓
Primary data collection experience	Track Leaders	✓	✓	
First Author Publication	GPILS Leadership/Program Director	✓	✓	✓

✓ required

(✓) recommended

To complete the program within five years of admission, the program in EHG recommends the timeline shown in Table 5.



**Table 5. Recommended Progression Towards PhD Degree**

	Year 1	Year 2	Year 3	Year 4	Year 5
Coursework					
Teaching assistantships					
Rotations					
Identify research mentor					
GPILS funding					
Non-GPILS* funding					
Comprehensive exam		**	**		
Pre-proposal					
Dissertation Proposal					
Dissertation Proposal Defense					
Dissertation					
First Author Publication					
Dissertation Defense					

\* Support by mentor’s research grant, student’s own predoctoral research grant, or training grant

\*\*Comprehensive examinations are in August at the end of the first year for Epidemiology and Molecular Epidemiology track students, January of the second year for Human Genetic Track students.

According to Graduate School requirements, all PhD students (including part-time students) must be admitted to candidacy within five academic years of the first term of enrollment in the program and at least two full sequential semesters (spring, summer, or fall) before graduation. All degree requirements, including the Dissertation Defense, must be completed within four years of admission to candidacy and no more than nine years after enrollment in the doctoral program. These deadlines are summarized in Table 6.

**Table 6. Graduate School Deadlines**

Interval	Maximum
From first term of enrollment to admission to candidacy (approval of pre-proposal)	5 years
From admission to candidacy to Dissertation Defense	4 years
Total	9 years

**9.3. Comprehensive Examination**

The purpose of the Comprehensive Exam is to determine whether students are prepared to begin their independent dissertation research. On this exam, students must demonstrate mastery of the fundamental principles and skills of their respective disciplines. In addition, they must demonstrate their ability to apply scientific reasoning to critique existing research and to apply background knowledge to develop and implement solutions to new research problems. Although part-time students are not required to take the Comprehensive Examination at the same time as full-time students, the deadlines for admission to candidacy and for graduation are the same as for all other PhD students.

For the **Epidemiology and Molecular Epidemiology Tracks**, students are required to take the comprehensive exam at the end of their first year (or after they have taken PREV 620, PREV 619, PREV 600, PREV 720, PREV 659, PREV 747, PREV 748). The Program Director appoints an examination committee to administer the exam. The exam is held in August before the start of the fall semester. During the spring semester preceding the examination, students are informed about the dates of the examination. The Comprehensive Examination has five-parts and includes closed-book questions (two parts: epidemiology and biostatistics), open-book questions (two parts: article critique and study design), and data analysis. To pass, a student needs to pass all five parts. If a student fails three or more of the five parts, they will be considered to have failed the examination. If a student passes at least three parts, they will be eligible to retake the parts that they failed. Retakes will take place in November following the August examination. Those who are asked to retake will be provided with feedback and guidance regarding how to prepare. A final decision on passing or not will be made for each student by the end of the fall semester. Students will receive examination results individually via their University of Maryland, Baltimore (UMB) email accounts. If the student fails the final examination or remediation, he or she must leave the PhD program. A student may appeal the head of the comprehensive examination committee to retake the entire examination again the following August but will only be allowed to do this once and the program will not be responsible for providing GRA funding in the Spring and Summer before the appealed retake.

For the **Human Genetics Track** students, the comprehensive examination is taken after students have completed their third semester of full-time coursework. The track leader appoints the examination committee. During the fall semester preceding the examination, students are informed about the dates of the examination which is usually held in January or early February. The format of the Comprehensive Examination includes an in-class written exam, a take-home written exam due one week after the in-class written exam, and an oral exam two weeks after the in-class written exam. There are three possible outcomes: Pass, fail with option to remediate or retake the exam the following January, or fail. Students will receive exam results individually via their University of Maryland, Baltimore (UMB) email accounts. If the student fails the final examination or remediation, he or she must leave the PhD program.

#### **9.4. Research Rotations**

Research rotations provide students with opportunities to learn how to function and flourish in a research setting; identify an area of research for their dissertation work; identify a source of funding for their dissertation work; and learn a specific skill (e.g., laboratory technique, statistical method) necessary for their dissertation work or future career. During rotations, students work on projects that are mutually beneficial to the mentor and the student and which help both decide if the situation is a good fit for the student's dissertation project. Students and mentors should agree on expectations before beginning the rotation and should maintain regular communication throughout the rotation period.

All full-time PhD students (regardless of track or source of funding) perform research rotations during the first fifteen months of their program. Note that the fifteen-month period starts with the beginning of the Summer Bridge Program, if applicable.

Students in the Human Genetics Track complete three rotations, beginning upon completion of Mechanisms in Biomedical Sciences (Core Course). Students who have previously completed a rotation as part of the GPILS Summer Bridge Program complete two additional rotations after completing the Core Course. Each rotation is eight to twelve weeks in length, with the duration and weekly schedule negotiated with the rotation mentor. If the third rotation is completed before the end of the first fifteen months, the student spends the rest of the time working with the dissertation mentor.

For students in the Epidemiology and Molecular Epidemiology Tracks, there are three five-month rotations: September 1 to January 31, February 1 to June 30 and July 1 to December 1 of the student's first fifteen months in the program. In some cases, students may obtain permission to begin their rotations earlier (e.g., during the summer before their first semester). The selection of the first rotation is made during the summer preceding the student's first year in the program, in consultation with the student's Track Leader. The selection of the second rotation is made during the last two months of the first rotation. Ideally, the third rotation is with the mentor identified for dissertation research. However, the student may, with the agreement of the research mentor, work with another faculty member for the third rotation to obtain a specific set of skills.

Rotations are selected by the student in collaboration with the Track Leader or Program Director. Selection is based on individual student needs. Thus, students who have already identified their area of interest are encouraged to arrange rotations with one or more mentors in the identified research area who expect to have research or training grant funds and are willing to support a student's future dissertation work. Students who do not yet have a preferred research area are encouraged to identify rotations with one or more mentors who work in fields of potential interest and who expect to have research or training grant funds and would be willing to support a student's future dissertation work. Students should explicitly ask the potential rotation mentor if there is a possibility of funding for their dissertation before they start a rotation. Students should meet weekly with their rotation mentors.

Once a rotation has been selected, the student, in collaboration with the rotation mentor, completes a Research Rotation Proposal Form (<http://lifesciences.umaryland.edu/epidemiology/Student-Resources/>) outlining the goals of the rotation. The form is reviewed, signed by the student's Track Leader, and submitted to the Academic Coordinator. Electronic signatures are sufficient if confirmation emails are sent to the Academic Coordinator. At the end of each rotation, the student and mentor each submit to the Track Leader a Research Rotation Evaluation Form (<http://lifesciences.umaryland.edu/epidemiology/Student-Resources/>) in which they assess the extent to which the goals were attained. The Academic Coordinator must also receive a copy of the completed Research Rotation Evaluation Form.

Modifications regarding the number of required rotations may be approved by the student's track leader on a case-by-case basis.

### **9.5. Identifying a Research Mentor**

Students are expected to identify a research mentor by the fall of Year 2, with the mentor agreeing to provide funding for the student starting on December 1 of Year 2 (or October 1 of Year 2 for students who completed the GPILS Summer Bridge Program). Rotations are a valuable way to help students identify a mentor who will supervise their dissertation research and provide funding once the initial GRA funding expires. Students should work closely with their Track Leaders for advice about identifying a mentor. Fellow students can also provide valuable information based on their own experience.

### **9.6 Pre-proposal**

This requirement will replace the abstract and general research plan requirements and will be required of students who have entered the EHG program in 2019 or later or who have not submitted their graduate research plan prior to August 2019. Students who have already submitted an abstract may choose to submit the larger general research plan or submit a pre-proposal.

After passing the Comprehensive Examination, the student, with approval from the research mentor, must provide a two to three-page pre-proposal and propose a dissertation committee. References are not included in the two-to-three-page limit. The EHG program recommends that this milestone be reached by the end of the second year or within six months of passing the Comprehensive Examination. The pre-proposal should be single-spaced, using Arial 11-point or Times New Roman 12-point font, with 0.5" margins, and with no condensed character or line spacing. The pre-proposal should include the following sections (see template) as well as your name/title/program you are enrolled in.

### **Specific Aims** (1-1.5 pages – modeled after the Specific Aims page for an NIH grant)

- Introduce the research question and rationale for the project by providing a brief summary of the existing literature on the topic, current knowledge gaps, how the proposed study will fill those gaps, and the significance of the proposed research (1/3-1/2 page).
- Present the study aims. For each aim, state the hypothesis to be tested, 3-4 sentences describing the approach (study design, data source, exposure/outcome, and analyses), and impact.

### **Committee** (1/2 page)

- List the proposed members of the dissertation committee (see requirements below). For each member, please include the following:
  - Name and primary department
  - Expertise and contribution to the work
  - Graduate Faculty membership status (Regular, Associate, or not a member) – *at least three committee members, including the chair, should be regular members of the Graduate Faculty.*

### **Student's Role** (1/4-1/2 page)

- Describe the student's role in the development of the research questions and hypotheses, collection and/or analysis of the data, performance of any experiments or assays, and dissemination of results.
- Be sure to emphasize what the student adds to the existing project (i.e., how does it build on the research mentor's work).

### **Timeline** (1/4-1/2 page)

- Provide a detailed timeline outlining when specific tasks for each aim will be accomplished.
- Please also include when specific program milestones will be completed (e.g. proposal defense and dissertation defense)

While working on the pre-proposal, it is expected that the student will meet with the research mentor and other committee members to obtain feedback. All members of the student's committee must send an email message to the Academic Coordinator (at least two weeks prior to the Graduate Program Committee meeting), indicating that they have read the pre-proposal, approve of its content, and are willing to serve on the committee.

The Graduate Program Committee (GPC) reviews the pre-proposal to ensure that the scope is sufficient for a dissertation, the work is feasible, and the proposed committee has the expertise to guide the student and meets program requirements.

The pre-proposal must be submitted to the Academic Coordinator at least two weeks prior to the GPC meeting during which it will be reviewed. GPC meetings are held monthly. Students should contact the Academic Coordinator for specific dates. The pre-proposals are scheduled in the order in which they are received.

The GPC deliberates and decides whether to approve the pre-proposal. The Academic Coordinator transmits the decision to the student by email, with a copy to all members of the student's dissertation committee. If the chair or co-chair of the student's proposed dissertation committee is on the GPC, he or she does not participate in the discussion or decision about the student's pre-proposal. If other members of the student's proposed dissertation committee are on the GPC, they may participate in the discussion but may not vote.

If the student is asked to resubmit the pre-proposal or if the student makes substantial changes to his or her research plan or dissertation committee after the pre-proposal has been approved, a revised pre-proposal must be submitted for approval.

## Committee Selection

Dissertation committee membership must meet requirements of the Graduate School, including the following requirements:

- The dissertation committee must have 5-7 members, including the chair
- All members must hold a doctoral-level degree
- The committee chair and two additional members must be Regular Members of the Graduate Faculty. The list of Graduate Faculty members, and procedures to apply for Regular Graduate Faculty membership are available at <https://www.graduate.umaryland.edu/About/Faculty/Graduate-Faculty/>.
- At least one committee member must be from outside the student's program or department.

For Epidemiology and Molecular Epidemiology Track students, at least one member must be a biostatistician and at least one member should have expertise in epidemiologic methods. For students in the Human Genetics Track, at least one member of the committee should be a member of the Human Genetics teaching faculty. A member with biostatistical expertise may be required depending on the research area. Students in this track should consult the Track Leader for guidance, if necessary.

### 9.7 Admission to Candidacy

PhD students must be admitted to candidacy within five years of the first term of enrollment in the doctoral program and at least two full sequential semesters (spring, summer, or fall) before graduation. Students cannot be admitted to candidacy until they are off the initial fifteen-month GPILS funding.

Once the pre-proposal has been approved, the student is eligible to apply for PhD candidacy. The application can be found on the Graduate School website (<https://www.graduate.umaryland.edu/Forms/>). Students supported by graduate research assistantships become eligible for the Level II stipend when they achieve candidacy.

The Application for Admission to PhD Candidacy form must be submitted by email to Erin Golembewski, Senior Associate Dean of the Graduate School ([egole001@umaryland.edu](mailto:egole001@umaryland.edu)) and [Gradforms](#). Students will receive an approval letter from Dr. Golembewski, which they must provide to the GPILS Senior Financial Analyst, Ali Squires ([asquires@som.umaryland.edu](mailto:asquires@som.umaryland.edu)), in order to receive their stipend increase. The student must provide a copy of the Application for Admission to PhD Candidacy form and the approval letter from the Graduate School to the Academic Coordinator.

### 9.8 Dissertation Proposal

After approval of the pre-proposal, the student writes the Dissertation Proposal with the guidance of his or her dissertation committee. The Dissertation Proposal is intended to convey essential information about the student's doctoral dissertation research. It should succinctly identify the problem to be addressed, review relevant background, state the significance of the problem, and describe the methods to be used in carrying out the project. The proposal is an important document outlining the student's dissertation research, and its acceptance implies that the dissertation committee and student agree on the plan of study.

While working on the Dissertation Proposal, it is expected that the student will meet with the research mentor and other committee members on a regular basis. Consultations with individual committee members should be planned as needed, depending on the faculty member's specific expertise and the phase of project development and execution. The full committee is expected to meet at least twice a year to assure optimal communication and to prevent last-minute problems. The student or the dissertation committee chair should inform the Program Director or Track Leader if there is difficulty scheduling meetings due to the lack of availability of committee members. Students should allow sufficient time for the appropriate discussions and approvals to occur and should make a point of scheduling meetings well in advance.

The structure and content of the Dissertation Proposal are similar to the structure and content of the pre-proposal, but the information provided should be more detailed. The goal is to provide a roadmap for the proposed research as one would in a research grant application. There is no specific page limit, but the recommended length is roughly twenty to twenty-five pages (exclusive of references) as outlined below.

- Specific aims (including hypotheses) (*approximately 1 page*)
- Background and significance (*approximately 6 pages*)
- Innovation (*approximately 0.5 page*)
- Preliminary data (optional)
- Methods (including potential problems and proposed solutions) (*approximately 12 pages*)
- Anticipated results and contribution to knowledge (*approximately 0.5 page*)
- Feasibility and timeline (*approximately 1 page*)
- Student's role (*approximately 0.5 page*)
- Dissertation committee (*approximately 0.5 page*)
- References (*as needed*)

In preparing the Dissertation Proposal, the student should be careful not to use the plural pronoun, we, when referring to independent work that will be done by the student.

### **9.8.1 Dissertation Proposal Defense**

When the dissertation committee agrees that the Research Proposal is complete, the student arranges to conduct the Dissertation Proposal Defense. The student should inform the Academic Coordinator as soon as he or she has identified a date for the defense so that a room can be reserved, and announcements distributed. It is recommended that the proposal defense take place no later than six months after attaining PhD candidacy status.

At least four weeks prior to the Dissertation Proposal Defense, the student should provide copies of the Research Proposal to all members of the dissertation committee for review. At least two weeks prior to the defense, all committee members must email the Academic Coordinator to indicate that they have read and approve the Dissertation Proposal and that the student is ready to proceed to the Proposal Defense. The Academic Coordinator will distribute announcements to faculty and students. The student should provide the Academic Coordinator with the Title, Place, Date, Time, Committee Member Names, and Zoom Link if applicable.

The purpose of the defense is to evaluate the quality of the Dissertation Proposal and to provide constructive criticism for the proposed dissertation work. The Dissertation Proposal Defense consists of a public oral presentation and a closed session. All members of the student's dissertation committee must attend both the open and closed sessions. All faculty and graduate students may attend the open session and all attendees may ask questions during this session. The dissertation committee and EHG faculty questions the student during the closed session. Members of the Graduate Faculty who are not on the student's dissertation committee are encouraged to attend and participate in the closed session.

At least one member of the GPC must attend the Proposal Defense. Therefore, the student should identify a GPC member and include that faculty member in the scheduling process. The designated GPC member should make a brief announcement about the procedures and format of the defense before the start of the open session and should ensure that proper procedures are followed. The GPC member (and other faculty) should participate in the closed session of the defense.

The Dissertation Proposal Defense is administered and graded by the student's dissertation committee. The possible outcomes are pass or fail. If the outcome is "pass", the dissertation committee may require minor or major revisions. If the outcome is "fail", the student may be allowed to repeat the defense.

The student is responsible for providing the dissertation committee with a copy of the Dissertation Proposal

Defense Form (<http://lifesciences.umaryland.edu/epidemiology/Student-Resources/>) on which the committee indicates the outcome of the defense. The dissertation committee will advise the student of any changes that must be made before the student can proceed to work on the Doctoral Dissertation. This form should be returned to the Academic Coordinator within two days of the defense.

## **9.9 Doctoral Dissertation**

The Doctoral Dissertation is an original, scholarly research project that demonstrates that the student has mastered a field of knowledge, has successfully completed a program of independent research in a chosen field, and is able to publicly discuss and defend the research.

While working on the dissertation, it is expected that the student will meet with the research mentor and other committee members on a regular basis. Consultations with individual committee members should be planned as needed, but the full committee should meet at least twice a year to assure optimal communication and to prevent last-minute problems. Students should allow sufficient time for the appropriate discussions and approvals to occur and should make a point of scheduling meetings well in advance.

### **9.9.1 Guidelines for the Dissertation**

The dissertation must conform to all Graduate School requirements and policies as stated on the Graduate School website. The EHG program's specific guidelines are discussed in the following paragraphs.

The student may collect most or all of the data for the dissertation project or may use previously collected data. A student who chooses to use existing data is responsible for gaining access to the data, for ensuring that the data set is adequate to answer the research question, and for establishing that the data are of acceptable quality.

Students may choose a conventional or a manuscript-based dissertation format. The format should be agreed upon by the student, mentor, and dissertation committee by the time of the Dissertation Proposal Defense. A single abstract summarizing the entire dissertation is required for both formats. The dissertation must meet all criteria (except those related to presentation format) specified in this handbook. The style of the dissertation should follow the Graduate School's dissertation style guide (<https://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/Electronic-Thesis-and-Dissertation-Style-Guide-2017-final.pdf>).

The conventional dissertation must be written by the student and may not include, as results, work that was conducted by others or work published prior to the submission of the pre-proposal to the GPC. It must address a unified hypothesis-based theme and should be organized as follows:

1. The first chapter should be a short introduction.
2. The second chapter should be a comprehensive critical literature review which leads to and supports the dissertation aims and hypotheses.
3. The third chapter should be a complete and detailed description of the study methods.
4. The fourth chapter should present the results of the student's original research in sufficient detail for the committee to assess the student's accomplishments.
5. The fifth chapter should summarize and discuss the significance of the findings, especially in the context of published literature. It should include a discussion of the conclusions drawn from the research and should make recommendations for further studies while clearly explaining the implications of the student's work.
6. The dissertation may include an appendix with additional tables and results deemed necessary to fully understand the data.

Like the conventional dissertation, the manuscript-based dissertation must be written by the student and may not include, as results, work that was conducted by others or work published prior to the submission of the pre-proposal to the GPC. It must include a minimum of two original research manuscripts that address a unified hypothesis-based theme. The student must have written and must be first author on both manuscripts and the manuscripts must be reviewed and determined suitable for publication in a peer-reviewed scientific journal by the readers and chair of the dissertation committee.

The manuscript-based dissertation should be organized as follows:

1. The first chapter should include a short introduction and a comprehensive critical literature review which leads to and supports the aims and hypotheses of the manuscripts.
2. The second chapter should be a complete and detailed description of the study methods.
3. The third, fourth, and possibly later chapters should be manuscripts that communicate the student's original research. Each chapter should be written as a complete document suitable for publication, although additional detail may be included if necessary to demonstrate the student's accomplishments to the dissertation committee.
4. The final chapter should integrate and discuss the significance of the findings reported in the manuscripts, especially in the context of published literature. It should include a discussion of the overall conclusions drawn from the research and should make recommendations for further studies while clearly explaining the implications of the student's work.
5. The dissertation may include an appendix with additional tables and results deemed necessary to fully understand the data.

In preparing the dissertation, the student should be careful not to use the plural pronoun, we, when referring to independent work that was done by the student.

The importance of clear and concise writing cannot be over-emphasized. Students are encouraged to take advantage of writing resources on campus throughout their time as a graduate student, but particularly during the dissertation writing phase. Resources include the UMB Writing Center (<http://www.umaryland.edu/writing/>), the UMB Dissertation Bootcamp, and various writing accountability groups on campus.

### **9.10 Preparing for Graduation**

At least six months before a student plans to graduate, he or she should consult the Graduate School website (<http://www.graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>) for the required forms and deadlines including dates for submission of forms and materials. For clarification on any of the information provided, the student should contact the Graduate School (phone 410-706- 7131, email [gradinfo@umaryland.edu](mailto:gradinfo@umaryland.edu)). Note that students must be registered for at least one credit in the semester during which they plan to graduate, including summer and winter semesters. All PhD students applying for graduation must have registered for a total of at least twelve dissertation research credits (PREV 899) and must have completed a successful Dissertation Defense. All degree requirements, including the Dissertation Defense and submission of the final dissertation to the Graduate School, must be completed within four years of admission to candidacy and no more than nine years after the first semester of enrollment in the doctoral program.

The Procedures for Examination of the Doctoral Dissertation is an essential document that summarizes the steps in preparation for the Dissertation Defense and graduation:

<https://www.graduate.umaryland.edu/Forms/>



Students are responsible for submitting all necessary forms to graduate, and for providing the Academic Coordinator with copies of all forms submitted to the Graduate School. These forms include:

- Nomination of Members of Final Doctoral Examination Committee (due six months before the defense) <https://www.graduate.umaryland.edu/Forms/>
- Application for Diploma (due date changes each semester – check Graduate School calendar) <https://graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>
- Certification of Completion of the Doctoral Dissertation (due two weeks before defense) <https://www.graduate.umaryland.edu/Forms/>
- Announcement of Doctoral Dissertation Defense (due two weeks before defense) <https://www.graduate.umaryland.edu/Forms/>

Once the Graduate School is aware of a student's upcoming Dissertation Defense, the student will receive information from the Graduate School regarding procedures for the commencement and hooding ceremonies. In addition, the Academic Coordinator will contact the student regarding program- specific graduation events.

### **9.11 Dissertation Defense**

Students are advised to consult the Graduate School calendar frequently during preparation for the Dissertation Defense. Important deadlines can be found at <http://www.graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>.

The dissertation committee chair and two other members of the committee should be designated as readers. No more than two weeks before the scheduled Dissertation Defense, the student's dissertation committee chair must complete and send to the Graduate School the Certification of Completion of the Doctoral Dissertation (<https://www.graduate.umaryland.edu/media/Graduate-School/Documents/Certification-of-Completion-of-the-Doctoral-Dissertation.pdf>). This form certifies that the committee chair and the readers consider that the dissertation is ready to be defended. To allow sufficient time for review of the dissertation, the student should provide the dissertation to the dissertation committee chair and readers at least one month before the Dissertation Defense. All major revisions should have been completed to the satisfaction of the dissertation committee prior to the Dissertation Defense.

The defense consists of a public oral presentation and question period, followed by a closed session during which the dissertation committee questions the student. All members of the dissertation committee must attend both the open and closed sessions. If it is impossible for a member to participate in person, permission for the member to participate by phone can be requested from the Program Director and, if approved, the Associate Dean of the Graduate School must be notified of the absence and of the proposed accommodations. In addition, the Program Director (or designee) must attend the defense. If the Program Director is on the student's dissertation committee, the Program Director must designate another GPC member to attend the defense. The student should include the Program Director or designee in the scheduling process.

The Dissertation Defense is open to all program faculty and graduate students. Members of the Graduate Faculty who are not on the student's dissertation committee may attend the closed session as observers but may not participate verbally or otherwise in the proceedings.

The Dissertation Defense is conducted and graded by the student's dissertation committee. The possible outcomes are pass with minor revisions, pass with significant revisions, and fail. If the outcome is "fail", the student may be given one more opportunity to repeat the defense.

A Report of Examination Committee form is sent by the Graduate School to the Graduate School-appointed Dean's Representative on the student's committee before the defense. The completed form must be returned to the Graduate School within two working days of the oral defense, with a copy to the Academic Coordinator.

### 9.12 Publication of Work Resulting from the Doctoral Dissertation

Publication of manuscripts resulting from the dissertation is a critical accomplishment for research scholars, regardless of whether the student completes a manuscript-based dissertation or a conventional dissertation. It is also an essential contribution to the ongoing work of the mentor and research group who support the student’s dissertation work. Questions of authorship should be discussed early in the process of dissertation writing. Students are expected to publish manuscripts based on their dissertations and are encouraged to submit manuscripts to journals for peer review as they are completed prior to the Dissertation Defense. Although submission of the manuscripts is not required prior to graduation, students are expected to publish in a timely fashion.

GPILS is now requiring that all students have a first author publication as a requirement for graduation. This change in policy would apply to all current and future pre-candidacy students; current students ~~(as of January 22, 2021)~~ who have achieved candidacy ~~(as of January 22, 2021)~~ would be “grandfathered” in. We recognize that exceptional situations will nevertheless occur in the future and so Program Directors should request an exemption for those students who do not have a first author publication at the time of their defense. Such requests should be sent to Dr. Gruber-Baldini. Such requests will be reviewed and approved by Sharron Graves and Jim Kaper, Vice Dean for Academic Affairs.

## 10 THE MS DEGREE

The EHG program offers three MS degrees: MS in Human Genetics, MS in Epidemiology and Clinical Research (Epidemiology Track), and MS in Epidemiology and Clinical Research (Clinical Research Track). All three have a course requirement of thirty credits. Both tracks in the MS in Epidemiology and Clinical Research offer a thesis and a non-thesis option. The MS in Human Genetics and Genomic Medicine offers a thesis option only.

A summary of milestones (other than course requirements) that must be completed by MS students is in Table 7.

**Table 7. Non-Course Degree Requirements for the MS in Epidemiology and Clinical Research and the MS in Human Genetics**

Requirement	Approval	MS in Epidemiology and Clinical Research (both tracks)		Human Genetics and Genomic Medicine
		Thesis	Non-Thesis	
Pre-proposal	Graduate Program Committee	✓		✓
Thesis Defense	Student’s thesis committee	✓		✓
Rotations	Student’s Track Leader			✓

### 10.1 MS (Thesis Option)

In order to complete the MS program in a timely way, the program in EHG recommends that, by the end of the spring semester of the first academic year in the program, students who have opted for the MS (thesis option) should have identified a research mentor and submitted a pre-proposal describing the proposed research and the proposed thesis committee.

#### 10.1.2 Pre-proposal

The purpose of the pre-proposal is to assure that the proposed thesis project appears feasible and that the scope is appropriate for an MS thesis. The GPC reviews the pre-proposal to judge whether the student should pursue development of the proposed research or should re-evaluate the area of interest. Membership of the student’s proposed thesis committee is also subject to the approval of the GPC.

The rules for formatting and presenting the pre-proposal and the criteria for evaluating the pre-proposal are the same as those described in the “Pre-proposal” section in the PhD chapter.

### **10.1.3 Master's Thesis**

The Master's thesis is required for the MS in Human Genetics. The MS in Epidemiology and Clinical Research (both tracks) offers a non-thesis option.

The purpose of the Master's thesis is to provide students with the opportunity to develop and demonstrate an advanced understanding and application of skills in scientific research by progressing through each of the following steps:

1. Formulation of a research question based on review of the literature and input from experts in the field of interest
2. Identification of methods and measurements that appropriately address the research question
3. Assembly of adequate data
4. Analysis and interpretation of results
5. Written and oral presentations of results

The student should identify an area of research for the Master's thesis through discussions with his or her advisor, Track Leader, and other faculty members. A Master's thesis should address an unanswered research question. The scope of the research must be such that the thesis is both of high quality and can be completed within the allocated time. There may be acceptable Master's research projects that do not entail collecting primary data. However, a student who chooses to use existing data is responsible for gaining access to the data, for ensuring that the data set is adequate to answer the research question, and for establishing that the data are of acceptable quality.

Students should consult the Graduate School website for the thesis style guide

(<https://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/Electronic-Thesis-and-Dissertation-Style-Guide-2017-final.pdf>).

### **10.1.4 MS Thesis Committee Selection**

The thesis committee must have between three and five members. At least three of the committee members must be members of the Graduate Faculty. All members must hold a doctoral degree or the highest degree for their discipline. Up to two members may be from programs other than EHG. In the pre-proposal, the student should indicate the Graduate Faculty membership status and the program affiliations of each member of the proposed thesis committee. The thesis committee chair and two other committee members must be designated as "readers." Requirements specific to the MS tracks are discussed below. Students should consult their Track Leader for guidance on committee composition.

For students in the MS in Epidemiology and Clinical Research (both tracks), the thesis committee chair must be a full-time, on-site member of the Graduate Faculty affiliated with the EHG program. In addition, students in the MS in Epidemiology and Clinical Research (Clinical Research Track) may identify a co-chair who is a member of the UMB clinical faculty at the rank of Assistant Professor or above with expertise in the biomedical field of the proposed research.

For students in the MS in Human Genetics, the thesis committee chair must be a full-time, on-site member of the Graduate Faculty. At least one member of the committee should be a member of the Human Genetics teaching faculty and a member with biostatistical expertise may be required depending on the research area. Students in this track should consult the Track Leader for guidance, if necessary.

### **10.1.5 Master's Thesis Defense**

At least four weeks before the proposed Thesis Defense date, the student must provide the final version of the thesis to all thesis committee members. At least two weeks before the defense, the thesis committee chair and the two other committee members who have been designated as readers, must agree that the thesis is defensible, must sign the Certification of Completion of Master's Thesis form (<https://www.graduate.umaryland.edu/Forms/>) and must return it to the Graduate School. The Thesis Defense should be scheduled at least two weeks before the thesis submission deadline to allow time for minor revisions, which are almost always required. All major revisions should have been completed to the satisfaction of the thesis committee prior to the Thesis Defense.

The defense consists of a public oral presentation and question period followed by a closed session during which the thesis committee questions the student. The open session is open to all program faculty and graduate students. All members of the student's thesis committee must attend both the open and closed sessions. Members of the Graduate Faculty who are not on the student's thesis committee may attend the closed session as observers but may not participate verbally or otherwise in the proceedings.

The members of the thesis committee vote on whether the student has passed or failed. The student is deemed to have passed if a majority of members vote affirmatively. If a majority of members do not vote affirmatively, the members may decide to accept the thesis pending minor modifications, fail the thesis and require major revisions, or fail the defense and require a repeat of the defense without requiring major revisions to the written document.

See Procedures for Examination of the Master's Thesis (<https://www.graduate.umaryland.edu/Forms/>).

### **10.2 MS (Non-Thesis Option) – Milestones and Timeline**

At least six months before a student plans to graduate, he or she should consult the Graduate School website (<http://www.graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>) for the required forms and deadlines. Note that students must be registered for at least one credit in the semester during which they plan to graduate, including summer and winter semesters. All degree requirements must be completed within five years of the first semester of enrollment.

Students are responsible for submitting all necessary forms to graduate and for providing the Academic Coordinator with copies of all forms submitted to the Graduate School. These forms include:

- Application for Diploma (due date changes each semester – check Graduate School calendar) (<https://graduate.umaryland.edu/Current-Students/Academic-Calendar-and-Deadlines/>)
- Fulfillment of Course Requirements for Master's Degree (due date changes each semester – check Graduate School calendar) ([http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/masters\\_courses.pdf](http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/masters_courses.pdf))

### 10.2.2 Preparing for Graduation

At least six months before a student plans to graduate, he or she should consult the Graduate School website (<http://www.graduate.umaryland.edu/student-resources/>) for the required forms and deadlines. Students are advised to consult the Graduate School calendar frequently during preparation for the Master's Thesis Defense (<http://www.graduate.umaryland.edu/Current-Students/Academic-Calendar- and-Deadlines/>). For clarification on any of the information provided, the student should contact the Graduate School (phone 410-706-7131, email [gradinfo@umaryland.edu](mailto:gradinfo@umaryland.edu)). Note that students must be registered for at least one credit in the semester during which the thesis is defended, including summer and winter semesters. All MS degree requirements must be completed within five years of the first semester of enrollment in the program. Students in the MS program (thesis option) who are applying for graduation must have registered for at least six thesis research credits (PREV 799) and must have completed a successful Thesis Defense. Students are responsible for submitting all necessary forms in order to graduate and for providing the Academic Coordinator with copies of all forms submitted to the Graduate School. These forms include:

- Nomination of Members of Final Thesis Defense Committee (due two months before the Thesis Defense) ([http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Academic-Progress/masters\\_committee.pdf](http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Academic-Progress/masters_committee.pdf))
- Application for Diploma (due date changes each semester – check Graduate School calendar) (<http://www.umaryland.edu/surfs/>)
- Fulfillment of Course Requirements for Master's Degree (due date changes each semester – check Graduate School calendar) ([http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/masters\\_courses.pdf](http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/masters_courses.pdf))
- Certification of Completion of the Master's Thesis (due two weeks before the Thesis Defense) ([http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/certify\\_thesis.pdf](http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Graduation-and-Degree-Certification/certify_thesis.pdf))

## 11 DUAL DEGREE PROGRAMS

The EHG program offers two dual degree programs, one with the Gerontology doctoral program and one with the Pharmaceutical Health Services Research (PHSR) doctoral program. Students in these programs obtain an MS in Epidemiology and Clinical Research along with their doctoral degree in Gerontology or PHSR. Both graduate programs involved in the dual degree must approve the composition of the student's dissertation committee. At least one member of the student's dissertation committee must be an epidemiologist who is a member of the EHG program faculty. In addition, at least one member must be a biostatistician.

The student's dissertation committee must be approved by the Director of the EHG program. After the dissertation committee has been approved by the student's doctoral program, the student should submit his or her Nomination of Members for Final Doctoral Examination Committee form (<http://www.graduate.umaryland.edu/media/Graduate-School/Documents/Academic-Progress/Nomination-of-Doctoral-Committee.pdf>) to the Program Director of EHG by email with a copy to the EHG Academic Coordinator. The Program Director will respond by email within two weeks either approving the committee or requesting a change.

### **11.1 MS Epidemiology and Clinical Research/PhD Gerontology**

This dual degree program is available to students who are accepted into the Gerontology doctoral program and remain in good standing according to the requirements found on Graduate School website (<http://www.graduate.umaryland.edu/policies/>).

While primarily intended for students in the Epidemiology track, all Gerontology doctoral students are eligible to apply for admission to this program. Those interested in applying to the dual degree program should contact the Academic Coordinator for the Gerontology Doctoral Program.

#### **11.1.2 Course Requirements for the Epidemiology/Gerontology Dual Degree**

##### *Methods (15 credits)*

- GERO 750 Theory/Methods I (3 credits)
- GERO 751 Theory/Methods II (3 credits)
- PREV 600 Principles of Epidemiology (3 credits)
- PREV 659 Observational Studies in Epidemiology (3 credits) PREV 758 Health Survey Research Methods (3 credits)

##### *Gerontology Core (15 credits)*

- GERO 711 Biology of Aging (3 credits) GERO 672 Issues in Aging Policy (3 credits)
- GERO 681 Epidemiology of Aging (3 credits)
- GERO 700 Sociocultural Gerontology (3 credits)
- GERO 786 Psychological Aspects of Aging (3 credits)

##### *Biostatistics (11-12 credits)*

- PREV 620 Principles of Biostatistics (3 credits)
- PREV 619 Introduction to SAS (1 credit)
- PREV 720 Statistical Methods in Epidemiology (3 credits)
- PREV 721 Regression Analysis (2 credits)
- PREV 723-789.3 Statistical Methods for Causal Inference and Machine Learning (2 credits) or PREV 801 Longitudinal Data Analysis (3 credits)

##### *Other requirements*

- PREV 803 Clinical Trials and Experimental Epidemiology (3 credits)
- Epidemiology elective from among PREV courses not already taken (3 credits)
- GERO 899 (doctoral dissertation research) (12 credits)
- CIPP 909 Responsible Conduct of Research (1 credit)

## 11.2 MS Epidemiology/PhD PHSR

This program is available to students who are accepted into the PHSR doctoral program and remain in good standing according to the requirements found on Graduate School website (<http://www.graduate.umaryland.edu/policies/>).

While primarily intended for students in the pharmacoepidemiology track, all PHSR doctoral students are eligible to apply for admission to this program. Those wishing to apply to the dual degree program should apply at the end of their second semester in the PHSR program.

### 11.2.2 Course Requirements for the Epidemiology/PHSR Dual Degree

#### *Methods (6 credits)*

- PHSR 701 Research Methods I (3 credits)
- PHSR 702 Research Methods II (3 credits)

#### *Statistics (11 credits)*

- PREV 619 Introduction to SAS (1 credit)
- PREV 620 Principles of Biostatistics (3 credits)
- PREV 720 Statistical Methods in Epidemiology (3 credits)
- PREV 721 Regression Analysis (2 credits)
- PREV 723/789.3 Statistical Methods for Causal Inference and Machine Learning (2 credits)

#### *PHSR Core (12 credits)*

- PHSR 610 Pharmacy, Drugs, and the Health Care System (3 credits)
- PHSR 620 Introduction to Health Behavioral Theory (3 credits)
- PHSR 650 CER & Pharmaceutical Economics I (3 credits)
- PHSR 704 Pharmacoepidemiology (3 credits)

#### *Epidemiology Core (15 credits)*

- PREV 659 Observational Studies in Epidemiology (3 credits)
- PREV 803 Clinical Trials and Experimental Epidemiology (3 credits)
- Epidemiology electives from among PREV courses not already taken (6 credits)

#### *Other requirements*

- PHSR 899 (doctoral dissertation research) (12 credits)
- 12 credits of cognate as required by PHSR program