PhD Curriculum and Requirements.

For Students who Entered GPCI Program Fall 2014 and Later

The doctor of philosophy is the highest degree conferred at UW-Madison. It is never conferred solely as a result of any prescribed period of study, no matter how faithfully pursued. Rather, the GPCI PhD is a research degree and is granted on evidence of distinctive attainment in a specific field and on ability for independent investigation as demonstrated by a dissertation presenting original research or creative scholarship with a high degree of literary skill.

Depending on which ethics course is chosen, 51-52 credits are required to earn the PhD. Below is a list of required courses and research requirements.

1. **Nursing 705 Seminar in Interdisciplinary Clinical Research Evidence** (2 credits, Summer)
2. **Family Medicine 701 Perspectives in Multidisciplinary Clinical and Translational Research** (3 credits, Spring) An overview of clinical investigation and translational research
3. **A graduate entry level biostatistics course** (3 credits): Possible course selections include BMI 541 or BMI 699 (Fall) Introduction to Biostatistics, Stat 571 (Fall) Statistical Methods for Bioscience, or an equivalent course. The 1-credit BMI 699 is for students with instructor consent who have prior statistics (not biostatistics) coursework.
   
   Topic areas should include: descriptive statistics, hypothesis testing, estimation, confidence intervals, t-tests, chi-squared tests, analysis of variance, linear regression, correlation, nonparametric tests, survival analysis and odds ratio. Biomedical applications should be used for each topic.
4. **An intermediate statistics course** (3 credits) Course selection must meet the approval of the graduate program and be applicable to the students’ area of research.
5. **Biostatistics and Medical Informatics 542 Introduction to Clinical Trials I** (3 credits, Spring) BMI 541 is a prerequisite. Course emphasis is on clinical trials study design. BMI 541 (or equivalent) is a prerequisite.
6. **Biostatistics and Medical Informatics 544 Introduction to Clinical Trials II** (3 credits, Fall) Course emphasis is on clinical trial implementation and management, regulatory requirements, and data collection and management strategies. BMI 541 (or equivalent), BMI 542, and instructor consent are prerequisites.
7. **One lecture course in the Responsible (Ethical) Conduct of Research** (1-2 credits) selected from the following list or an equivalent course approved by the Executive Committee:
   
   a) **Med Hist 545 Ethical and Regulatory Issues in Clinical Investigation** (1 credit, Fall)
   
   b) **Pharmacy 800 Research Ethics, Scientific Integrity and the Responsible Conduct of Research** (2 credits, alternate Falls, 2014, 2016, etc.)
   
   c) **Vet Med/Surgical Science 812 Research Ethics and Career Development** (2 credits, Fall)
   
   d) **Ob/Gyn 955 Responsible Conduct of Research for Biomedical Students** (2 credits, Fall)
   
   e) **Nursing 802 Ethics and Responsible Conduct of Research** (1 credit, Spring)
f) **Oncology 675 Appropriate Conduct of Science** (listed as "Advanced or Special Topics," 1 credit, Spring)

8. **Population Health Sciences 797 Introduction to Epidemiology** (3 credits, Fall)

9. **A non-credit regulatory experience activity:** Students attend Pharmacy 800 Scientific Integrity and the Responsible Conduct of Research (alternate Falls 2014, 2016, etc.), sign a confidentiality agreement, review a protocol submitted to an Institutional Review Board, and attend an IRB meeting (supervised). This activity is also known as the RCR Laboratory.

10. **Advanced statistics or analytical methods courses (6 credits):** Students should select courses that advance their knowledge and application of statistics, study design or analytical methods (such as those used in qualitative and quantitative studies) that are applicable to their areas of research. Students are encouraged to consult the program administrator about their options, such as Statistics 572 Statistical Methods for Bioscience II; Sociology 751 Methods of Survey Research Design & Measurement; Sociology 360 / 361 Stats for Sociologists I / II; or Statistics 642 Statistical Methods for Epidemiology.

11. **Biostatistics and Medical Informatics 773 Clinical Research Informatics** (3 credits, Spring, alternating years: 2011, 2013, etc.)

12. **Communication Sciences & Disorders 900 Research Career Development Seminar on Grant Writing** (3 credits, Spring)

13. **PhD Interdisciplinary or Minor Option.** Clinical Investigation students are exempted from the Minor requirement based on the following principles. The mission of the Graduate Program in Clinical Investigation is to train students to develop new technologies and therapeutic interventions using efficient and effective clinical trials to accelerate bringing clinical research discoveries to communities in the State and throughout the Country. Through an infrastructure of team research experience and diversified coursework, the program provides clinician scientists exposure to, and training from, faculty from a wide variety of scientific disciplines (e.g. biostatistics and medical informatics, biomedical engineering, oncology, and nursing, pharmacy, and veterinary sciences) to prepare them to direct patient-oriented research teams, comprised of scientists from inside and outside their own scientific disciplines. Thus, the doctoral program in Clinical Investigation is inherently interdisciplinary. At the time students request the Preliminary Exam Warrant, they are required to provide the program office with a **two-paragraph summary** of their interdisciplinary coursework experience and on the heterogeneous and diverse research teams with which they have interacted and from which they received instruction. Alternatively, students may wish to complete a PhD Minor and submit a Completion of Minor form at the time they request the Preliminary Exam Warrant.

Students who achieve breadth of training by completing a PhD Minor should be aware that a Minor requires at least 10 credits unique to the Clinical Investigation program; that is, credits taken for the major will not also count for the Minor. Monitoring the course content and credit requirements for PhD Minors is the responsibility of the Minor department/program. Major departments/programs are responsible for indicating which type of minor is being pursued (External or Distributed) at the time of the preliminary warrant request.

**External or Distributed Minor Option**
- Option A (external) requires a minimum of 10 credits in a single department/program. Selection of this option requires the approval of the minor department/program.
- Option B (distributed) requires a minimum of 10 credits in one or more departments/programs and can include coursework in the major department/program. Selection of this option requires the approval of the major department/program.
Minimum Course Requirements for the Minor.
- A GPA of 3.00 on all minor course work.
- Course work at a graduate level (and no Audits or Pass/Fail)
- Maximum of 3 credits as independent study (e.g., 699, 799, 899, 999).
- Research and thesis cannot be used to satisfy the minor (e.g., 790, 890, 990).

14. Doctoral Dissertation Research (18 credits)
Doctoral degree candidates are expected to complete and defend a research project, pass an oral exam, and prepare a dissertation that is approved by their degree committee. The dissertation should demonstrate a thorough description and critical understanding of the literature in the student’s topic area, an original idea, methods used, the results, and their implications in terms of the study questions, further research or future directions, and practical significance and application.

Preliminary Exam. Each doctoral candidate is expected to complete required coursework for at least 35 credits and pass an oral preliminary exam. Before permission (the warrant) can be requested from the Graduate School to undertake this oral exam, students must request of their instructors that letter grades be provided in place of any Incomplete and Progressing grades (990 Research excluded). The remaining 18 credits are Research credits taken as a dissertator (someone who has passed the prelim exam).

The Preliminary Exam (Prelim) Proposal is a research proposal whose subject matter will coincide with the student’s anticipated dissertation research.

The program encourages the student to consult with others in addition to meeting with the major advisor when writing the research proposal.

The prelim is intended to assess a student’s knowledge of the field and readiness for independent research. The exam is a comprehensive assessment of a student’s knowledge and skills acquired through the graduate curriculum and abilities to apply clinical and translational research concepts to a field of study. The primary objectives of the prelim exam are to:

- Determine whether the student can independently identify an important and novel scientific problem and provide feasible step by step research strategies to address the problem;
- Assess the student’s ability to recognize possible pitfalls in the long range planning of a research proposal and present methods of adaptation to circumvent such pitfalls;
- Determine whether the student can develop a logical attack on a specific problem (i.e., which experiment comes first, second, etc.) or research question and to reasonably gauge the anticipated timeline for a proposed research project;
- Determine whether the student can present the proposal with clarity in written and oral form; and
- Determine whether the student can defend the proposal and effectively respond to criticism and questions.

Prelim Procedure. The final copy of the preliminary exam proposal must be circulated to the student’s preliminary exam committee at least two weeks prior to the oral exam. At least five faculty or academic staff are required for the preliminary exam and dissertation committees, including the major advisor.

Students are allowed to submit an NIH grant proposal for their prelim.

The program recommends an approximate length for the proposal at 30 pages using 12-point double-spaced type. This excludes tables, figures, appendices, and references.