PhD Requirements for the entering cohorts of 2024 and earlier

PhD in Biostatistics requires completion of the following:

Course Credits

- [Core curriculum courses](): 43 credits for Standard pathway; 50 credits for Statistical Genetics pathway
- [Elective courses](): 14 credits for Standard pathway; 8 credits for Statistical Genetics pathway*
  - *15 credits are required for standard pathway cohorts of 2022 and earlier. 7 credits are required for Statistical Genetics pathway cohorts of 2022 and earlier.
- 9 Seminar credits
- 3 credits for the Applied Research Project (PhD Applied Requirement)*
- 3 credits for the course in Statistical Consulting
- 36 credits for dissertation
- Minimum 3.0 grade in each core course and minimum 2.7 grade in each elective course
- Full-time enrollment of 10 credits per quarter is required (2 credits in summer quarter).

Exams and Projects

- **First Year Theory Exam**: For advisory purposes, PhD students must take the First Year Statistical Theory Examination after the end of spring quarter following completion of [STAT 512]() and [STAT 513]() (usually in Year 1). (A new PhD student placement exam may be taken to waive these courses and the First Year Theory Exam.)
- **PhD Theory Exam**: PhD students must pass the PhD Statistical Theory Examination within two years following first time completion of [STAT

[581](#), [STAT 582](#), [STAT 583](#) (usually the summer of Year 2). This comprehensive exam covers theory material learned in both the first and second years of the program.

- ***PhD Applied Research Project / Applied Requirement:** This requirement replaces the PhD Applied Exam for cohorts entering 2022 and later. The cohort entering 2021 can opt out of the Applied Exam and choose to complete the Applied Requirement instead. To complete the Applied Requirement, students must complete an independent project demonstrating their knowledge of applied Biostatistics and their scientific collaborative skills.   The student prepares a report of the analysis and presents the project to a committee of faculty. The committee reviews and approves proposed projects and final reports. A student undertakes the project in one or two adjacent quarters, typically during the third year after taking all required courses, including the course in statistical consulting. The Applied Requirement should be completed before the General Exam, and must be completed before the final exam.

Learn [more about exams](#) in our Students section.

Dissertation

The purpose of writing a PhD dissertation is to make a substantive contribution to knowledge in biostatistics and to provide the student with training in undertaking biostatistical research. Under the guidance of a supervisory committee and the mentorship of the committee chair (the dissertation advisor), PhD students must perform biostatistics research and write a dissertation. The preliminary work for the dissertation is assessed in the General Examination, and the completed dissertation is assessed in the Final Examination. Students typically begin work on their dissertation after completing the PhD qualifying exams, although students should explore potential research topics early their graduate program.

- **General Exam**: The General Examination enables the Supervisory Committee to assess whether the student's background of study and preparation are sufficient to merit commencement of a dissertation. In the General Exam, the student presents preliminary work for the

dissertation, outlines a proposal for the dissertation research, and answers questions from the Supervisory Committee. Passing the General Exam means the student is formally a PhD candidate. After achieving candidate status, the student ordinarily devotes their time primarily to writing the dissertation and preparing for the Final Examination.

- **Final Exam**: The Final Examination enables the Supervisory Committee to assess whether the student has produced a dissertation that is a significant contribution to biostatistical knowledge and that the student has PhD-level training in biostatistical research. After a successful Final Exam, the student must submit a final dissertation. This final version of the dissertation should address any issues raised in the Final Exam, to the satisfaction of the Supervisory Committee.

Other Requirements

PhD students must serve as a Teaching Assistant for at least one quarter.

Doctor of Philosophy Courses & Timeline

Most students take the core lecture courses during their first two years. Timing of electives vary from what is listed. Please discuss when to take your electives with your advisor.

NOTE: The Statistical Genetics Pathway will not be a program option starting with the entering cohort of 2025. However, statistical genetics coursework and research opportunities will continue to be available in our graduate programs.

Standard Pathway

Sample Timeline for Standard Pathway

	Autumn	Winter	Spring	Summer
1st Year	STAT 512 Statistical Inference	STAT 513 Statistical Inference	BIOST 533 Theory of Linear Models	
	BIOST 514 Biostatistics I	BIOST 515 Biostatistics II	BIOST 561 Computational Skills for Biostatistics 2	
	MATH 574 Fundamental Concepts of Analysis 3 or Elective	MATH 575 Fundamental Concepts of Analysis 3 or Elective	STAT 559 Measure Theory 3 and/or Elective	
	BIOST 580 Seminar in Biostatistics 1	BIOST 580 Seminar in Biostatistics	BIOST 580 Seminar in Biostatistics	
2nd Year	STAT 581 Advanced Theory of Statistical Inference	STAT 582 Advanced Theory of Statistical Inference	STAT 583 Advanced Theory of Statistical Inference	Exam Preparation
	BIOST 570 Advanced Regression Methods for	BIOST 571 Advanced Regression Methods for	BIOST 572 Advanced Regression Methods: Project	

	Autumn	Winter	Spring	Summer
	[Independent Data](#)	[Dependent Data](#)		
	Elective	Elective	Elective	
	[BIOST 580 Seminar in Biostatistics](#)	[BIOST 580 Seminar in Biostatistics](#)	[BIOST 580 Seminar in Biostatistics](#)	
			[BIOST 579 Data Analysis and Reporting](#) (recommended; Spr and/or Sum) [4](#)	
3rd Year	Select Dissertation Advisor	Dissertation Research		Finalize Supervisory Committee
	Elective(s)			
	TA (Aut, Win, or Spr)			
	[BIOST 580 Seminar in Biostatistics](#)			
	[BIOST 590 Biostatistical Consulting](#) (one quarter; 3rd or 4th Year) [5](#) followed by [BIOST 591 Applied Research Project (3 credits)](#)			

	Autumn	Winter	Spring	Summer
	Students entering the program in 2023 or later must fulfill the CEPH foundational knowledge in Public Health requirement by taking one of the following required courses during any quarter/year: BIOST 504 Foundations of Public Health for Biostatistics or PHI 500 Public Health Practice, Science and Knowledge			
4th Year	General Exam	Dissertation Research and Writing		
5th Year	Final Exam and Graduation			

Core Courses

- BIOST 504 Foundations of Public Health for Biostatistics (2 credits) or PHI 500 Public Health Practice, Science and Knowledge (1 credit)
- BIOST 514 Biostatistics I (4 credits)
- BIOST 515 Biostatistics II (4 credits)
- BIOST 533 Theory of Linear Models (3 credits)
- BIOST 570 Advanced Regression Methods for Independent Data (4 credits)
- BIOST 571 Advanced Regression Methods for Dependent Data (4 credits)
- BIOST 572 Advanced Regression Methods: Project (3 credits)
- STAT 512 Statistical Inference (4 credits)*
- STAT 513 Statistical Inference (4 credits)*
- STAT 581 Advanced Theory of Statistical Inference (4 credits)
- STAT 582 Advanced Theory of Statistical Inference (4 credits)
- STAT 583 Advanced Theory of Statistical Inference (4 credits)

*A new student placement exam may be taken to waive [STAT 512](#) and [STAT 513](#).

Additional requirements

- [BIOST 580 Seminar in Biostatistics](#) or [BIOST 581 Statistical Genetics Seminar](#) (9 credits total)
- [BIOST 590 Biostatistical Consulting (3 credits)](#)
- [BIOST 591 Applied Research Project (3 credits)](#)
- [BIOST 800 Doctoral Dissertation (36 credits total)](#)
- Electives
  - Minimum 6 credits from [Elective List One: Methodological Emphasis](#)
  - Minimum 8* credits from [Elective List Two: Biology or Public Health Emphasis](#).
  - *Minimum 9 credits are required for entering cohorts of 2022 and earlier.
  - As a department in the accredited University of Washington School of Public health, the Department of Biostatistics requires that all graduates demonstrate foundational knowledge in Public Health. Any questions should be directed to the Graduate Program Director.
    - Students who entered the department in Autumn 2018 or prior fulfill this requirement by taking at least one course (3 credits) in epidemiology. This can be satisfied by taking a BIOST course that is cross-listed with Epidemiology (e.g., [BIOST 516](#), [BIOST 519](#), [BIOST 520](#), [BIOST 531](#), [BIOST 536](#), [BIOST 537](#), [BIOST 555](#)) as well as [EPI 517](#) (cross-listed with PHG 511). Note: a BIOST course that is cross-listed with EPI and that is listed either under Elective List 1 or 2 counts towards both the electives credit and the epidemiology requirement.
    - Students who enter the department in Autumn 2019 through Autumn 2022 fulfill this requirement by taking [BIOST 504 Foundations of Public Health for Biostatistics](#) as one of their List 2 electives, satisfying the

most recent requirements set forth by the [Council on Education for Public Health (CEPH)](#).

- o Elective courses may be taken S/NS or equivalent, pending approval from the Graduate Program Director. See policy here: https://www.biostat.washington.edu/support/policy-graduate-students-bio.... To earn the grade of "S," students must achieve a 2.7 or higher.

Course recommendations and notes

1. The department recommends that students register for and attend the [BIOST 580 Seminar in Biostatistics](#) or [BIOST 581 Statistical Genetics Seminar](#) every quarter. Students are required to register for BIOST 580 or BIOST 581 for at least nine quarters.
2. In preparation for work on their dissertation, students are expected to master computational skills at the level covered in [BIOST 561 Computational Skills for Biostatistics](#). Taking this course in the first year of PhD studies is recommended.
3. In preparation for advanced coursework in Statistical Theory ([STAT 581](#) , [STAT 582](#), and [STAT 583](#)) and the PhD Statistical Theory Exam, students are expected to master Real Analysis and Measure Theory at the level covered in [MATH 574](#), [MATH 575](#), and [STAT 559](#). Taking these courses in the first year of PhD studies is recommended, for students who have not previously mastered this material.
4. In preparation for the PhD Applied Research Project (BIOST 591), students are expected to master data analysis at the level covered in [BIOST 579 Data Analysis and Reporting](#). Taking this course at least once in the second or third year of PhD studies is recommended.
5. [BIOST 590 Biostatistical Consulting](#) is a required course and is typically taken during Years 3 or 4. Enrollment is limited to 4-6 students per quarter so advance planning is necessary. Students may email bcurric@uw.edu to sign up for a quarter.
6. Most students will complete The Applied Research Project ([BIOST 591](#)) after the 570s sequence, the Data Analysis course (BIOST 579) and the Consulting Course (BIOST 590), as these all provide important preparation. A project proposal that has been approved by the Applied

Project Committee is required prior to registering for BIOST 591. BIOST 591 must be completed prior to the General Exam.

Optional courses

- [BIOST 582 Student Seminar](#) is offered every Autumn, Winter, and Spring quarter.
- [BIOST 600 Independent Study](#) may be arranged with a faculty advisor in any quarter.

Milestones

1. First-Year Theory Exam follows spring quarter of Year 1.
2. PhD Theory Exam occurs at the end of Summer Year 2.
3. Selection of dissertation advisor and topic by Year 3. (This process includes conducting independent studies with faculty, attending seminars, and engaging in discussions with faculty).
4. Applied Research Project (BIOST 591) completed before General Exam in Years 3 or 4.
5. General Exam completed in Years 3 or 4.
6. Final Exam completed in Years 4 or 5.

Statistical Genetics Pathway

Sample Timeline for Statistical Genetics Pathway

	Autumn	Winter	Spring	Summer
1st Year	STAT 512 Statistical Inference	STAT 513 Statistical Inference	BIOST 533 Theory of Linear Models	

	Autumn	Winter	Spring	Summer
	BIOST 514 Biostatistics I	BIOST 515 Biostatistics II	BIOST 561 Computational Skills for Biostatistics [2]	
	MATH 574 Fundamental Concepts of Analysis [3] or Elective	MATH 575 Fundamental Concepts of Analysis [3] or Elective	STAT 559 Measure Theory [3] and/or BIOST 550 Statistical Genetics I: Mendelian Traits	
	BIOST 581 Statistical Genetics Seminar [1]	BIOST 581 Statistical Genetics Seminar	BIOST 581 Statistical Genetics Seminar	
2nd Year	STAT 581 Advanced Theory of Statistical Inference	STAT 582 Advanced Theory of Statistical Inference	STAT 583 Advanced Theory of Statistical Inference	Exam Preparation
	BIOST 570 Advanced Regression Methods for Independent Data	GENOME 562 Population Genetics [6] and/or GENOME 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis [7] (2nd or 3rd year)	Elective	
	BIOST 551 Statistical Genetics II: Quantitative Traits			

	Autumn	**Winter**	**Spring**	**Summer**
	BIOST 581 Statistical Genetics Seminar	BIOST 581 Statistical Genetics Seminar	BIOST 581 Statistical Genetics Seminar	
			BIOST 579 Data Analysis and Reporting (recommended; Spr and/or Sum) [4]	
3rd Year	Select Dissertation Advisor	Dissertation Research		Finalize Supervisory Committee
	Elective(s)			
	TA (Aut, Win, or Spr)			
	BIOST 581 Statistical Genetics Seminar			
	BIOST 590 Biostatistical Consulting (one quarter; 3rd or 4th Year) [5] followed by BIOST 591 Applied Research Project (3 credits)			
	Students entering the program in 2023 or later must fulfill the CEPH foundational knowledge in Public Health requirement by taking one of the following required courses during any quarter/year: BIOST 504 Foundations of Public Health for Biostatistics or PHI 500 Public Health Practice, Science and Knowledge			
4th Year	General Exam	Dissertation Research and Writing		

	Autumn	Winter	Spring	Summer
5th Year	Final Exam and Graduation			

Core Courses

Theory, Methods, and Applications

- BIOST 504 Foundations of Public Health for Biostatistics (2 credits) or PHI 500 Public Health Practice, Science and Knowledge (1 credit)
- BIOST 514 Biostatistics I (4 credits)
- BIOST 515 Biostatistics II (4 credits)
- BIOST 533 Theory of Linear Models (3 credits)
- BIOST 570 Advanced Regression Methods for Independent Data (4 credits)
- STAT 512 Statistical Inference (4 credits)*
- STAT 513 Statistical Inference (4 credits)*
- STAT 581 Advanced Theory of Statistical Inference (4 credits)
- STAT 582 Advanced Theory of Statistical Inference (4 credits)
- STAT 583 Advanced Theory of Statistical Inference (4 credits)

*A new student placement exam may be taken to waive STAT 512 and STAT 513.

Statistical Genetics

- BIOST 550 Statistical Genetics I: Mendelian Traits (3 credits)
- BIOST 551 Statistical Genetics II: Quantitative Traits (3 credits)
- GENOME 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis (4 credits) or GENOME 541 Introduction to Computational Molecular Biology: Molecular Evolution (4 credits)
- GENOME 562 Population Genetics (4 credits)

Additional requirements

- BIOST 581 Statistical Genetics Seminar (9 credits total)
- BIOST 590 Biostatistical Consulting (3 credits)
- BIOST 591 Applied Research Project (3 credits)
- BIOST 800 Doctoral Dissertation (36 credits total)
- Electives
  - Minimum 6 credits from Elective List One: Methodological Emphasis
  - Minimum 2 credits* from Elective List Two: Biology or Public Health Emphasis.

- *Minimum 1 credit is required for entering cohorts of 2022 and earlier.
- BIOST 571 and BIOST 572 (which is required for Standard Pathway students) may count as Elective List One credits for Stat Gen students.)
- As a department in the accredited University of Washington School of Public health, the Department of Biostatistics requires that all graduates demonstrate foundational knowledge in Public Health. Any questions should be directed to the Graduate Program Director.
  - Students who entered the department in Autumn 2018 or prior fulfill this requirement by taking at least one course (3 credits) in epidemiology. This can be satisfied by taking a BIOST course that is cross-listed with Epidemiology (e.g., BIOST 516, BIOST 519, BIOST 520, BIOST 531, BIOST 536, BIOST 537, BIOST 555) as well as EPI 517 (cross-listed with PHG 511). Note: a BIOST course that is cross-listed with EPI and that is listed either under Elective List 1 or 2 counts towards both the electives credit and the epidemiology requirement.
  - Students who enter the department in Autumn 2019 through Autumn 2022 fulfill this requirement by taking BIOST 504 Foundations of Public Health for Biostatistics as one of their List 2 electives, satisfying the most recent requirements set forth by the Council on Education for Public Health (CEPH).
- Elective courses may be taken S/NS or equivalent. To earn the grade of "S," students must achieve a 2.7 or higher.

Course recommendations and notes

1. Nine quarters of BIOST 581 Statistical Genetics Seminar are required, and the department recommends that students register for and attend BIOST 581 every quarter.
2. In preparation for work on their dissertation, students are expected to master computational skills at the level covered in BIOST 561 Computational Skills for Biostatistics. Taking this course in the first year of PhD studies is recommended.
3. In preparation for advanced coursework in Statistical Theory (STAT 581 , STAT 582, and STAT 583) and the PhD Statistical Theory Exam, students are expected to master Real Analysis and Measure Theory at the level covered in MATH 574, MATH 575, and STAT 559. Taking these courses in the first year of PhD studies is recommended, for students who have not previously mastered this material.
4. In preparation for the PhD Applied Research Project (BIOST 591), students are expected to master data analysis at the level covered in BIOST 579 Data Analysis and Reporting. Taking this course at least once in the second or third year of PhD studies is recommended.
5. BIOST 590 Biostatistical Consulting is a required course and is typically taken during Years 3 or 4. Enrollment is limited to 4-6 students per quarter so advance planning is necessary. Students may email bcurric@uw.edu to sign up for a quarter.
6. Most students will complete The Applied Research Project (BIOST 591) after the 570s sequence, the Data Analysis course (BIOST 579) and the Consulting Course (BIOST 590), as these all provide important preparation. A project proposal that has been approved by the Applied Project Committee is required prior to registering for BIOST 591. BIOST 591 must be completed prior to the General Exam.
7. GENOME 562 Population Genetics is a required course for the pathway and is offered winter quarter in odd numbered years. Students without a background in genetics may need to take an introductory course prior to this class.

8. [GENOME 540 Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis](#) (or [GENOME 541 Introduction to Computational Molecular Biology: Molecular Evolution](#)) is a required course for the pathway and is offered winter quarter. Students typically take it during Years 2 or 3. Students without a background in genetics may need to take an introductory course prior to this class.

Optional courses

- [BIOST 582 Student Seminar](#) is offered every Autumn, Winter, and Spring quarter.
- [BIOST 600 Independent Study](#) may be arranged with a faculty advisor in any quarter.

Milestones

1. First-Year Theory Exam follows spring quarter of Year 1.
2. The PhD Theory Exam occurs at the end of Summer Year 2.
3. Selection of dissertation advisor and topic by Year 3. (This process includes conducting independent studies with faculty, attending seminars, and engaging in discussions with faculty).
4. Applied Research Project (BIOST 591) completed before General Exam in Years 3 or 4.
5. General Exam completed in Years 3 or 4.
6. Final Exam completed in Years 4 or 5.

Selecting the Pathway

Students must email the [Graduate Program](#) to notify of their wish to follow the Statistical Genetics PhD pathway.