THE OHIO STATE UNIVERSITY

PROGRAM GUIDE FOR THE INTERDISCIPLINARY PHD PROGRAM IN BIOSTATISTICS

Revised 4/27/2017

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CURRICULUM OVERVIEW

Both Biostatistics PhD specializations require at least 60 credit hours of coursework. Core math and core statistics courses comprise 41 hours and are required for both specializations and form the core curriculum, as listed below. Each specialization requires an additional 19-20 credit hours of coursework. The remainder of the minimum of 80 credits required for the PhD comprise individual reading and research related to developing the dissertation or other courses.

CORE PROGRAM

CORE COURSES

Area/Course	Title	Credits
Core Math		**4 total**
MATH 4545	Analysis Overview	4
Core Statistics		**37 total**
*STAT 6570	Applied Bayesian Analysis	2
*STAT 6801	Statistical Theory I	4
*STAT 6802	Statistical Theory II	4
*STAT 6860	Foundations of the Linear Model	2
*STAT 6910	Applied Statistics I	4
*STAT 6950	Applied Statistics II	4
*STAT 7301	Advanced Statistical Theory I	3
*STAT 7410	Theory of the Linear Model	3
*STAT 7430	Generalized Linear Models	3
STAT 7730	Advanced Computational Statistics	3
PUBHBIO 7245/STAT 7755	Biostatistical Collaboration	2
*PUBHBIO 8235/STAT 7605 or STAT 8605	Advanced Regression Modeling for Time-to-Event Data or Advanced Survival Analysis	3

*Starred courses are pre-requisites for the Biostatistics PhD QII Exam.

SAMPLE CORE PROGRAM

	Autumn Semester	Spring Semester
First Year	MATH 4545 (Analysis) STAT 6801 (Stat Theory I) STAT 6910 (Appl Stat I)	STAT 6570 (Appl Bayes) STAT 6802 (Stat Theory II) STAT 6860 (Found Lin Mod) STAT 6950 (Appl Stat II)
Second Year	STAT 7301 (Adv Stat Theory I) STAT 7410 (Theory of Lin Mod) PUBHBIO 8899 (Doctoral Seminar) Specialization or Elective Course	STAT 7430 (GLM) PUBHBIO 8235/STAT 7605/STAT 8605 (Adv Survival) PUBHBIO 7245/STAT 7755 (Biostat Collab)
Third Year	STAT 7730 (Stat Computing) Specialization or Elective Courses	Specialization or Elective Courses
Fourth Year and Beyond	Specialization or Elective Courses	Specialization or Elective Courses

Specialization-Specific Required Courses

See the Methodology Specialization and Public Health Specialization pages for details.

Total Course Hour Requirements

The doctoral program requires a minimum of 80 credits, including the 60/61 credits of core and required courses listed above and on the specialization pages. Note that the required curriculum leaves a maximum of 20 of the required 80 hours available for individual reading and research related to developing the dissertation. However, students may exceed the 80 required hours. A maximum of 30 credits of master's degree work may be applied to PhD requirements if approved by the Graduate Studies Committee. (See the Policies, Rules and Procedures for information about transferring credit from other universities.) A grade of B- or better is required in all courses in the PhD program. Students should be familiar with and follow any additional Graduate School enrollment rules and procedures.

METHODOLOGY SPECIALIZATION

CURRICULUM

Area/Course	Title	Credits
Core Math		**4 total**
See Core Courses		
Core Statistics		**37 total**
See Core Courses		
Advanced Statistics		**6 total**
STAT 7201	Theory of Probability	3
STAT 7540	Theory of Stochastic Processes	3
Biostatistics (pick two)		**5 or 6 total**
PUBHEPI 6410	Principles of Epidemiology	3
PUBHBIO 7215/STAT 6615	Design and Analysis of Clinical Trials	2
STAT 8625/6625	Stat Methods for Analyzing Genetic Data	3
Electives		**8 total**
6000-level or higher STAT or 7000-level or higher PUBHBIO	As approved by the student's dissertation committee	8
Total Credit Hours		**60 or 61 total**

SAMPLE METHODOLOGY SPECIALIZATION PROGRAM

	Autumn Semester	Spring Semester
First Year	MATH 4545 (Analysis) STAT 6801 (Stat Theory I) STAT 6910 (Appl Stat I)	STAT 6570 (Appl Bayes) STAT 6802 (Stat Theory II) STAT 6860 (Found Lin Mod) STAT 6950 (Appl Stat II)
Second Year	STAT 7301 (Adv Stat Theory I) STAT 7410 (Theory of Lin Mod) PUBHBIO 8899 (Doctoral Seminar) **STAT 7201 (Theory of Prob)**	STAT 7430 (GLM) PUBHBIO 8235/STAT 7605/STAT 8605 (Adv Survival) PUBHBIO 7245/STAT 7755 (Biostat Collab)
Third Year	STAT 7730 (Stat Computing) **[PUBHEPI 6410 (Epi)]** **[STAT 8625/6625 (Genetics)]** **[PUBHBIO 7215/STAT 6615 (Clincal Trials)]**	**STAT 7540 (Thry Stoch Proc)** Specialization or Elective Courses Specialization or Elective Courses
Fourth Year and Beyond	Specialization or Elective Courses	Specialization or Elective Courses

Boldface font indicates specialization-specific courses. [Brackets] indicate biostatistics courses from which students must choose at least two.

PUBLIC HEALTH SPECIALIZATION

CURRICULUM

Area/Course	Title	Credits
Core Math		**4 total**
See Core Courses		
Core Statistics		**37 total**
See Core Courses		
Biostatistics		**5 total**
PUBHBIO 7215/STAT 6615	Design and Analysis of Clinical Trials	2
STAT 6540 or STAT 7540	Applied Stochastic Processes or Theory of Stochastic Processes	3
Epidemiology		**3 total**
PUBHEPI 6410	Principles of Epidemiology	3
Cognate		**6 total**
	Courses in a health-related field outside of statistics/biostatistics, as approved by the student's dissertation committee	6
Electives		**6 total**
6000-level or higher STAT or 7000-level or higher PUBHBIO	As approved by the student's dissertation committee	6
Total Credit Hours		**61 total**

SAMPLE PUBLIC HEALTH SPECIALIZATION PROGRAM

	Autumn Semester	Spring Semester
First Year	MATH 4545 (Analysis) STAT 6801 (Stat Theory I) STAT 6910 (Appl Stat I)	STAT 6570 (Appl Bayes) STAT 6802 (Stat Theory II) STAT 6860 (Found Lin Mod) STAT 6950 (Appl Stat II)
Second Year	STAT 7301 (Adv Stat Theory I) STAT 7410 (Theory of Lin Mod) PUBHBIO 8899 (Doctoral Seminar) **PUBHEPI 6410 (Epi)**	STAT 7430 (GLM) PUBHBIO 8235/STAT 8605 (Adv Survival) PUBHBIO 7245/STAT 7755 (Biostat Collab)
Third Year	STAT 7730 (Stat Computing) **PUBHBIO 7215/STAT 6615 (Clincal Trials)** Specialization or Elective Courses	**STAT 6540 or 7540 (Appl or Theor Stoch Proc)** **Cognate Course**
Fourth Year and Beyond	**Cognate Course** Specialization or Elective Courses	Specialization or Elective Courses

Boldface font indicates specialization-specific courses.

EXAMINATIONS, DISSERTATION AND GRADUATION

In addition to required coursework, students in the Biostatistics PhD program must pass examinations as described below. None of these examinations may be taken more than twice.

QUALIFIER I

This written examination covers material from the first year of coursework. This exam is the same for both the Statistics and Biostatistics PhD programs. After passing Qualifier I, the student will elect to follow either the Methodology or the Public Health specialization by completing the Specialization Declaration Form.

QUALIFIER II

This written examination tests knowledge acquired in the Core Courses and the ability to integrate and apply such knowledge. It may not be attempted until Qualifier I has been passed. The exam will consist of one in-class session and two computer lab sessions, administered by the Interdisciplinary Biostatistics Program.

After passing the Qualifier II, the student chooses a dissertation adviser, who must be a Category P Biostatistics graduate faculty member. The student also forms a PhD candidacy Examination Committee, consisting of at least four graduate faculty members. At least three of these must be P-status faculty of the Interdisciplinary PhD Program in Biostatistics. This committee is responsible for approving a Plan of Study Form to be filed with the Graduate Studies Committee within two semesters after passing Qualifier II.

CANDIDACY EXAMINATION

In accordance with Graduate School policy, when the candidate's candidacy examination committee deems a student sufficiently prepared, the candidate's candidacy examination committee will administer and grade a candidacy examination. The program allows flexibility in the format of the candidacy exam within the rules established by the Graduate School.

After passing the Candidacy Exam, the student forms a dissertation committee, consisting of at least three graduate faculty members. At least two of these must be P-status faculty of the Interdisciplinary PhD Program in Biostatistics.

FINAL ORAL EXAMINATION/DISSERTATION DOCUMENT

Once the student has made sufficient progress (as judged by the dissertation committee) on his/her dissertation to warrant holding the Final Oral Examination, the student electronically submits an Application for Final Examination to the Graduate School at least two weeks prior to the actual Final Oral Examination (Dissertation Defense). At this time, the student circulates the dissertation draft to his/her dissertation committee and submits the draft to the Graduate School to review the format (see the Graduate School website for format guidelines and submission instructions). The final oral examination committee, consisting of the dissertation committee and a graduate faculty representative, then conducts a two-hour oral examination in which the candidate discusses/defends his/her dissertation. After passing the oral exam, students revise the dissertation document to the dissertation committee's satisfaction, verify that all dissertation committee members have approved the electronic Report on

Final Document, and submit the final dissertation document to the Graduate School (see the Graduate School website for submission instructions). Students must pass the Final Oral Examination and submit a final, approved copy of the dissertation to the Graduate School within five years of being admitted to candidacy.

GRADUATION

The student must electronically submit the Application to Graduate to the Graduate School by the published deadline. Students should consult the Graduate School website for the appropriate deadline and procedure, and submit their applications in ample time for their dissertation committee to review their completed coursework prior to the application approval deadline.

POLICIES, RULES AND PROCEDURES

In addition to the Ohio State University Graduate School rules and policies, as presented in the Graduate School Handbook, the Interdisciplinary PhD Program in Biostatistics Graduate Studies Committee has adopted the following policies, rules and procedures.

ADMISSION DEFERRAL

Admitted students may request a one-year deferral of admission from the Graduate Studies Committee. Approval of such a deferral relates solely to the admission, and does not guarantee funding upon matriculation.

DISSERTATION ADVISING

Once adequate progress has been made towards the degree, usually after passing the Qualifier II Examination, students should select an advisor who is willing to direct their dissertation research. The advisor must have Category P graduate status in Biostatistics. The selection must be communicated in writing to the Graduate Studies Chair, who will advise the Graduate School of the advisor assignment.

Although infrequent, situations do arise that make it necessary to change advisors after a dissertation advisor has been selected. Open and regular communication between student and advisor will avoid such situations in most cases. In the event that a student deems that it is not possible to continue with a particular advisor, he/she should directly contact the Graduate Studies Chair or Vice-Chair concerning the situation. The Chair or Vice-Chair will attempt to resolve any problems that have occurred. In the event that resolution is not possible, the Chair or Vice-Chair will work with the student to identify a new advisor if the student has not done so. Students must notify the Graduate Studies Committee in writing that they wish to change advisors and that this change is agreeable with both the previous and the new advisor. If consent of one or both advisors cannot be obtained, the student must petition the Graduate Studies Committee in writing for a change of advisor. Action of the Graduate Studies Committee will be based on consultation with the student and the advisors. If the problem cannot be resolved, the Graduate School has established grievance procedures (see the Graduate School Handbook). Students must recognize that the length of time required to complete the requirements for the degree and financial support might be affected by a change in advisor.

FACULTY MEMBERSHIP AND REVIEW

FACULTY MEMBERSHIP. As stated in the Graduate School Handbook, the Graduate Studies Committee appoints faculty to M status and recommends faculty for P status to the Graduate School.

> *NEW STATISTICS DEPARTMENT AND BIOSTATISTICS DIVISION FACULTY*. All new regular faculty with TIU in the Statistics Department or the Biostatistics Division will be invited to join the Interdisciplinary PhD Program in Biostatistics Faculty. M or P level will be appointed or recommended based on the new faculty preference and status.
>
> *FACULTY WITH OTHER TIUS*. Faculty from other TIUs may request M or P level membership from the Graduate Studies Committee. Such requests should be made in writing and include a CV. The Graduate Studies Chair will circulate such requests to the full faculty. The Graduate Studies Chair will conduct a vote of the full faculty to determine support for appointment to the faculty

at level M or level P. The Graduate Studies Committee shall take the results of this vote into consideration in their decision to deny faculty membership, appoint the candidate to level M status, or recommend appointment to level P status.

REQUESTING P-STATUS FOR THOSE FACULTY WITH M-STATUS. Current M-status Biostatistics PhD Program Faculty may request P-status. The faculty member should request this change in status in writing, along with a justification of why the status change is desired, and a current CV. All materials should be sent to the Graduate Studies Chair. The faculty will meet to discuss the request, and provide an advisory vote.

CURRENT FACULTY REVIEW. Every year, the Graduate Studies Committee shall review all current faculty, primarily assessing active participation in the PhD Program. Examples of participation include serving on various committees, attending faculty meetings, and serving on PhD student candidacy and final exam committees. Typically, serving as primary student advisor is not alone sufficient for active participation in the program. The Graduate Studies Committee shall contact current faculty members who seem to have disengaged from the program. As appropriate (and in consultation with the appropriate Unit chair for those whose primary appointment is in the Statistics Department or Biostatistics Division) the Graduate Studies Committee shall begin the procedure to request that faculty category level be removed in accordance with the procedure in the Graduate School Handbook.

PROGRAM GUIDE CHANGES

Students may choose to follow the current program guide or the program guide in effect when they matriculated, but not a combination of the two. Students may request exceptions to the curriculum, policies and procedures by submitting such requests in writing to the Graduate Studies Committee.

PROGRESS TOWARD DEGREE

Full-time PhD students are expected to take the Qualifier I Exam in the summer term of their first year, and the Qualifier II Exam within 15 months of passing the Qualifier I Exam. Students are expected to re-take failed exams at the next exam offering. Full-time PhD students are expected to complete their candidacy exam within two years of passing the Qualifier II Exam. Students are expected to re-take failed candidacy exams within two semesters of the failed exam. PhD students are expected to complete their degree within 2 years of admission to candidacy, and must complete their degree within 5 years of admission to candidacy. Alterations to this schedule may be requested in writing to the Graduate Studies Chair and will be considered by the Graduate Studies Committee on a case by case basis. Note that extensions to the 5-year post-candidacy timeframe must be requested from the Graduate School (as per Section 12 of the Graduate Handbook), and so for these cases the Graduate Studies Chair will write a letter that communicates the committee's recommendation. Part-time PhD students should establish progress toward degree expectations with the Graduate Studies Chair upon program enrollment. Students who are not making adequate progress toward degree may be placed on probation by the Graduate School.

REINSTATEMENT

Students who have been inactive for one year (three consecutive semesters/terms) or more must petition the Graduate Studies Committee to renew their status in the PhD program. The committee urges students to discuss their situation with the Graduate Studies Chair prior to, or as soon as possible after initiating, any period of inactivity.

TRANSFER CREDIT

Any student who has completed a Master's degree at other universities may request the transfer of up to 30 graduate credits by initiating a Transfer of Graduate Credit form via gradforms.osu.edu (follow the provided help instructions, paying particular attention to Step 5) and providing an official graduate transcript to the Graduate Studies Chair. The Graduate Studies Committee will review each request to determine if the University qualifies under Ohio State Graduate School policy, and if the coursework is sufficiently relevant to the Biostatistics PhD to warrant such a transfer. Typically, MS degrees in Statistics or Biostatistics earned in the United States are deemed sufficiently relevant.

VOTING

The Faculty of the Interdisciplinary PhD Program for Biostatistics ('the Bio-PhD Faculty') consists of all Ohio State faculty who hold M- or P-status in that program. A binding or advisory vote of the Bio-PhD Faculty is called by the Graduate Studies Chair at his/her discretion or within a reasonable time (usually two weeks) after receiving a written request from at least 1/3 of the Bio-PhD Faculty.

A quorum consists of at least 2/3 of the Faculty with majority appointment in the Statistics Department or Biostatistics Division. For in-person votes, a quorum must be present for the vote to be valid; each present member of the Bio-PhD Faculty (regardless of P- or M-status) may cast a single vote. Electronic votes may be held when a scheduled in-person meeting does not achieve a quorum. For electronic votes, the Graduate Studies Chair announces the vote by email to the Bio-PhD Faculty and specifies an open voting period of at least two business days' length (though usually seven days' length) that ends no more than fourteen days after the vote is announced; each member of the Bio-PhD Faculty (regardless of P- or M-status) may cast a single ballot within the voting period. An electronic vote is valid if the number of valid cast ballots (including abstentions), represent a quorum as defined above. A motion is passed if at least 2/3 of the cast valid votes (not including abstentions) are in favor of it.