

## **Agreement between the Department of Bioinformatics and Biostatistics at the University of Louisville and the Division of Mathematics and Science at Kentucky State University.**

**Objective:** Create a program for students majoring in Mathematics or Statistics at Kentucky State University (KSU) to earn an MS degree in Biostatistics from the University of Louisville (UofL) in a manner similar to a five year BS-MS program. The proposed five-year BS/MS degree collaborative in Mathematics and Biostatistics will require the completion of a minimum of 33 semester credit hours at the University of Louisville, 30 in Biostatistics (12 of which will complete degree requirements at KSU) and 3 in public health. Under this program, a KSU student ("Applicant") spends 7 semesters (3.5 years) at KSU and 3 semesters (1.5 years) at UofL, earning a BA/BS in Mathematics or Statistics from KSU and an MS in Biostatistics from UofL.

### **Coursework at KSU**

The Applicant completes all except 12 hours of required courses for the major at KSU with a minimum cumulative GPA of 3.00. This coursework must include a statistics course (sophomore or junior level) and a course in probability and mathematical statistics (junior or senior level). See relevant coursework in KSU curriculum (Appendix I).

### **Enrollment at UofL**

The Applicant enrolls in the Spring semester at UofL as a visiting student during the last semester of his/her undergraduate study taking 9 graduate hours from the list PHST 620, PHST 640, PHST 681, PHST 684, PHEP 618 and 3 undergraduate hours (either MATH 501 or MATH 502). Tuition and fees for all these courses will be charged at an undergraduate level. The Applicant will then transfer these 12 credit hours to KSU and earn the BS/BA degree at the end of the Spring semester.

During the Spring semester, upon review of the complete application which, among other materials, includes a satisfactory GRE score, the Applicant may be admitted to the MS degree in Biostatistics at the University of Louisville, conditional upon completion of the bachelor's degree from KSU. The 9 graduate credit hours earned from the above list will be counted towards the MS degree in Biostatistics.

The Applicant will take the balance of the required coursework, 21 hours in Biostatistics selected from the offerings in the Department of Bioinformatics and Biostatistics, plus the 3 hour Public Health requirement (e.g. PHMS 523) and earn the MS degree in Biostatistics from the University of Louisville. All conditions for the MS degree will apply. See U of L MS degree in Biostatistics sample curriculum (Appendix II).

## **Financial Aid/ Tuition and Fees**

The Applicant, with assistance from an academic advisor at KSU, works with the financial aid office of KSU to get an **Individual Consortium Agreement** (Appendix III) processed to cover financial aid aspects for the 8<sup>th</sup> semester. The Applicant is responsible for all tuition and fees at UofL.

## **Academic Advising**

Mathematics faculty at KSU will identify Applicants wishing to participate in the program by the first day of the seventh semester of their KSU studies. Applicants will complete the General GRE by the first week in November, such that scores would be available early December simplifying the admissions process to the MS program at U of L. During the course of that fall semester, academic advisors at KSU will have monthly conversations with program leadership at U of L in order to ensure the smoothest transition possible. The academic advisor at KSU, a Bioinformatics and Biostatistics faculty member with UofL ("UofL advisor") and the graduate director of the Department of Bioinformatics and Biostatistics at UofL will jointly advise the applicant during the eighth semester (first spring semester at UofL) of study. The applicant is expected to have regular meetings, at least fortnightly, with the UofL advisor to discuss his/her progress to ensure timely intervention to alleviate difficulties due to issues that may hinder satisfactory progress.

## **Other**

**SACSCOC Disclaimer Statement:** The University of Louisville (UofL) is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award associate, bachelor's, master's, specialists, doctoral, and professional degrees. If an institution is not accredited by SACS Commission on Colleges, the accreditation of UofL does not extend to or include the partner college/school or its students. Further, although UofL agrees to accept certain course work from partner colleges or schools to be applied toward an award from UofL, that course work may not be accepted by other colleges or universities in transfer, even if it appears on a transcript from UofL. The decision to accept course work in transfer from any institution is made by the institution considering the acceptance of credits or course work.

## **Program Evaluation**

The academic program faculty at UofL and the partner college/school agree to develop criteria to evaluate success in reaching the program objectives based on factors deemed important to the assessment process. The program faculty will confer annually to review assessment results and determine how it will be used for program improvement.

## **Management and Liaison**

- A. The Dean of the School of Public Health and Information Sciences as the representative of U of L, shall oversee the understanding established in this Agreement and serve as the liaison for all matters reflected in this Agreement. The parties shall notify each other of any changes in the liaison appointment, contact information, or substitution for a set period of availability.
- B. The Provost, as the representative of KSU, shall oversee the understanding established in this Agreement and serve as the liaison for all matters reflected in this Agreement.

## **Notice of Significant Change**

Each party shall promptly notify the other party in writing of any significant change of accreditation, physical space, or other change that might impact the dual degree program.

## **Use of Logos**

Neither party shall use the logo of the other party without the other's written permission. Neither shall use the logo of SACSSOC in any materials or websites related to the Dual degree program.

## **Liability**

- A. Neither party assumes any liability arising from any acts or omissions of the other party.
- B. This Agreement does not impart liability of one party to the other party.

## **Term**

- A. This Agreement is in force from the date stated in the preamble of this Agreement until July 1, 2022, and may be renewed for successive two-year terms upon satisfactory review of the program and this Agreement in March of every other year beginning in March of 2022.
- B. The parties shall review this Agreement in March of 2022 and revise it as necessary for continuation unless terminated (see below).

## **Review and Assessment**

The parties shall review the joint degree program represented by this Agreement annually in March beginning in March of 2018 and its assessment shall include consideration of the following:

1. The number of students participating in the joint degree program.
2. The number of students completing the joint degree program.

3. Any changes of accreditation, physical facilities, offerings, or any other matter that impacts the joint degree program.
4. The degree to which the joint degree program meshes with the individual missions of the parties.
5. The academic progress of the students participating in the joint degree program.

**Amendment**

The parties may amend this Agreement only upon the written agreement of the parties.

**Termination**

Either party may terminate this Agreement for any reason upon thirty days' prior written notice to the other party. In the event of termination, any students currently admitted to the program at U of L and KSU during an academic term then in progress shall continue as originally agreed, and the privileges accorded to the institutions' students in such courses shall continue to the end of that academic term.

**Applicable Law**

This Agreement is governed by and construed in accordance with the laws of the Commonwealth of Kentucky and the rules of the Kentucky Council on Postsecondary Education.

**Signatures for the University of Louisville:**

  
K.B. Kulasekera

Chair, Department of Bioinformatics and Biostatistics

Date: 3/20/2017

Craig Blakely 

Dean, School of Public Health and Information Sciences

Date: 3/20/17

Beth A. Boehm 

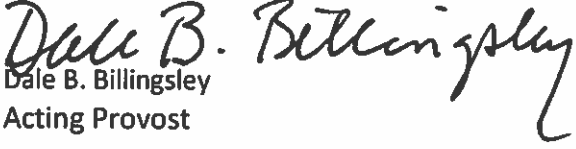
Dean, School of Interdisciplinary and Graduate Studies

Date: 3/20/17

  
Gregory C. Postel

Interim Executive Vice President for Health Affairs

13 March 2017  
Date:

  
Dale B. Billingsley  
Acting Provost

7 March 2017  
Date:

**Signatures for Kentucky State University:**



Date: 3-20-2017

Dr. Fariba Bigdeli-Jahed, Chairperson of Mathematics and Sciences



Date: 3/20/17

Dr. Candice Jackson, Interim Vice President for Academic Affairs and Provost



Date: \_\_\_\_\_

Dr. Aaron Thompson, Interim President

## **Appendix I: Course schedule at Kentucky State University**

In 3.5 years at KSU, the Applicant completes 108 credit hours which includes the following 12 hours to satisfy prerequisites for graduate and undergraduate courses at UofL.

- PSY 300 Statistics for BSS (3)
- MAT 321 Probability and Statistics I (3)
- MAT 322 Probability and Statistics II (3)
- MAT 403 Real Analysis I (3)

## **Appendix II: MS program in Biostatistics at the University of Louisville**

## Master of Science (M.S.) in Biostatistics

Program Director: K.B. Kulasekera, Ph.D.  
Administrative Assistant: Lynne C. Dosker  
Department: Bioinformatics and Biostatistics  
Website: [M.S. in Biostatistics](#)

### Introduction

Biostatistics involves the development and application of statistical techniques to scientific research in health-related fields including medicine, nursing, and public health. Students in the M.S. program receive state-of-the-art training in the latest statistical methodologies with focus on the design of research studies, modern statistical data analysis in health sciences research, and research in Biostatistical methodology. In addition, students are provided with tools with which to develop evidence-based clinical and healthcare policies and guidelines.

### Competencies

To graduate, a student must be able to demonstrate mastery of the following competencies:

Competency*
Evaluate the biostatistics content of scientific and biomedical journal articles. [C6]
Analyze moderately complex research data using statistical methods involving common linear statistical models. [C4]
Manage data using spreadsheet and database software. [C3]
Demonstrate use of standard statistical and graphics computer packages, including SAS, R, Microsoft Excel, and SPSS. [C3]
Evaluate new statistical methods presented in the literature. [C6]

Investigate the history, theoretic underpinnings, current applications, and active areas of inquiry of biostatistics. [C4]

Apply principles and theorems of advanced biostatistical operations. [C3]

\* Bracketed codes represent cognitive domain levels from Bloom's Taxonomy

Demonstration of the competencies is accomplished by successful completion of all M.S. curriculum activities.

### **Admission**

The M.S. program is available to students who have completed an undergraduate degree in biostatistics, statistics, mathematics, or a related discipline and possess competency in college-level calculus and statistics, as evidenced by transcripts from postsecondary institutions attended. The following are required for admission:

- [Graduate application](#) submitted to the School of Interdisciplinary and Graduate Studies (SIGS).
- Non-refundable application fee.
- At least two letters of recommendation written within past twelve months, submitted as part of the [graduate application](#).
- Submission of GRE scores to SIGS. Applicants are required to score in the 60<sup>th</sup> percentile on the Quantitative test to be admitted.
- All postsecondary transcripts. Transcripts from institutions outside of the U.S.A. require a foreign credential evaluation.
- A statement of purpose submitted to the department office, which must include desired degree program.
- If an applicant's primary language is not English, one of the following:
  - Test of English as a Foreign Language (TOEFL) exam with a minimum score of 250 (after conversion for test type)
  - Passing the exit examination for the advanced level of the Intensive English as a Second Language Program at the University of Louisville
  - Degree from an accredited university in the U.S.A.



## **Curriculum**

### **Faculty Advisor**

Upon admission to the M.S. program, the program director serves as the student's faculty advisor until a mentor for the student's project or thesis is identified. At this milestone, the mentor becomes the student's faculty advisor.

### **Program of Study**

Upon admission to the M.S. program, the program director, working with the student as faculty advisor, develops a program of study for the student, which requires agreement by the student and the academic dean. Changes to a student's program of study, including coursework, milestones, and their anticipated timings, are made by the student's faculty advisor, working with the student, and formally signed by the student, the faculty advisor, the program director, and, for selected changes, the academic dean. This flexibility allows adapting programs of study to differing student then current capabilities and interests.

### **Degree Requirements**

The M.S. program in biostatistics is 30 credit hours over three semesters for full-time students. Additional credit hours may be needed for remediation of missing or lacking student capabilities encountered following matriculation or for capabilities outside the standard coursework required for an identified project or thesis.

A student may apply to continue beyond the required coursework to pursue the preparation and defense of a six credit-hour master's thesis in an additional semester. The optional thesis requires permission of the program director and is available for those students intending to pursue a Ph.D. degree or wanting to pursue a research project that interests them. However, a

master's thesis is not a requirement for the degree. A student who pursues a thesis and subsequently does not successfully complete the thesis remains eligible for award of degree.

Award of degree from an accredited school of public health requires successful completion of the equivalent of three credit hours in:

- Instruction that introduces the students to the breadth of public health
- Instruction in epidemiology

Either or both of these requirements may be determined to have been met prior to matriculation by approval of the academic dean of a variance request submitted by the program director. The request for a variance in one or both requirements must be justified by (1) previous degrees received, such as an MPH or Dr.P.H., (2) previous coursework successfully completed, or (3) extensive experience in the public health workforce. In the absence of a variance for a requirement, the student's program of study must include successfully completed coursework that satisfies the requirement.

For the M.S. in Biostatistics, the epidemiology requirement is met by the epidemiology elective included in the required coursework. However, the public health foundation requirement is not included in the required coursework and, in the absence of a variance, is met by including PHMS-523 Public Health in the U.S. on a co-curricular basis prior to graduation.

Coursework

<u>Semester</u>	<u>Course No.</u>	<u>Course Title</u>	<u>Credits</u>
Fall 1	PHST 661	Probability	3
	PHST 680	Biostatistical Methods I	3
	PHST 624	Clinical Trials I	2
	<u>PHMS 523</u>	<u>Public Health in the U.S.<sup>1</sup></u>	<u>(3)</u>
	Semester Total	8 (11)	
Spring 1	PHST 662	Mathematical Statistics	3
	PHST 681	Biostatistical Methods II	3
	PHST 684	Categorical Data Analysis	3
	<u>PHST 625</u>	<u>Clinical Trials II</u>	<u>2</u>
	Semester Total	11	
Fall 2	PHST 683	Survival Analysis	3
	PHST xxx	Biostatistics Elective <sup>2</sup>	3
	PHEP xxx	Epidemiology Elective <sup>3</sup>	3
	<u>PHST 675</u>	<u>Independent Study in Biostatistics</u>	<u>2</u>
	Semester Total	11	
	<b>Degree Total</b>	<b>30</b>	
Spring 2	<u>PHST 666</u>	<u>Master's Thesis Research (optional)</u>	<u>6</u>
	Total	6	

**Degree Total with Optional Thesis 36**

1. PHMS 523 fulfills the accreditation requirement that all graduates from the School of Public Health and Information Science receive foundational instruction in public health
2. The biostatistics elective is chosen with the approval of a faculty advisor, typically from courses offered by the Department of Bioinformatics and Biostatistics (PHST courses)
3. The epidemiology elective is chosen with the approval of a faculty advisor from courses offered by the Department of Epidemiology and Population Health (PHEP courses)

Students in the 3-semester, non-thesis M.S. fulfill their degree requirements after the Fall semester of the second year of study.

### Optional Thesis

A student may apply to pursue preparation and defense of a master's thesis following completion of the required coursework. Pursuing an optional thesis requires permission of the program director. The thesis topic is approved by the major professor and thesis committee, chaired by the major professor. The student identifies a desired mentor to become his or her major professor, who is recommended by the program director and appointed by the academic dean. Following appointment, the major professor becomes the student's faculty advisor. Procedures for the thesis are given below.

### *Thesis Committee*

Working with the major professor, the student identifies at least two or more desired committee members. Including the major professor, at least two members of the committee are faculty in the Department of Bioinformatics and Biostatistics and at least one member is from outside the department. The committee members are recommended by the program director and appointed by the academic dean.

### *Thesis Preparation*

The thesis is prepared in format and binding according to the guidelines established by the School of Interdisciplinary and Graduate Studies.

### *Thesis Approval*

The thesis is submitted in completed form to the chair of the thesis committee at least fifteen working days before the last day of classes for the term in which the candidate expects to graduate. The candidate is not eligible for the final oral examination until the thesis has been accepted by the committee.

The thesis committee schedules an oral examination of the candidate, to which all faculty and students of the department are invited. The oral examination is scheduled at the convenience of the members of the thesis committee. Approval of the thesis is by majority vote of the committee.

### *Thesis Distribution*

One unbound copy of the thesis, signed by the thesis committee, must be deposited with SIGS before graduation. A copy of the final, signed thesis must also be deposited with the department office.

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**Kentucky State University**  
**Office of Financial Aid**  
**400 East Main Street**  
**Suite 349 ASB**  
**Frankfort, KY 40601**

**Office: 502-597-5960 Fax: 502-597-5950**

**OFFICE OF**  
**Financial Aid**

Date:

Office of Financial Aid

RE: xxx-xx-\_\_\_\_\_

Please be advised that the above named student plans to be a visiting student via a consortium agreement for the \_\_\_\_\_ Term, \_\_\_\_\_. I have enclosed a consortium agreement packet so that our office can process the student's financial aid. Please return the signed packet by mail or via fax to our office at your earliest convenience.

If you have any questions, please do not hesitate to contact me at (502) 597- 5960.

Thank you for your prompt attention,

\_\_\_\_\_  
Financial Aid  
Kentucky State University