

Nikou, Roshan

From: Graduate.Council.Web.Site@www.uky.edu
Sent: Tuesday, December 02, 2008 9:40 PM
To: Nikou, Roshan
Cc: Price, Cleo
Subject: Investigator Report

AnyForm User: www.uky.edu
AnyForm Document: <http://www.research.uky.edu/gc/GCInvestigatorReport.html>
AnyForm Server: www.uky.edu (/www/htdocs/AnyFormTurbo/AnyForm.php)
Client Address: 75.90.150.105

College/Department/Unit: = BST 676
Category: = New
Date_for_Council_Review: = 12/4/08
Recommendation_is: = Approve
Investigator: = Bill Smith
E-mail_Address = bsmith@enr.uky.edu
1__Modifications: = None
2__Considerations: = N/A
3__Contacts: =
4__Additional_Information: = This course is part of a biostatistics track created for the proposed PhD in Epidemiology/Biostatistics, College of Public Health

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APPLICATION FOR NEW COURSE

1. Submitted by the College of Public Health Date: March 26, 2008

Department/Division proposing course: Biostatistics

2. Proposed designation and Bulletin description of this course:

a. Prefix and Number BST 676

b. Title* Biometrics II

*If title is longer than 24 characters, write a sensible title (24 characters or less) for use on transcripts:

c. Courses must be described by at least one of the categories below. Include the number of actual contact hours per week for each category, as applicable.

() CLINICAL () COLLOQUIUM () DISCUSSION () LABORATORY (4) LECTURE
() INDEPEND. STUDY () PRACTICUM () RECITATION () RESEARCH () RESIDENCY
() SEMINAR () STUDIO () OTHER – Please explain: _____

d. Please choose a grading system: Letter (A, B, C, etc.) Pass/Fail

e. Number of credit hours: 4

f. Is this course repeatable? YES NO If YES, maximum number of credit hours: _____

g. Course description:

This course, the second of a two-semester sequence in biometrics, introduces techniques for constructing and evaluating point estimators, hypothesis testing procedures, and interval estimators.

h. Prerequisite(s), if any:

required: CPH 675 (Biometrics I)

i. Will this course be offered through Distance Learning? YES NO

If YES, please circle one of the methods below that reflects how the majority of the course content will be delivered:

Internet/Web-based Interactive video Extended campus Kentucky Educational Television (KET/teleweb) Other

Please describe "Other": _____

3. Teaching method: N/A or Community-Based Experience Service Learning Component Both

4. To be cross-listed as: _____
Prefix and Number Signature of chair of cross-listing department

5. Requested effective date (term/year): Spring / 2010

BST 676: Biometrics II

Course Description: This course, the second of a two-semester sequence in biometrics, develops numerous techniques for constructing and rigorously evaluating point estimators, hypothesis testing procedures, and interval estimators.

Course Structure: 4 credit hours (4 hours of lecture, 0 hours of laboratory)

Prerequisite: BST 675 (Biometrics I)

Initial Offering: Spring 2010

Instructors: Any faculty member in the Department of Biostatistics

Philosophical Statement: Students pursuing a doctoral degree in epidemiology and/or biostatistics must be prepared to deal with issues in the collection, analysis, interpretation, and presentation of numerical data. This course is designed to provide students with an introduction to the fundamental theories that form the basis of the inferential statistical procedures that they will utilize in the study and practice of biostatistics. The course will emphasize inferential principles as they relate to biostatistical methods and to applications in public health and allied fields; however, the course will be conducted with enough mathematical rigor to avoid repeatedly asking students to take on faith results that should be understood in some depth. A special feature of the course will be the motivating "case studies" incorporated into the various units. Each case study will: demonstrate the application of inferential theory in public health, pharmaceutical science, or medicine; or, illuminate the rationale for a commonly employed biostatistical method.

Objectives: Students completing BST 676 will be able to:

1. Implement various point estimation, hypothesis testing, and interval estimation techniques when numerical data are supplied.
2. Understand the properties of point and interval estimators as well as approaches for comparing and evaluating them.
3. Understand the properties of hypothesis testing procedures as well as approaches for comparing and evaluating them.
4. Articulate connections between inferential principles and biostatistical methods.

Textbook: Larsen and Marx (2005). *Introduction to Mathematical Statistics and Its Applications*. Prentice Hall.

Detailed Outline:

I. A Few More Useful Probabilistic Tools

- a. Motivating case study #1: Modeling a distribution of blood pressure and cholesterol scores
- b. Motivating case study #2: Finding an appropriate nonlinear transformation in regression
- c. Joint and marginal probability mass/density functions
- d. Univariate and bivariate transformations
- e. Convergence in probability and Slutsky's Theorem
- f. Resolution of motivating case studies

II. More Techniques for Point Estimation

- a. Motivating case study: Should cancer rate estimates be zero when there are no cases?
- b. Bayesian posterior mode
- c. Bayesian posterior mean

- d. Resolution of motivating case study
- III. More Techniques for Hypothesis Testing
 - a. Motivating case study: Why three tests for the global null in PROC LOGISTIC?
 - b. Wald tests
 - c. Score tests
 - d. Rank-based tests
 - e. Resolution of motivating case study
- IV. Techniques for Interval Estimation
 - a. Motivating case study #1: Can an interval for a cancer rate contain a negative number?
 - b. Motivating case study #2: Constructing intervals from non-normal point estimators
 - c. Inverting tests
 - d. Pivoting
 - e. Resolution of motivating case studies
- V. Evaluating Point Estimators
 - a. Motivating case study #1: What if the sample variance entailed division by n ?
 - b. Motivating case study #2: Sample median and sample mean as competing estimators
 - c. Unbiased estimators
 - d. Mean square error
 - e. Consistency
 - f. Resolution of motivating case studies
- VI. Evaluating Hypothesis Tests
 - a. Motivating case study #1: Why require such huge sample sizes in clinical trials?
 - b. Motivating case study #2: Can a clinical trial have a positive result but not be definitive?
 - c. Power calculations
 - d. Unbiased, uniformly most powerful, and consistent tests
 - e. Comparing nominal and actual significance levels
 - f. Resolution of motivating case studies
- VII. Evaluating Interval Estimators
 - a. Motivating case study #1: When should one-sided intervals be used?
 - b. Motivating case study #2: How "approximate" is an approximate 95% interval?
 - c. Controlling the length of an interval
 - d. Unbiased and uniformly most accurate intervals
 - e. Comparing nominal and actual confidence levels
 - f. Resolution of motivating case studies

Note: Motivating case studies may vary from year to year.

Assessment: There will be regular homework assignments (40%), a midterm examination (30%), and a final examination (30%).

Grading Scale:

Grade	%
A	90-100
B	80-89
C	70-79
E	60-69

APPLICATION FOR NEW COURSE

1. Submitted by the College of Public Health Date: March 10, 2008

Department/Division proposing course: Biostatistics

2. Proposed designation and Bulletin description of this course:

a. Prefix and Number BST 701

b. Title Bayesian Modeling in Biostatistics

*If title is longer than 24 characters, write a sensible title (24 characters or less) for use on transcripts:

Bayesian Biostatistics

c. Courses must be described by at least one of the categories below. Include the number of actual contact hours per week for each category, as applicable.

- CLINICAL COLLOQUIUM DISCUSSION LABORATORY LECTURE
 INDEPEND. STUDY PRACTICUM RECITATION RESEARCH RESIDENCY
 SEMINAR STUDIO OTHER - Please explain: _____

d. Please choose a grading system: Letter (A, B, C, etc.) Pass/Fail

e. Number of credit hours: 3

f. Is this course repeatable? YES NO If YES, maximum number of credit hours: _____

g. Course description:

This course provides an introduction to Bayesian ideas and data analysis applied to the biosciences. The course illustrates current approaches to Bayesian modeling and computation in biostatistics.

h. Prerequisite(s), if any:

required: BST 760 (Advanced Regression) and BST 676 (Biometrics II) or equivalent

i. Will this course be offered through Distance Learning? YES NO

If YES, please circle one of the methods below that reflects how the majority of the course content will be delivered:

Internet/Web-based Interactive video Extended campus Kentucky Educational Television (KET/teleweb) Other

Please describe "Other": _____

3. Teaching method: N/A or Community-Based Experience Service Learning Component Both

4. To be cross-listed as: _____
Prefix and Number Signature of chair of cross-listing department

5. Requested effective date (term/year): Spring / 2011

LaRoche, Adrea S.

From: Brothers, Sheila C
Sent: Monday, September 22, 2008 8:42 AM
To: LaRoche, Adrea S.
Subject: FW: HCCC Transmittal - Program Change: MS in Athletic Training
Attachments: PhD Epi Bio Final Signatures.pdf; FW: important-EPI 714; FW: regarding the New Program Proposal for the PhD in Epidemiology and Biostatistics

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Curricular Items

Don't let the subject line fool you – this is for a PhD in Epidemiology. ☺

Sheila

*Office of the Senate Council
Phone: (859) 257-5872*

From: Lindsay, Jim D.
Sent: Friday, September 19, 2008 2:20 PM
To: Nikou, Roshan; Jackson, Brian A
Cc: Brothers, Sheila C; Anderson, Heidi Milia; Flanagan, Rebecca; Alexander, Linda A; Kryscio, Richard
Subject: RE: HCCC Transmittal - Program Change: MS In Athletic Training

September 19th, 2008

TRANSMITTAL

TO: Brian Jackson, Roshan Nikou
Graduate Council
FROM: Jim Lindsay
Health Care Colleges Council

At its August 19th 2008 meeting, the Health Care Colleges Council approved the following proposal and is now forwarding it to the Graduate Council to approve:

College of Public Health
New Program: Ph.D. in Epidemiology

Attached are the materials to implement the requested action.

cc: Linda Alexander
Becki Flanagan
Richard Kryscio
Shelia Brothers
Heidi Anderson

Jim Lindsay
Health Care Colleges Council Coordinator
Associate Provost for Faculty Affairs Office
University of Kentucky, 205 Frazee Hall
Lexington, KY 40506-0031 Ph. (859) 323.6638
www.uky.edu/Provost/AcademicCouncil/council.php

APPLICATION FOR NEW COURSE

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5. Requested effective date (term/year): Spring / 2010

APPLICATION FOR NEW COURSE

6. Course to be offered (please check all that apply): Fall Spring Summer
7. Will the course be offered every year? YES NO
If NO, please explain: _____
8. Why is this course needed?
This course will be a requirement in the proposed Ph.D. Epidemiology/Biostatistics programs. This course will also be
available as a selective for M.P.H. and Dr.P.H. students concentrating in Biostatistics who have the prerequisite noted above.
9. a. By whom will the course be taught? Adam Branscum or Richard Charnigo
- b. Are facilities for teaching the course now available? YES NO
If NO, what plans have been made for providing them?

10. What yearly enrollment may be reasonably anticipated?
5-10 students per year
11. a. Will this course serve students primarily within the department? Yes No
- b. Will it be of interest to a significant number of students outside the department? YES NO
If YES, please explain.
The course will be a requirement for the proposed Ph.D. in Epidemiology/Biostatistics. Some of the students in that
program may consider Epidemiology their home department.
12. Will the course serve as a University Studies Program course[†]? YES NO
If YES, under what Area? _____
[†]AS OF SPRING 2007, THERE IS A MORATORIUM ON APPROVAL OF NEW COURSES FOR USP.
13. Check the category most applicable to this course:
- traditional -- offered in corresponding departments at universities elsewhere
- relatively new -- now being widely established
- not yet to be found in many (or any) other universities
14. Is this course applicable to the requirements for at least one degree or certificate at UK? Yes No
15. Is this course part of a proposed new program? YES NO
If YES, please name: Ph.D. Epidemiology/Biostatistics
16. Will adding this course change the degree requirements for ANY program on campus? YES NO
If YES[†], list below the programs that will require this course:

[†]In order to change the program(s), a program change form(s) must also be submitted.

APPLICATION FOR NEW COURSE

17. The major teaching objectives of the proposed course, syllabus and/or reference list to be used are attached.
18. Check box if course is 400G or 500. If the course is 400G- or 500-level, *you must include a syllabus showing differentiation* for undergraduate and graduate students by (i) requiring additional assignments by the graduate students; and/or (ii) the establishment of different grading criteria in the course for graduate students. (See SR 3.1.4)
19. Within the department, who should be contacted for further information about the proposed new course?

Name: Richard Kryscio Phone: 257-4064 Email: kryscio@email.uky.edu

20. Signatures to report approvals:

4-1-08
DATE of Approval by Department Faculty

Richard Kryscio / Richard Kryscio
printed name Reported by Department Chair signature

6-26-08
DATE of Approval by College Faculty

Linda Alexander / Linda Alexander
printed name Reported by College Dean signature

* DATE of Approval by Undergraduate Council

printed name Reported by Undergraduate Council Chair signature

* DATE of Approval by Graduate Council

printed name Reported by Graduate Council Chair signature

8/19/08
* DATE of Approval by Health Care Colleges Council (HCCC)

Heidi Anderson / Heidi Anderson
printed name Reported by Health Care Colleges Council Chair signature

* DATE of Approval by Senate Council

Reported by Office of the Senate Council

* DATE of Approval by University Senate

Reported by Office of the Senate Council

*If applicable, as provided by the *University Senate Rules*. (<http://www.uky.edu/USC/New/RulesandRegulationsMain.htm>)

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