Nikou, Roshan

From: Graduate.Council.Web.Site@www.uky.edu
Sent: Tuesday, December 02, 2008 9:58 PM
To: Nikou, Roshan
Cc: Price, Cleo
Subject: Investigator Report

AnyForm User: www.uky.edu
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Client Address: 75.90.150.105

College/Department/Unit: = STA 632
Category:_ = New
Date_for_Council_Review: = 12/4/08
Recommendation_is:_ = Approve
Investigator: = Bill Smith
E-mail_Address = bsmith@engr.uky.edu
1__Modifications: = None
2__Considerations: = N/A
3__Contacts: = Kurt Viele, Statistics.
4__Additional_Information: = This course is part of the change requested for the MS in Statistics.

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APPLICATION FOR NEW COURSE

1. Submitted by the College of Arts and Sciences Date: 9/3/2008

   Department/Division proposing course: Statistics

2. Proposed designation and Bulletin description of this course:

   a. Prefix and Number STA 632

   b. Title* Longitudinal Data Analysis

   *If title is longer than 24 characters, offer a sensible title of 24 characters or less: Longitudinal Data Anal

   c. Courses must be described by at least one of the categories below. Include number of actual contact hours per week..

   (___) CLINICAL (___) COLLOQUIUM (___) DISCUSSION (___) LABORATORY (3) 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:

   Statistical techniques for analyzing longitudinal studies and repeated measures experiments that occur frequently in public health, clinical trials, and outcomes research. This course will cover linear mixed models, generalized linear mixed models and an introduction to nonlinear models as they apply to the analysis of correlated data

   h. Prerequisite(s), if any:

   STA603 and STA606

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

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

   Internet/Web-based ☐ Interactive video ☐ Extended campus ☐

3. Supplementary teaching component: ☒ N/A or ☐ Community-Based Experience ☐ Service Learning ☐ Both

4. To be cross-listed as: _____ (Prefix and Number) _____ / (printed name / Cross-listing Department Chair signature)

5. Requested effective date (term/year): Fall / 2009

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?
   Course is part of changes to the M.S. in Statistics. Many datasets involve measurements taken repeatedly over time across many subjects. This course discusses such data in detail.

   Note STA606 is a renumbering of the current STA532

9. a. By whom will the course be taught? Any faculty member in statistics

   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?
    5-15

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.

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: _____

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:

    This course is part of the proposed revision of the M.S. program in statistics

APPLICATION FOR NEW COURSE

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

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: Kert Viele Phone: 257-4803 Email: viele@uky.edu

20. Signatures to report approvals:

2/6/2008	Arnold J. Stromberg	/	
DATE of Approval by Department Faculty	printed name	Reported by Department Chair	signature
11/7/08	Leonidas G. Bachas		
DATE of Approval by College Faculty	printed name	Reported by College Dean	signature
		/	
* DATE of Approval by Undergraduate Council	printed name	Reported by Undergraduate Council Chair	signature
	BRIAN A. JACKSON		
* DATE of Approval by Graduate Council	printed name	Reported by Graduate Council Chair	signature
		/	
* DATE of Approval by Health Care Colleges Council (HCCC)	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)*

STA632

Longitudinal Data Analysis

Learning Objectives

Instructor : To be taught by any member of the graduate faculty in Statistics

Overview : This course presents statistical techniques for analyzing longitudinal studies and repeated measures experiments that occur frequently in public health, clinical trials, and outcomes research. This course will cover linear mixed models, generalized linear mixed models and an introduction to nonlinear models as they apply to the analysis of correlated data.

Format : 3 hours lecture

Prerequisite : STA603 and STA606

Learning objectives :

1. Repeated Measures Introduction – univariate methods, multivariate approaches, repeated measures ANOVA with single and multiple groups case.
2. Linear Mixed Models with Gaussian Data – simple linear regression with random intercept and/or slope, compound symmetry and intraclass correlation, specification of the linear mixed model, and design of longitudinal studies including sample size and power.
3. Linear Mixed Models (LMM): General theory – matrix formulation, estimation, two stage estimation with weighted least squares, MLEs, REML, Wald test for fixed effects and inference for variance components.
4. Practice – Robust estimation of errors for fixed effect parameter estimates, approximate t statistics, covariance pattern models (structured versus unstructured, autocorrelated errors), residual analysis, prediction and shrinkage, Proc Mixed in SAS.
5. Generalized Linear Models – exponential families, marginal models, generalized estimating equations, and weighted least squares.
6. Linear Mixed Models for non-gaussian data – binary outcomes, ordinal outcomes, nominal outcomes, count responses, Proc Glimmix in SAS.
7. Cluster Randomized and Multi-center Trials
8. Nonlinear Mixed Models – specifications, growth curves, zero inflated and hurdle models, pharmacokinetics, proc nlmixed in SAS.

Grading : Students will be graded on a mix of homework, exams, and projects at the discretion of the instructor. A standard grading scale of (>=90 at least an A, >=80 at least a B, >=70 at least a C, >=0 at least an E) should be used.