Nikou, Roshan

AnyForm User: www.uky.edu
AnyForm Document: http://www.research.uky.edu/gs/GCInvestigatorReport.html
AnyForm Server: www.uky.edu (/www/htdocs/AnyFormTurbo/AnyForm.php)
Client Address: 128.163.161.136

College/Department/Unit: = STA 603
Category:_   = Change
Date_for_Council_Review: = 12/4/08
Recommendation_is:_   = Approve
Investigator: = T. Troland
E-mail_Address = troland@pa.uky.edu
1__Modifications: = None, routine investigation
2__Considerations: = I assume that the distribution of contact hours in the proposed course will be the same as in the current course.
3__Contacts: = Discussed course changes with Kert Viele, no problems were identified.
4__Additional_Information: =

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AnyForm/PHP3 0.1

AnyFormRandomSeqNo: 15708852

APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR and MINOR

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

    Department/Division offering course: Statistics

2. What type of change is being proposed?   ☒ Major   ☐ Minor*

*See the description at the end of this form regarding what constitutes a minor change. Minor changes are sent directly from the dean of the college to the Chair of the Senate Council.

If the Senate Council chair deems the change not to be minor, the form will be sent to the appropriate Council for normal processing and an email notification will be sent to the contact person.

PROPOSED CHANGES

Please complete all *Current* fields.
Fill out the *Proposed* field only for item(s) being changed. Enter N/A if not changing.
Circle the number for each item(s) being changed. For example: ⑥

3. Current prefix & number: STA 603   *Proposed prefix & number:* _____

4. Current Title   Introduction to Linear Models and Experimental Design

    Proposed Title[†]   _____

    [†]If title is longer than 24 characters, offer a sensible title of 24 characters or less: _____

5. Current number of credit hours: 4   *Proposed number of credit hours:* _____

6. Currently, is this course repeatable?   YES ☐   NO ☒   If YES, current maximum credit hours: _____

    Proposed to be repeatable?   YES ☐   NO ☐   *If YES, proposed maximum credit hours:* _____

7. Current grading system: ☒ Letter (A, B, C, etc.)   ☐ Pass/Fail

    Proposed grading system: ☐ *Letter (A, B, C, etc.)*   ☐ *Pass/Fail*

8. Courses must be described by <u>at least one</u> of the categories below. Include number of <u>actual contact hours per week</u> for each category.

    Current:

    (__) CLINICAL   (__) COLLOQUIUM   (__) DISCUSSION   (2) LABORATORY   (3) LECTURE

    (__) INDEPEND. STUDY   (__) PRACTICUM   (__) RECITATION   (__) RESEARCH   (__) RESIDENCY

    (__) SEMINAR   (__) STUDIO   (__) OTHER – Please explain: _____

    Proposed:

    (___) CLINICAL   (___) COLLOQUIUM   (___) DISCUSSION   (___) LABORATORY   (___) LECTURE

    (___) INDEPEND. STUDY   (___) PRACTICUM   (___) RECITATION   (___) RESEARCH   (___) RESIDENCY

    (___) SEMINAR   (___) STUDIO   (___) OTHER – Please explain: _____

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

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

    Proposed supplementary teaching component: ☐ *Community-Based Experience*   ☐ *Service Learning*   ☐ *Both*

11. Cross-listing: ☒ N/A   or   _____   / _____

APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR and MINOR

| Current Prefix & Number | printed name | Current Cross-listing Department Chair | signature |

a. *Proposed – REMOVE current cross-listing:* ☐ _____ / _____

| | printed name | Current Cross-listing Department Chair | signature |

b. *Proposed – ADD cross-listing:* _____ _____ / _____

| Prefix & Number | printed name | Proposed Cross-listing Department Chair | signature |

12. Current Distance Learning (DL) status: ☐ Already approved for DL   ☐ *Please Add*   ☐ *Please Drop*

If PROPOSING, 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 ☐

13. Current prerequisites:

STA503 and STA531, coreq STA601

Proposed prerequisites:

STA602, coreq STA606

14. Current Bulletin description:
Review of topics from matrix and vector algebra; multivariate normal distribution and its properties; distribution of quadratic forms. The noncentral $X2$, F and T distributions; the general linear model and related inference; elementary computational methods; applications of the theory-experimental design and covariance analysis; a. One-Way Layout, CRD, b. Two-Way Layout, RCB, c. Latin Squares - (1) Crossover designs, (2) Reversal, Double-reversal designs, (3) Other related designs,

Proposed Bulletin description:
Multivarate normal distribution, linear models in matrix notation, multiple linear regression (distributional results, categorical predictors, interactions, connection to ANOVA, sums of squares, diagnostics, ridge and nonparametric regression), Generalized linear models (binomial, poisson, and gamma regression), overdispersion, mixed models, diagnostics, professional presentation of results.

15. What has prompted this change?
To accommodate a more applied focus in the M.S. program in statistics, the applied sequence STA503/STA603/STA643 is being reworked to accommodate recent advances in statistical methodology. The theoretical content is also being slightly reduced in STA603, with the more theoretical element of the current STA603 placed in the revised STA643. Finally, current STA503 renumbered to STA602, current STA532 renumbered to STA606

16. If there are to be significant changes in the content or teaching objectives of this course, indicate changes:
See question 15

17. Please list any other department that <u>could</u> be affected by the proposed change:

None

18. Will changing this course change the degree requirements for ANY program on campus?   ☐ YES   ☒ NO
If YES[‡], list below the programs that require this course:

_____

[‡] In order for the <u>course</u> change to be considered, <u>program</u> change form(s) for the programs above must also be submitted.

APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR and MINOR

19. Is this course currently included in the University Studies Program? ☐ Yes ☒ No

20. ☐ Check box if changed to 400G or 500. If changed to 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*)

21. Within the department, who should be contacted for further information on the proposed course change?

Name: __Kert Viele__   Phone: __257-4803__   Email: __viele@uky.edu__

22.   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
_12/08/08_	Brian 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 the University Senate		Reported by the 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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Excerpt from *University Senate Rules:*

SR 3.3.0.G.2:   **Definition.** A request may be considered a minor change if it meets one of the following criteria:

   a. change in number within the same hundred series;
   b. editorial change in the course title or description which does not imply change in content or emphasis;
   c. a change in prerequisite(s) which does not imply change in content or emphasis, or which is made necessary by the elimination or significant alteration of the prerequisite(s);
   d. a cross-listing of a course under conditions set forth in *SR 3.3.0.E;*
   e. correction of typographical errors.

Rev 7/08

STA603

Introduction to Linear Models and Experimental Design

Learning Objectives

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

Overview : Course is a detailed master's level introduction to multiple linear regression and generalized linear models. Essentially, students should be exposed to all the most common methods for predicting a univariate response from a list of explanatory variables. Emphasis remains on preparation of professional presentation of results.

Format : 3 hours lecture, 2 hours lab.

Prerequisite : STA602, coreq STA606.

Learning objectives :

1) Multivariate normal distribution, linear models in matrix notation;
2) Multiple linear regression: Design matrices and matrix formulation, modes of parametric inference, distributional results, tools for model building and selection, categorical predictors, interaction, connection to ANOVA, types of sums of squares, polynomial regression, diagnostics and flexible alternatives such as weighted least squares, and robust, ridge and nonparametric regression;
3) Generalized linear models, binomial regression, Poisson regression, Gamma regression, overdispersed GLMs, quasi-likelihood, estimating equations, iterated reweighted least squares, introduction to random and mixed effects models, case-control studies, applications;
4) Familiarity with possibilities and limitations of linear and generalized linear models;
5) Correct identification of fixed and random effects, mixed models;
6) Ability to use linear and generalized linear models in data analysis, along with contrasts and multiple comparisons, under consideration of power and sample size issues;
7) Ability to employ model building and diagnostics tools and corrective procedures, and methods to deal with practical problems such as unbalanced data, missing values, co-linearity, correlated data, non-normal data;
8) Capability of appropriate real data analysis using R and SAS including as well as clear and concise presentation of results.

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.