# 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 items 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 531      *Proposed prefix & number:*   STA 623

4. Current Title    Theory of Probability

    *Proposed Title†* _____

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

5. Current number of credit hours:   3      *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     (___) 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 _____ / _____

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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:

MA471G

Proposed prerequisites:

*Graduate Standing in Statistics*

**14.**   Current Bulletin description:

Probability, spaces, conditional probability, law of total probability, Bayes Theorem, independence, random variables and their distributions, multivariate distributions, transformations, moment generating functions, Chebyshev's inequality, modes of convergence, Slutsky's Theorem, Borel-Cantelli, Law of large numbers, Central Theorem

*Proposed Bulletin description:*

*Axioms of Probability, conditional probability, distribution functions, density and moment generating functions, expected values, discrete and continuous distributions, joint, marginal, and conditional distributions, transformations, covariance and correlation, inequalities, properties of sums from a random sample.*

**15.**   What has prompted this change?

To accommodate a more applied focus in the M.S. program in statistics, the course no longer emphasizes the same degree of theory as in previous versions.

In addition, course is intended solely for graduate students, hence the number change

**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.

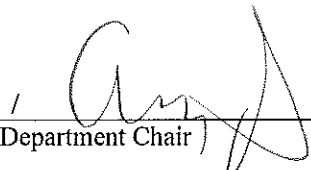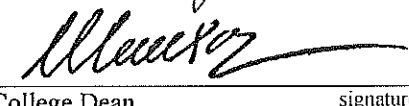**19.**   Is this course currently included in the University Studies Program?    ☐ Yes    ☒ No

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**20.** ☐ Check box if changed to 400G or 500. If <u>changed to</u> 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 | / | *signature* |
| DATE of Approval by Department Faculty | printed name | Reported by Department Chair | |

| *11/7/08* | Leonidas G. Bachas | | *signature* |
| DATE of Approval by College Faculty | printed name | Reported by College Dean | |

| 1-20-2009 | | / | *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* |
| *DATE of Approval by Health Care Colleges Council (HCCC) | printed name | Reported by Health Care Colleges Council Chair | |

| | Reported by Office of the Senate Council |
| *DATE of Approval by Senate Council | |

| | Reported by the Office of the Senate Council |
| *DATE of Approval by the University Senate | |

*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

# STA531 (to be renumbered STA623)

# Theory of Probability

# Learning Objectives

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

Overview : Course is a standard master's level introduction to non-measure theoretic probability, taught at the level of Casella and Berger, Statistical Inference. The course follows the beginning of this text fairly faithfully, with some slight topic omissions. Students will learn the basics of probability theory, random variables, standard distributions, joint distributions, and properties of random samples.

Format : 3 hours lecture

Prerequisite : Graduate Standing in Statistics

Learning objectives :

1) Set Theory, Probability Theory, Conditional Probability and Independence, Random Variables, Distribution Functions, Density and Mass Functions (3 weeks)
2) Distribution of Functions of a Random Variable, Expected Values, Moments and Moment Generating Functions, Differentiating Under an Integral Sign (3 weeks)
3) Discrete Distributions, Continuous Distributions, Exponential Families, Location and Scale Families, Inequalities and Identities (3 weeks)
4) Joint and Marginal Distributions, Conditional Distributions and Independence, Bivariate Transformations, Covariance and Correlation, Multivariate Distributions, Inequalities (4 weeks)
5) Basic Concepts of Random Samples, Sums of Random Variables from a Random Sample (emphasize properties of expectations, variances, covariances, and moment generating functions) (2 weeks)

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.