APPLICATION FOR NEW COURSE

1. Submitted by the **College of Arts and Sciences** Date: **02/10/02**

   Department/Division offering course: **Statistics**

2. Proposed designation and Bulletin description of this course:

   (a) Prefix and Number: **STA 630** (b) Title: *Bayesian Inference* (subt. req.)

   *NOTE: If the title is longer than 24 characters (including spaces), write a sensible title (not exceeding 24 characters) for use in transcripts:

   (c) Lecture/Discussion hours per week **3** (d) Laboratory hours per week **0**

   (e) Studio hours per week **0** (f) Credits: **3**

   (g) Course description: **Likelihood principle, sufficiency, natural conjugate and hierarchical priors, empirical Bayesian analysis for estimation and testing.**

   (h) Prerequisites (if any): **STA 601**

   (i) May be repeated to a maximum of (if applicable)

4. To be cross-listed as:

   Prefix & No. **Signature, Chairman, cross-listing department**

5. Effective Date: **Fall, 2002** (semester and year)

6. Course to be offered: (a) Fall **✓** (b) Spring **☐** (c) Summer **☐**

7. Will the course be offered each year? (a) Yes **☐** (b) No **✓**

   (Explain if not annually): **This course will be offered every other year.**

8. Why is this course needed: **Bayesian Methods are being widely used in fields ranging from astronomy to decision sciences.**

9. (a) By whom will the course be taught? **Cidambi Srinivasan, Kert Viele**

   (b) Are facilities for teaching the course now available? (a) Yes **✓** (b) No **☐**

   If not, what plans have been made for providing them?
10. What enrollment may be reasonably anticipated? 5-10

11. Will this course serve students in the Department primarily? (a) Yes □ (b) No □
Will it be of service to a significant number of students outside the Department? (a) Yes □ (b) No □
If so, explain: ____________________________

12. Check the category most applicable to this course:
   ☑ traditional; offered in corresponding departments elsewhere;
   _______ relatively new, now being widely established
   _______ not yet to be found in many (or any) other universities

13. Is this course part of a proposed new program? (a) Yes □ (b) No □
If yes, which? **Elective for the Statistics/Probability and Biostatistics tracts within the Statistics Ph. D.**

14. Will adding this course change the degree requirements in one or more programs?* (a) Yes □ (b) No □
If yes, explain the change(s) below: __________________________________________________________

15. Attach a list of the major teaching objectives of the proposed course, outline and/or reference list to be used.

16. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.

17. Within the Department, who should be contacted for further information about the proposed course?
   Name/e-mail: **Arnold J. Stromberg, DGS** Phone Extension: 7-6903

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.
APPLICATION FOR NEW COURSE

Signatures of Approval:

Constance L. Wood
Department Chair

Philip Taylor
Dean of the College

*Undergraduate Council

*University Studies

*Graduate Council

*Academic Council for the Medical Center

*Senate Council

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL:

Date

MAR 28 2002

Date of Notice to the Faculty

Date

MAR 28 2002

Date of Notice to Univ. Senate

Rev 11/98
Course Description for STA630

Bayesian Inference


Teaching Objectives:

1. Students will be familiar with likelihood principles as related to Bayesian inference.
2. Students will be familiar with the statistical concept of sufficiency as it relates to Bayesian inference.
3. Students will be familiar with the notion of natural conjugate and hierarchical priors.
4. Students will be familiar with parametric estimation as it relates to Bayesian inference.
5. Students will be familiar with hypothesis testing as it relates to Bayesian inference.
6. Students will be familiar with empirical Bayesian analysis.

Outline

1. Likelihood principles.
2. Sufficiency.
3. Natural conjugate priors.
4. Hierarchical priors.
5. Parametric estimation.
6. Hypothesis testing.
7. Empirical Bayesian analysis.

Nature of Assignments and Grading Criteria:

Weekly Homework – 25%
2 Midterms – 25% each
Final – 25%

Grading Scale:
90-100 – A
80-90 – B
70-80 – C
Below 70 – E
At his or her discretion, the instructor may use a curve.
INVESTIGATOR REPORT

INVESTIGATING BODY
Area A, Shelley Steiner
(Area, Area Chair)

COURSE, MAJOR or DEGREE
STA 680
(department or college)

DATE FOR COUNCIL REVIEW
4/9/02

CATEGORY
NEW, CHANGE, DROP

INSTRUCTIONS: This completed form will accompany the course application to the Graduate/Undergraduate Council(s) in order to avoid needless repetition of investigation. The following questions are included as an outline only. Be as specific and as brief as possible. If the investigation was routine, please indicate this. The term "course" is used to indicate one course, a series of courses or a program, whichever is in order. Return the form to Phil Harling, Associate Dean, 231 Patterson Office Tower for forwarding to the Council(s). ATTACH SUPPLEMENT IF NEEDED.

1. List any modifications made in the course proposal as submitted originally and why.

   NONE

2. If no modifications were made, review considerations that arose during the investigation and the resolutions.

3. List contacts with program units on the proposal and the considerations discussed therein.

4. Additional information as needed.

5. A&S Area A, Natural & Mathematical Sciences Curriculum Committee Recommendation:

   APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

6. A&S Council Recommendation:

   APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

7. A&S Council Investigator, Dr. Shelley Steiner

   Signature
   Date: 4-9-02

File: InvestigatorRpt