The Ohio State University
Colleges of the Arts and Sciences Course Change Request

Statistics
Academic Unit

Statistics 623
Book 3 Listing (e.g., Portuguese) Course Number

Summer Autumn Winter X Spring Year 2007

Proposed effective date: choose one quarter and put an "X" after it; and fill in the year. See the OAA curriculum manual for deadlines.

A. *Course Offerings Bulletin* Information. Follow instructions in the OAA curriculum manual. Before you fill out the "Present Course" information, be sure to check the latest edition of the Course *Offerings Bulletin* and subsequent Circulating Forms. You may find that the changes you need have already been made or that additional changes are needed. If the course offered is less than quarter or term, please also complete the Flexibly Scheduled/OffCampus/Workshop Request form.

COMPLETE ALL ITEMS THIS COLUMN

Present Course

1. Book 3 Listing: Theory of Statistical Analysis
2. Number: 623
3. Full Title: Theory of Statistical Analysis
4. 18-Char. Transcript Title: Thry STAT Analysis
5. Level and Credit Hours G 5
6. Description: Estimation, hypothesis tests, best tests, likelihood ratio tests, confidence sets, sufficiency efficient estimators; intended primarily for students in the MAS degree program.
(25 words or less)
7. Qtrs. Offered : winter
8. Distribution of Contact Time: 5 cl
(e.g., 3 cl, 1 3-hr lab)
9. Prerequisite(s): STAT 610 or 620 or permission of instructor. Not open to students with credit for 621 or 622
10. Exclusion:
(Not open to....)
11. Repeatable to a maximum of _____ credits.
12. Off-Campus Field Experience:
13. Cross-listed with:
14. Is this a GEC course?
15. Grade option (circle): Ltr X S/U P
If P graded, what is the last course in the series?
16. Is an honors version of this course available?
17. Other general course information:

COMPLETE ONLY THOSE ITEMS THAT CHANGE

Changes Requested

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B. General Information

1. Do you want the prerequisites enforced electronically (see the OAA manual for what can be enforced)?

2. Does this course currently satisfy any GEC requirement, if so indicate which category?

3. What other units require this course? Have these changes been discussed with those units?

4. Have these changes been discussed with academic units that might have a jurisdictional interest in the subject matter? Attach relevant letters.

5. Is the request contingent upon other requests, if so, list the requests?

6. **Purpose of the proposed change. (If the proposed change affects the content of the course, attach a revised syllabus and course objectives and e-mail to asccurrofc@osu.edu.)**

7. Please list Majors/Minors affected by the proposed change. Attach revisions of all affected programs. This course is (check one): ☐ Required on major(s)/minor(s) ☐ A choice on major(s)/minors(s) ☐ An elective within major(s)/minor(s) ☐ A general elective:

8. Describe any changes in library, equipment or other teaching aids needed as a result of the proposed change or if the proposed change involves budgetary adjustments, describe the method of funding:

Approval Process The signatures on the lines in ALL CAPS (e.g. ACADEMIC UNIT) are required.

1. Academic Unit Undergraduate Studies Committee Chair — Printed Name — Date

2. Academic Unit Graduate Studies Committee Chair — Printed Name — Date

Douglas A. Wolfe

3. **ACADEMIC UNIT CHAIR/DIRECTOR** — Douglas A. Wolfe — 12/29/05
Printed Name **Date**

4. **After the Academic Unit Chair/Director signs the request, forward the form to the ASC Curriculum Office, 105 Brown Hall, 190 West 17th Ave. or fax it to 688-5678. Attach the syllabus and any supporting documentation in an e-mail to asccurrofc@osu.edu. The ASC Curriculum Office will forward the request to the appropriate committee.**

5. **COLLEGE CURRICULUM COMMITTEE** — John Parson — 1/12/06
Printed Name **Date**

6. **ARTS AND SCIENCES EXECUTIVE DEAN** — Edward Adelson — 1/13/06
Printed Name **Date**

7. Graduate School (if appropriate) — Printed Name — Date

8. University Honors Center (if appropriate) — Printed Name — Date

9. Office of International Affairs (study tours only) — Printed Name — Date

10. **ACADEMIC AFFAIRS** — **Printed Name** — **Date**

COURSE SYLLABUS
STAT 623
THEORY OF STATISTICAL ANALYSIS

Meetings: MWF 11:30 - 12:48 in Cockins Hall Room 420
Instructor: Professor Omer Ozturk
Office: 321 Cockins Hall, Ph: 292-3346
Office Hours: MW 1:30-2:30 or stop by if I am in.
Grader: Shiling Ruan
Office hours: Monday 2:30-4:30

Text: Mathematical Statistics and Data Analysis (2nd Ed.) by John A. Rice.

Grading Policy: Course grade will be based on homework assignments, midterm, and final exams.
Homework Assignments: 30%
Midterm Exam: 35%, February 13, 2006
Final exam: 35%, March 13, 2006, 11:30-1:18.

Course Outline

1- Review of Probability Models and Random Samples.

2- Estimating parameters of a probability model: Method of moments and Maximum likelihood Estimation (Sections, 8.1-8.5.2). Properties of a good estimator, unbiasedness, consistency, minimum variance.

3- Efficiency, Cramer-Rao lower bound, sufficiency (Sections, 8.6, 8.7, 8.8).

4- Confidence sets, including approximate and bootstrap confidence intervals (8.5.3 and supplemental material).

5- Hypothesis testing, basic principles, most powerful test, uniformly most powerful test (9.1-9.3).

6- Generalized likelihood ratio test, likelihood ratio test for the multinomial distribution, duality between confidence intervals and test (9.5, 9.6, 9.4).

7- Inferences for comparing two samples (11.1, 11.2.1, 11.2.2, 11.3.1).

8- Contingency table analysis (13.1-13.4).

9- Additional topics such as the nonparametric bootstrap (10.4.6 or other section).

NOTE: Several topics will be covered in lecture in much greater depth than in the textbook. These topics include: the invariance property of the method of moment and MLE, pivotal quantities, confidence intervals, the power function, sample size determination, uniformly most powerful test, generalized likelihood ratio for two-sample problems. You are responsible for all the material presented in the lecture.