

CURRICULUM PROPOSAL FORM 2001-2002

NON-GENERAL EDUCATION PROCESS A

***DEADLINES:** Deadline dates for 2001/2002 submissions: Regular proposals: October 19, 2001 to be implemented in Fall 2002; Short-Term proposals: December 7, 2001 to be implemented in Fall, 2002; Regular proposals February 15, 2002 to be implemented in Spring, 2003; March 22, 2002 for short-term courses to be implemented in Spring 2003.

PROPOSAL TITLE: Minor Curriculum Change: Statistics II, 1702-261

SPONSOR(S): Dexter C. Whittinghill & Christopher J. Lacke

DEPARTMENT: Mathematics

COLLEGE: L.A. & S.

IF LAS CHECK ONE: History/Humanities Math/Sciences Social/Behavioral Sciences

Check one: Undergraduate Graduate

THE ATTACHED **NON-GEN-ED** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED.

New non-gen-ed course

Short-term non-gen-ed course

Minor curricular changes (fewer than three) to:

existing non-gen-ed course

non-gen-ed degree requirements

major

minor, specialization, concentration, track, certificate program

DEPARTMENT
(Signature indicates approval)

Ronald J. G... 10/2/01

Dept. Curriculum Chair / Date 10/30/2001

Dept. Chairperson / Date

ACADEMIC DEAN

Approved Not Approved Comments:

Dean's Signature/Date [Signature] 11/5/01

COLLEGE CURRICULUM COMMITTEE

Date of open hearing (if necessary) _____ Approved Not Approved _____

Comments:

Signature of College Chair/Date: [Signature] 5-14-02

UNIVERSITY CURRICULUM COMMITTEE

Date Received/Processed _____

Comments:

Curriculum Chair Signature [Signature] Date Announced At Senate 7/1/02

EXECUTIVE VICE PRESIDENT/PROVOST

Approved Not Approved _____ If no, reasons are as follows:

Student Credit Hours _____ Faculty Load Hours _____ Equalized Credit Hours _____

Official Copy & Approval Sheet Filed (Date): _____ Executive VP/Provost Signature/Date [Signature] 7/7/02

REGISTRAR

Date Approved Course Description Received _____ Hegis Taxonomy & Course Number Assigned _____

Registrar Signature/Date [Signature] 7/10/02

NOTIFICATION FORWARD

Senate Curriculum Committee Chairperson

Academic Dean(s)

Department Chairpersons

Registrar

CAP
IRP
rw 7/23/02
____ Sponsor(s)

Minor Curriculum Change
1702.261 – Statistics II

1. Details:

- a. Change Requested. In the 'New' descriptions the added or changed text appears in bold.
i. Old Catalog Description:

1702.261 Statistics II 3 s.h.
(Prerequisites: 1702.260 Statistics I)

This course is a continuation of Statistics I. Hypothesis testing is studied in more detail using the normal and Student's t- distribution. The F distribution and chi-square distribution are also used in statistical inference making. Analysis of variance and experimental design are also presented. Analysis of time series and the use of index numbers are also included. Statistical concepts are used to introduce statistical quality control. Use of Computer Statistics software, such as MiniTAB, SPSS or SAS, is also required.

Old Course Content:

1. Decision Making
 - 1.1 The process of decision making
 - 1.2 The role of statistics in decision making
2. Quality Control
3. Regression and Correlation
4. Index Numbers
5. Time Series
6. Analysis of Variance
7. Introduction to Non-parametric Methods

- ii. New Catalog Description:

1702.261 Statistics II 3 s.h.
(Prerequisites: 1702.260 Statistics I)

This course is a continuation of Statistics I. **Confidence intervals and hypothesis tests** are studied in more detail, **beginning with two-sample inference for means and proportions. The inferences in simple linear regression and multiple regression are presented.** Analysis of variance and experimental design are **introduced. Other topics include chi-square tests for goodness-of-fit and independence, and the principles of nonparametric tests.** Use of statistical software such as Minitab, SPSS or SAS, is also required.

New Course Content:

1. The role of statistics in decision making
2. **Classical two-sample inference**
3. **Simple Linear** Regression and Correlation
4. **Multiple Regression**
5. **Chi-square tests of goodness-of-fit and independence**
6. Analysis of Variance
7. Introduction to Non-parametric Methods

- b. Sponsor(s). Dexter C. Whittinghill & Christopher J. Lacke, Department of Mathematics

2. Rationale:

- a. Need:

Statistics II is required by Accounting, and is a prerequisite for many courses in Finance (and hence a *de facto* requirement). It is also taken by a few students in other departments as a follow up to *Statistics I*. We have made some changes in Course Content, which have also causes the changes in the Catalog Description. Quality control and the paired topics of index numbers and time series have been removed. In their place have been added classical two-sample inference and two chi-square tests. The 'Regression and Correlation' topic has just been made more explicit by the addition of 'Simple Linear' to Regression and 'Multiple Regression.'

The old syllabus was tailored to the typical business major, or generalized for all business majors. In the last five years the overwhelming majority of students taking Statistics II has been comprised of Accounting majors (it was 'strongly recommended' until recently) and Finance majors (it was required, but is now 'only' a prerequisite to many courses). The topic of quality control is not needed for either major. The topics of index numbers and time series are useful to the Finance majors, but have been removed for two reasons. First, they are not really pertinent to the Accounting majors, who are better served by a more general coverage of topics beyond Statistics I. Second, the 'Time Series' implicitly referred to in the old syllabus is a set of (questionable) applications of multiple regression techniques to time-ordered data. A proper coverage of time series includes auto-regressive models and requires more than the one-to-two week coverage available in Statistics II. [This is a topic where is not advisable to show students a glimpse and run the risk of them misusing what they know.]

What material has been added to the syllabus may not be apparent on the surface. Classical two-sample inference is currently part of the course, acting as the mechanism for presenting the ideas of decision making, and reinforcing the topics of hypothesis testing from *Statistics I*. Where it is expanded upon is in the addition of (and emphasis of) the approximate *t*-test, and the checking of assumptions with the software. The chi-square tests are an addition that shows the students another useful class of statistical tests. In multiple regression the topics can more easily be expanded beyond the 'linear model with several terms,' to include interaction and full second order models, use of categorical variables, and residual analysis (part of the emphasis of checking assumptions that is more realistically discussed with the use of software packages).

b. Curricular effect.

The curricular effect is an exchange of topics. A topic for the general business major (quality control) and a topic specific to the Finance major (time series), have been removed. The topic of chi-square tests has been added, and the two topics of two-sample inference and multiple regression have been expanded upon.

3. Results of Consultation:

a. Parties Consulted:

Carol Welsh (Chair) and the Department of Accounting and Finance

b. Consultation Results:

TBA

To: Dexter C. Whittingham
Christopher J Lacke

From: Carol N. Welsh

Date: May 1, 2002

Subject: Consultation – Minor Curriculum Change 1702.261 – Statistics II

The Department of Accounting & Finance supports the curriculum content change referenced above. The elimination of quality control and time series and the addition of the topic of chi-square tests and expansion of coverage of two-sample inference and multiple regression is supported. The changes proposed for Statistics II better meets the needs of students in the Accounting and Finance disciplines.

Cc: G.Meric
G.Romeo