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CURRICULUM PROPOSAL COVER SHEET

University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person Dr. Elizabeth Pierce Phone 357-5773

Department MIS and Decision Sciences

II. PROPOSAL TYPE (Check All Appropriate Lines)

_____ **COURSE** _____
Suggested 20 character title

_____ **New Course*** _____
Course Number and Full Title

X **Course Revision** OBUS 215 Business Statistics
Course Number and Full Title

_____ **Liberal Studies Approval +** _____
for new or existing course Course Number and Full Title

_____ **Course Deletion** _____
Course Number and Full Title

_____ **Number and/or Title Change** _____
Old Number and/or Full Old Title

_____ **_____** _____
New Number and/or Full New Title

_____ **Course or Catalog Description Change** _____
Course Number and Full Title

_____ **PROGRAM:** _____ Major _____ Minor _____ Track

_____ **New Program*** _____
Program Name

_____ **Program Revision*** _____
Program Name

_____ **Program Deletion*** _____
Program Name

_____ **Title Change** _____
Old Program Name

_____ **_____** _____
New Program Name

III. Approvals (signatures and date)

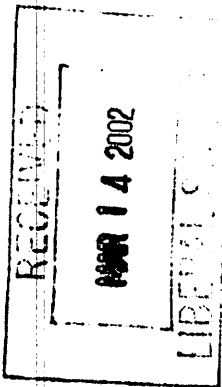
10/13/02
Department Curriculum Committee

3/14/02
Department Chair

College Curriculum Committee

College Dean

+ Director of Liberal Studies (where applicable) *Provost (where applicable)



Department of MIS and Decision Sciences

Course Revision: QBUS 215 Business Statistics

Description of Curriculum Change

1. No change in syllabus of record and course title.
2. Pre-requisite change from MATH 121 to MATH 115.
3. Justification: The Mathematics Department's proposed course, MATH 115 Applied Mathematics for Business, was approved during the Fall 2001 term as a replacement for the MATH 121 Calculus I for Business, Natural, and Social Sciences.
4. No change in syllabus of record. An updated syllabus of record is attached.

Course Description

QBUS 215 Business Statistics

3c-0l-3sh

Prerequisites: MATH 115, 214

Expands upon the probabilistic concepts developed in MATH 214 to orient the student toward managerial decision making using quantitative methodologies. Topics covered include classical regression analysis, forecasting, Bayesian decision theory, linear programming, and simulation.

Syllabus of Record Format

I. Catalog Description

QBUS 215 Business Statistics

**3 credits
3 lecture hours
0 lab hours
3c-0l-3sh**

Prerequisites: MATH 115, 214

Expands upon the probabilistic concepts developed in MATH 214 to orient the student toward managerial decision making using quantitative methodologies. Topics covered include classical regression analysis, forecasting, Bayesian decision theory, linear programming, and simulation.

II. Course Objectives

The primary objective is to show students how to apply statistical methods to solve various decision-making problems in the business environment. The students should be able to:

- 1. Describe the process involved in carrying out a statistical analysis.**
- 2. Describe the major steps for fitting a mathematical model to a given data set.**
- 3. Forecast future values using regression models and time series methods.**
- 4. Recognize the importance of decision trees in making rational managerial decisions.**
- 5. Formulate and solve linear programming models.**
- 6. Distinguish between probabilistic and deterministic systems through modeling and simulation.**

III. Detailed Course Outline

- | | | |
|-----------|--|------------------|
| A. | Introduction: Definitions and review | (2 hours) |
| B. | Review: Testing of Hypotheses/ANOVA | (5 hours) |
| C. | Review: Simple Linear Regression Model | (5 hours) |
| D. | Multiple Linear Regression Model | (7 hours) |
| E. | Index Numbers and Time-Series Forecasting | (6 hours) |
| F. | Decision Analysis | (6 hours) |
| G. | Linear Programming | (7 hours) |
| H. | Computer Simulation | (1 hour) |
| I. | Evaluation (Exams) | (3 hours) |

IV. Evaluation Methods

25% Quizzes, class attendance & participation, homework

75% Three equally weighted examinations

Grading Scale: A=90-100%; B=80-89%; C=70-79%; D=60-69%; F< 60%

V. Required Textbook(s):

McClave, Benson, & Sincich. (2001). Statistics for business and economics, (8th ed.). Prentice Hall, Inc.

Supplemental Books and Readings:

VI. Special Resource Requirements

None

VII. Bibliography

Anderson, D. R., Sweeney, D. J., & Williams, T. A. (1996). Statistics for business and economics, (6th ed.). St. Paul, MN: West Publishing Company.

Keller, G. & Warrack, B. (2000). Statistics for management and economics, (5th ed.). Pacific Grove, CA: Duxbury, a division of Thomson Learning.

Levine, D. M., Berenson, M. L., & Stephan, D. (1999). Statistics for managers using Microsoft Excel, (2nd ed.). Upper Saddle River, NJ: Prentice Hall, Inc.

Levine, D. M., Ramsey, P. P., & Berenson, M. L. (1995). Business statistics for quality and productivity. Englewood Cliffs, NJ: Prentice Hall, Inc.

Minieka, E. & Kurzeja, Z. D. (2001). Statistics for business with computer applications. Cincinnati, OH: South-Western College Publishing, a division of Thomson Learning.

Pelosi, M. K. & Sandifer, T. M. (2002). Doing statistics for business with Excel, (2nd ed.). New York: John Wiley & Sons, Inc.

Weiers, R. M. (2002). Introduction to business statistics, (4th ed.). Belmont, CA: Wadsworth Group, Duxbury, a division of Thomson Learning.

OLD SYLLABUS of Record

FS 215 Quantitative Analysis

3 credits

Prerequisite: MA 214 Probability and Statistics for Business Majors

Catalogue Description

Continuation of MA 214 and covers topics on regression analysis, time series study, statistical decision theory, linear programming, and simulation.

Course Objectives

The objective of this course are to introduce to the students the basic statistical and algebraic tools useful in solving forecasting and decision-making problems in business. The following objectives should be emphasized in this course:

- 1. Forecasting the future with time-series study and regression analysis.**
- 2. Finding the best alternative with linear programming.**
- 3. Making rational decisions with decision trees and statistical decision theory.**
- 4. Modeling system behavior with simulation.**

Course Content:

- 1. Regression Analysis**
 - a. Introduction**
 - b. Least Squares**
 - c. Time-Series Analysis and Forecasting.**
- 2. Statistical Decision Theory**
 - a. Setting up Decision Problems**
 - b. Criteria for Making Decisions**
 - c. Decision Trees**
 - d. Decision making under Uncertainty**
- 3. Linear Programming**
 - a. Problem Formulation**
 - b. Graphical Solution**
 - c. Simplex Method**
 - d. Sensitivity Analysis**
 - e. Overview of the Linear Programming**
- 4. Simulation**
 - a. Simulation Applications**
 - b. Modeling Techniques**
 - c. Simulation Experiment**
 - d. Computer in Simulation**

September 28, 2001

To whom it may concern:

At the request of the faculty of the College of Business, the Mathematics Department developed the course MATH 115 Applied Mathematics for Business. This course was offered under the Special Topics number MATH 281 during the 2000-2001 academic year, and was approved by the IUP Senate, and subsequently the Council of Trustees, in the spring of 2001.

The understanding reached between the Mathematics Department and the College of Business was that students in programs requiring MATH 121 would be required to take MATH 115 instead. This change requires no additional resources for the Mathematics Department. During the semesters MATH 115 was offered under the special topics number, we decreased the number of sections of MATH 121 that we put on the schedule by the number of sections of MATH 281 that we added to the schedule to accommodate the College of Business students. Based on this experience, we are confident we can staff both MATH 121 and MATH 115 without additional faculty complement.

The faculty of the Mathematics Department supports proposals from departments in the College of Business aimed at formalizing the curriculum change from MATH 121 to MATH 115. Please contact me if you have any questions.

Sincerely,

**Gerald Buriok, Chairman
Mathematics Department**