ECO 231, Applied Business and Economic Statistics.
Spring 2011

Prerequisite: Stat 215.

Instructor: Dr. David W. Letcher BB 316. Tel: (609) 771-2828 **Email:** letcher@tcnj.edu

Office Hours: XXX.

Text:
Dielman, Terry E. "Applied Regression Analysis: A Second Course in Business and Economic Statistics". 4th ed.
Brooks/Cole Thomson Learning. 2005. ISBN 0-534-46548-X.

The optional solutions manual is:

Dielman, Terry E. "Student Solutions Manual for Applied Regression Analysis: A Second Course in Business and Economic Statistics." Brooks/Cole Thomson Learning. 2005. ISBN-13 978-0-5344-6550-6.

I make much use of our textbook in lectures, tests and homework. Most homework problems are from the text.

Hand calculator Calculators are not required but, if used, should be able to handle exponential and logarithmic functions and they are useful for some exam problems**.** G**raphing calculators** offer many convenient, statistical functions that may be used in this class.

The principal objectives of this course are to:

a) Learn, understand, and extend the principles and techniques of statistical inference in a second-level study that includes regression, analysis of variance, and time-series analysis/forecasting.

b) Apply these techniques to real-world problems that pertain to functional areas of business.

I encourage in-class and out-of-class interaction with me. That includes making appointments to visit me too. Do not hesitate to seek clarification of the material. When preparing for tests and the final exam, it is important that you study the assigned readings in the text, the homework problems and the problems and concepts covered in the class. Do not forget to review your notes!

Tutoring is usually available in the tutoring center and with me, too, in my office.

Overall evaluation will be based on the following: ??????????????

Tests, two @ 17	34 pts.	
Homework, ten @ 2	20	← Hand in hardcopy
Comprehensive Final Exam	31	
Empirical Project	15	← Hand in hardcopy
TOTAL	100	

Exams:

All exams are to be taken on the announced dates but a make-up exam will be given for students with a documented, legitimate excuse**.** Please contact me ***within 24 hours*** of the test date to arrange a makeup date.

Homework:

Working on homework with others, such as a study group, etc. is effective for learning but each of you will hand in your own homework. Homework is to be handed in as hardcopy (hand-written + computer output.) It is often handy to combine word and excel output into one document.

Graphs are to be done using software and ***must*** **include appropriate chart and axes titles**.

A late penalty may apply to late homework and a late empirical project.

Approximate weeks for tests: Actual dates will be announced ahead of time.

Test #1 Week 5 or 6

Test #2 Week 10

Grading is based on the total number of points you accumulate.

A 93.00 - 100	B^- 79.00-82.99	D^+ 66.00-68.99
A^- 89.00-92.99	C^+ 76.00-78.99	D 60.00-65.99
B^+ 86.00-88.99	C 73.00-75.99	F 59.99 and below
B 83.00-85.99	C^- 69.00-72.99	

Although there is no extra-credit for this class, the tests may include extra-credit questions.

Class Sessions. The first part of each class will be devoted to going over homework, answering questions, etc. The main part of each class will consist of lecture/discussion/PC lab activities.

My Schedule of Topics for ECO 231

Topics	Chapters	Approximate # of weeks
Review of Basic Concepts The Normal Probability Distribution Normal probability plots Sampling and Sampling Distributions Estimation and Inferences for Single Population and Two populations (done for both Mean and Variance):	1, 2	1 to 2 weeks
Simple Linear Regression Model Overview of Regression Analysis Fitting the Model Model Assumptions and assessment of the assumptions Estimation of σ^2 Correlation Coefficient Coefficient of determination, R^2 Inference about the regression parameters Residual Analysis – desirable and undesirable residual plots Using the Model for Estimation and Prediction (Mean and Individual) Data transformations	3, 5, 6	2
Multiple Regression Model Assumptions Fitting the Model Estimation of σ^2 Inferences about β parameters Multiple Coefficient of Determination The analysis of variance F Test (AKA the global F test) Dummy (qualitative) Variables The interaction model and its two-sentence interpretation Multicollinearity Variable selection techniques	4, 5, 6, 7, 10	3

Model Building in Regression Analysis	5, 6, 8	2

Fitting curves
Collinearity
Assessing the regression assumptions
Variable selection

Analysis of Variance	9	2

Completely Randomized Design
Tukey's Multiple Comparison of Means
Dunnett's Test
Randomized Block Design
Two-Factor Factorial Experiment including Interaction and its interpretation

Forecasting Methods for Time-Series Data	11	2

Naïve and moving averages
Forecast accuracy
Using regression to analyze time-series data
Exponential smoothing
Autoregression, a.k.a. lagged regression
Additional smoothing techniques such as double and triple exponential smoothing.

Review Held during the last class day.

The Empirical Project. Your project will be an application of multiple regression *to a theme that will be announced by Dr. Letcher.*

Each of you will write your own empirical project. This is not a team activity.

I'll be providing a more definitive guide for you early this semester but in the meantime here is a suggested outline of the paper:

I. Statement of the problem

II. Review of the literature

III. Formulation of a model – may be the first of a few models to investigate.

IV. Data sources and description

V. Analysis and interpretation of results

VI. Interpretation of the analyses, predictions, and conclusions and model recommendation.

VII. Suggestions for future research.

VIII. References

Project Guidelines:

I will provide you with a grading rubric and specific guidance as to exactly what steps you need to include in your project.

Project Deadline

Your project will be due on Tuesday, November 23rd.

DWL
Spring 2011