Montgomery County Community College
MAT 132
Introduction to Statistics II
3-3-0

COURSE DESCRIPTION:
A continuation of MAT 131 with business applications including statistical inference and decision procedures, regression, correlation, time series, quality control and index numbers. A graphing calculator is required for classes, homework and testing. Classroom instruction and programs will be presented using a TI-84 Plus.

REQUISITES:
Previous Course Requirements

- MAT 131 Introduction to Statistics I with a minimum grade of "C"

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Solve basic binomial and poisson distribution problems using TI-84 calculator commands. Be able to find the mean, standard deviation and expected value of the binomial and poisson distributions.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
2. Solve problems comparing the means of three or more groups. Be able to use the methods of Analysis of Variance including Randomized Designs, Randomized Block Designs, and Factorial Experiments. Be able to use Fisher's LSD procedure to determine which population means are not equal.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
3. Solve simple linear regression problems and be able to produce, understand and read Excel computer output for multiple regression problems. Be able to find and interpret the coefficient determination and test for significance. Be able to use the estimated regression equation for estimation and prediction.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
4. Interpret residual analysis and normal probability plots to analyze outliers and perform model building.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
5. Compute price relatives, aggregate price indexes, and aggregate price index from price relatives and deflate a series by price indexes.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
6. Solve problems using smoothing methods in forecasting, trend projection in forecasting, trend and seasonal components in forecasting and regression analysis in forecasting.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
7. Solve nonparametric problems using the Sign Test, the Wilcoxon Signed-Rank Test and the Kruskall-Wallis Test.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
8. Use statistical methods to solve quality control problems. Be able to understand and interpret results from acceptance sampling.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
9. Use statistical methods to solve decision analysis problems. Be able to understand and interpret EVPI and EVSI.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects
10. Use the TI-84+ calculator to ease the tedious statistical computations for all of the above problems.	Lectures Small Group Discussions and/or Projects The Use of TI 84 Graphics Calculator and Minitab Homework Quizzes Projects	Exams Quizzes Homework Projects

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:

1. Poisson Distribution
2. Anova
3. Experimental Design
4. Simple Linear Regression
5. Analysis of Regression Model
6. Multiple Regression

7. Model Building
8. Residual Analysis
9. Index Numbers
10. Time Series
11. Forecasting
12. Nonparametric Statistics
13. Decision Theory
14. Decision Theory and Quality Control
15. Comprehensive Final Exam

LEARNING MATERIALS:

Textbook:

Anderson . *Statistics for Business and Economics* (13th ed.). Cengage 2017

Required Materials:

TI-84+ Graphing Calculator. If a student has a TI-83+, they do not need to buy a TI-84+.

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:

Prepared by:	Professor Fay Sewell	Date: 4/16/1998
Revised by:	Professor Fay Sewell	Date: 6/2001
Revised by:	Professor Fay Sewell	Date: 7/2003
Revised by:	Paul Winterbottom	Date: 1/2004
Revised by:	Richard Kern	Date: 7/2007
Revised by:	Mark McFadden	Date: 2/1/2013
VPAA/Provost or designee Compliance Verification:		
	Victoria L. Bastecki-Perez, Ed.D.	Date: 2/15/2013
Revised by:	Marion Graziano/James Muscatell	Date: 8/31/2017
VPAA/Provost or designee Compliance Verification:		Date: 11/13/2017

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.