Union County College
Faculty Curriculum Committee

Course Revision Form

PART I

ORIGINATOR(S): C. Roemer	DATE: October 21, 2013
DEPARTMENT CHAIR: Dr. Cynthia Roemer	
COURSE CODE: MAT246	TITLE: Business Statistical Analysis PROGRAM: Mathematics Department
PROPOSED EFFECTIVE CATALOG DATE: Fall 2014	
PROPOSED TERM EFFECTIVE: Spring 2014	

PART II

A. TYPE OF CHANGE PROPOSED. Check the appropriate item(s) in this section and complete only those sections below that are applicable to your proposal.		
☐Title	☐Corequisite	☐General Ed Designation –
☐Code	☐Lecture Hours	☐ Instructional Delivery Method
☐ Description	☐ Lab Hours	
☐XPrerequisite	☐ Credit Hours	
B. TITLE CHANGE		
Current Title:		
Recommended Title:		
Rationale to Support Change:		
C. CODE CHANGE		

Current Code:
Recommended New Code:
Rationale to Support Change:
D. CREDIT/LECTURE/LAB HOURS CHANGE
Current Credit/Lecture/Lab Hours:
Recommended New Credit/Lecture/Lab Hours:
Rationale to Support Change:
E. PREREQUISITE/COREQUISITE CHANGE
Current Prerequisite(s): ENG 089, ENG 099, and a grade of "C" or better in MAT 143 or permission of the instructor. (Per April Curriculum Committee: A grade of "C" or better in MAT143.) Recommended Prerequisite(s): ENG 089, ENG099, and a grade of "C" or better in MAT 143. Rationale to Support Change: Return ENG089 & ENG099, consistent with best practices per research.
Current Corequisite(s): Recommended Corequisite(s): Rationale to Support Change:
F. DESCRIPTION CHANGE
Current Description:
Recommended New Description:
Rationale to Support Change:
G. COURSE DESIGNATION
☐**General Education** Please check the requested General Education knowledge area below:

☐Communications	☐Mathematics
☐Cultural and Global Awareness	☐Sciences
☐Ethical Dimension	☐Social Sciences

☐History ☐Humanities	☐Technological and Information Competency
☐Basic Skills **☐Distance Learning** **☐Career Course (Identify program): _____** **☐Other (Please Specify): _____**	

H. INSTRUCTIONAL DELIVERY METHOD

CURRENT METHOD
☐Traditional ☐Online ☐Blended (partial online)

PROPOSED METHOD
☐Traditional ☐Online ☐Blended (partial online)

I. REQUIRED ATTACHMENTS

☐XDepartment Approval: Attach email from department chair indicating department review and approval of the new course proposal.

☐Revised course syllabus.

☐**For distance learning courses only** (this section will be reviewed by the ATC): an appendix addressing the technical issues related to administering the course via a distance learning modality. Consult with the Academic Technology Committee for specifics.

Review/Approval for MAT 246 Business Statistical Analysis

APPROVALS:

NEW COURSE/PROGRAM SUB-COMM.CHAIR	**DATE**
CURRICULUM COMMITTEE CHAIR	**DATE**
VP FOR ACADEMIC AFFAIRS	**DATE**

RECEIVED:

REGISTRAR	**DATE**
VP FOR ADMINISTRATIVE SERVICES	**DATE**

After all reviews/approvals have been completed, please return a copy of the completed signed form to Curriculum Committee Chair.

UNION COUNTY COLLEGE
MASTER COURSE SYLLABUS

COURSE NUMBER & NAME: MAT 246
Business Statistical Analysis

LECTURE/LAB HOURS: 4 Lecture Hours

CREDITS: 4 Credits

PREREQUISITES: ENG 089, ENG 099, and a grade of "C" or better in MAT 143**.**

COURSE DESCRIPTION: This course provides an application of statistical methods to business. Topics include an introduction to descriptive statistics, probability theory, sampling, estimations, hypothesis testing, analysis of frequencies, linear regression and correlation, time-series analysis and computer applications. This course is recommended as the foundation course in quantitative analysis as generally prescribed by AACSB member colleges for business administration students.

COURSE LEARNING OUTCOMES:

Students will be able to:

- Analyze data that include finding the measures of central tendency, measures of variation and apply it to various types of problems involving probabilities.
- Recognize the different types of probability distributions such as the binomial and the normal.
- Establish, and evaluate the different types of probability distributions such as the binomial and the normal.
- Read, evaluate, and apply the tables needed for appropriate distributions, and use calculators to obtain and evaluate derived outcomes.
- Determine if there is a correlation between two sets of data, and if so create the proper equation and graph using models of linear regression.
- Apply results from confidence intervals and hypothesis testing to evaluate and support conjectures.
- Use computers to access, analyze or present information.
- Research applications of statistical concepts in the real world, explaining and evaluating information being presented.
- Locate and evaluate multi-media sources for mathematical research.

STUDENT RESOURCES:
Campus:
Statistical Techniques in Business and Economics
Fifteenth Edition by Lind, Marchal, Walthen
McGraw-Hill
Additional Online Software Package Required for Distance Education offerings.

Computer software such as Excel or similar statistical software will be required. Texts and software are subject to change, including updates to current editions; check with your specific course instructor prior to purchasing the text or online component. Appropriate software and materials are required to support online instruction. You may check the Distance Education web page at the College web site for more information. The use of a calculator is required for this course.

Use of the Academic Learning Center (ALC), specifically the Mathematics Success Center (MSC), for extra tutoring assistance and online tutoring are recommended. Any software available with the textbook can be used as a tutorial as well.

COURSE REQUIREMENTS:

All courses in the Mathematics Department adhere to the College attendance policy as set forth in the Student Handbook.

Students should:
Attend and participate in all classes
Complete all assigned homework/lab work using required technology
Complete a paper or project
Take the exams and/or quizzes
Take a comprehensive final that is required.

To promote information literacy, all students in this course will be expected to complete a paper or project, which will demonstrate applications of statistics. References/citations are required using an acceptable academic format to be determined by the instructor. Plagiarism will be considered cheating and subject to the College's policy outlined in the Student Handbook.

The use of Excel and/or similar statistical software is required. Presentation of analysis and research using appropriate software is necessary.

Online students must have system requirements, required software, and technology competency, and are required to take proctored exams, presenting the instructor with a valid ID.

ACCOMMODATIONS:

Union County College offers reasonable accommodations and/or services to persons with disabilities. Any student who has a documented disability and wishes to self-identify should contact the Coordinator of Services for Students with Disabilities at (908) 709-7164, or email disabilitysvc@ucc.edu. Accommodations are *individualized* and in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992. In order to receive accommodations, students must be registered with the Disability Services Office. Students should register with the office as soon as possible. Accommodations are not official until the Faculty Accommodations Alert Form(s) are issued from the student to his/her instructor(s).

EVALUATION METHODS:

Classwork/Homework
Exams
Information Literacy Assignment (essays, paper/projects, etc.)
Computer -based assignments
Final Exam

CLASS SCHEDULE:

The exact schedule of topics in the course description will be determined by the instructor.

UNITS	CLASS WEEKS	CLASS MTGS.	TEXT ASSIGNMENT CHAP.	P.P.	TOPICS	ASSIGNMENT PROBLEMS OR QUESTIONS
					Orientation	
		1	1	2-20	What Is Statistics?	P.14; 1-3
		2	2	22-23	Frequency Table	P. 28; 1,3, 5 P. 35; 7-13 odd
				29-40	Frequency Distributions, Histogram & Frequency Polygon	P. 41; 15,16,17
				42-44	Cumulative Frequency Distributions	P. 44; 19,21
				24-28	Bar Charts, Pie Charts	P. 29; 5
					Chapter Exercises	P. 46; 23-43 odd
		3	3	58-62	The Population Mean, Sample Mean	P. 62, 1-11 odd
				62	Weighted Mean	P. 64, 11, 13, 15
				64-67	Median, Mode	P. 67; 17-23 odd
				69-71	Relative Positions of the Mean, Median, and Mode	P. 71; 25
				72-73	Geometric Mean (Optional)	P. 73; 27-33 odd
				75-78	Measures of Dispersion	P. 79; 35-39 odd
				79-82	Variance and Standard Deviation	P. 82; 41-45 odd P. 84; 47-51 odd
				85-87	Chebyshev's Theorem, Empirical Rule	P. 87; 53-56 all
				88-91	Mean & Standard Deviation of Grouped Data	P. 891; 57,59,61
					Chapter Exercises	P. 94-99; 63-85 odd

UNITS	CLASS WEEKS	CLASS MTGS.	TEXT ASSIGNMENT CHAP.	P.P.	TOPICS	ASSIGNMENT PROBLEMS OR QUESTIONS
		3	4	103-108	Dot Plots and Stem-and-Leaf Displays	P. 109, 1-9 odd
				111-115	Other Measures of Position	P. 115; 11, 13
				116-118	Box Plots	P. 118; 15-18 all
				119-123	Skewness	P. 123; 19, 21
				124-127	Contingency Table and Scatter Diagram	P. 127; 23-26 all
				124-128	Chapter Exercises	P. 130; 27-35 odd, 39-43 odd
		1			Test I	
		4	5	145-147	Introduction to Probability	
				148-151	Approaches to Probability: Classical, Empirical, Subjective.	P. 152; 1-9 odd
				153-158	Addition Rules of Probability	P. 158; 11-21 odd
				159-162	Rules of Multiplication	P. 160; Self Review 5-5; P. 162; Self Review 5-6; P. 166; 23, 25, 27
				162-164	Contingency Tables	P. 164; Self Review 5-7
				164-165	Tree Diagrams	P. 166; 29
				171-176	Principles of Counting	P. 176; 39-45 odd
					Chapter Exercises	P. 174-178; 47-65
		4	6	187-191	Probability Distributions & Random Variables	P. 189; Self Review 6-1
				191-193	Discrete Probability Distributions	P. 193; 1-7 odd
				195-201	Binomial Probability Distribution	P. 201; 9-18 all

UNITS	CLASS WEEKS	CLASS MTGS.	TEXT ASSIGNMENT CHAP.	P.P.	TOPICS	ASSIGNMENT PROBLEMS OR QUESTIONS
				202-203	Cumulative Binomial Probability Distribution	P. 203; 19-24 all
				207-212	Poisson Probability Distribution	P. 212; 31-35 odd
					Chapter Exercises	P. 213; 37-57 odd
		5	7	227-229	Family of Normal P.D.	P. 233; 7
				229-233	Standard N. P.D.	P. 233; 9, 11 P. 236; 13-16 all P. 239; 17-22 all P. 241; 23, 27, 29
				238-241	Normal Approximation to the Binomial	P. 245; 31-36 all
					Chapter Exercises	P. 252; 37-65 odd
		1			Test II	
		3	8	266-274	Sampling Methods	P. 272; 1
				275-278	Sampling Distribution of the Sample Mean	P. 279; 5, 7, 9
				279-285	Central Limit Theorem	P. 285; 11, 13 all
				286-289	Using the Sampling Distribution of the Sample Mean	P. 289; 15, 17
					Chapter Exercises	P. 290; 19, 21, 23, 25
		5	9	298-299	Point Estimate for Population Mean	
				299-305	Confidence Interval for the population standard deviation known	P. 305; 1-7 odd
				306-312	Confidence Interval for the population standard deviation unknown	P. 312; 9, 11, 13
				313-316	Confidence Interval for a Proportion	P. 316; 15,17
				316-319	Choosing an Appropriate Sample Size	P. 320; 19, 23, 25
				320-322	Finite Population Correction Factor	P. 322; 27, 29

UNITS	CLASS WEEKS	CLASS MTGS.	TEXT ASSIGNMENT CHAP.	P.P.	TOPICS	ASSIGNMENT PROBLEMS OR QUESTIONS
					Chapter Review	P. 323, 31-67 odd
		5	10	334-341	One Sample Hypothesis Testing	
				341-345	Population mean with σ known: two-tailed and one-tailed; p-value	P. 347; 1-7 odd
				348-352	Population mean with σ unknown	P. 353; 9-13 odd, P. 355; 15, 17, 19
				356-359	Tests concerning proportions	P. 359; 21, 23, 25
				P359- 362	Type II error	P. 355; 27,28
					Chapter Exercises	P. 364; 29- 65 odd
		1			Test III	
			11	372-377	Two-Sample Tests of Hypothesis: Independent Samples	P. 377; 1, 3, 5
				382-386	Comparing Populations Means	P. 387; 13, 17 P 391; 19, 21
				395-397	Comparing Dependent & Independent Samples	P. 398; 23, 25
		4	13	462-470	Coefficient of Correlation	P. 470; 1, 5, 7
				487-488		P. 488; 25, 27
				476-481	Coefficient of Determination Regression Analysis	P. 481; 13, 15, 17
					ADDITIONAL TOPICS IF TIME PERMITS:	
			12	411- 418	Analysis of Variance	
				418-425	ANOVA Test	P. 425; 7, 9
					Final Examination	

SUGGESTED TEACHING METHODOLOGIES:

A combination of lecture, cooperative learning, active learning/problem-solving activities, discussion, and technology supports course objectives to be determined at the discretion of the instructor. The use of technology using statistical software is incorporated. The course should include extensive computer based assignments using statistical software such as Excel, Minitab, SPSS or similar products.

CORRELATION OF PROGRAM and GENERAL EDUCATION OUTCOMES, STUDENT OUTCOMES, and ASSESSMENT METHODS

Program and General Education Learning Outcomes	**Course Learning Outcomes**	**Assessment Methods**
Students will evaluate and think critically about information	• Analyze data that include finding the measures of central tendency, measures of variation and apply it to various types of problems involving probabilities. • Establish, and evaluate the different types of probability distributions such as the binomial and the normal. • Read, evaluate, and apply the tables needed for appropriate distributions, and use calculators to obtain and evaluate derived outcomes. • Locate and evaluate multi-media sources for mathematical research.	Written assignments, including lab reports & analysis Quizzes & Tests. Classroom discussion
Students will construct graphs and charts, interpret them, and draw appropriate conclusions.	• Determine if there is a correlation between two sets of data, and if so create the proper equation and graph using models of linear regression. • Recognize the different types of probability distributions such as the binomial and the normal. • Establish, and evaluate the different types of probability distributions such as the binomial and the normal.	Written assignments, including gathering & presenting data in lab reports using technology Quizzes & Tests. Classroom discussion

Students will translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations	• Analyze data that include finding the measures of central tendency, measures of variation and apply it to various types of problems involving probabilities. • Read, evaluate, and apply the tables needed for appropriate distributions, and use calculators to obtain and evaluate derived outcomes. • Determine if there is a correlation between two sets of data, and if so create the proper equation and graph using models of linear regression. • Apply results from confidence intervals and hypothesis testing to evaluate and support conjectures	Written assignments Quizzes & Tests Classroom discussion
Students will address an information need by locating, evaluating, and effectively using information	• Research applications of statistical concepts in the real world, explaining and evaluating information being presented. • Use computers to access, analyze or present information. • Locate and evaluate multi-media sources for mathematical research.	Written assignments, including lab analysis & calculator/computer work Classroom discussion Paper/Project

This course is an information literacy course.

REVISED: March 2013
Doty & Roemer