COURSE OUTLINE

Course Number	Course Title	Credits
BUS 206	**BUSINESS STATISTICS II**	**3**

Hours: Lecture/Lab/Other	Co- or Pre-requisite	Implementation Semester & Year
3/0	BUS 205 with a minimum C grade	**Spring 2022**

Catalog description:]

Further testing of hypotheses and confidence intervals, plus coverage of regression analysis, chi-square, analysis of variance, and non-parametric measurements with use of several computer- based statistical packages

General Education Category:
Not GenEd

Course coordinator:
Professor Framarz Khoushab
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Required texts & Other materials:

Business Statistics and Analytics in Practice by
Bowerman, Drougas, Duckworth, Froelich, Hummel, Moninger,and Schur,
McGraw Hill, 9th edition

ISBN: Rental - 9781260187496 and Loose Leaf - 9781307661149

Course Student Learning Outcomes (SLO):

This course is the second half of a one-year course in statistics for business and economics. The aim is for students to perform statistical analysis on various inferential real life problems. By the end of the course, students will be able to:

1. explain the procedures of inferential statistical analysis concerning :two population parameters (**Supports ILG 1, 2.,11; PLO 1,2,3**)

2. perform analysis of variance (ANOVA) (**Supports ILG 1,2,11; PLO 1,2,3**)
3. interpret regression and correlation (**Supports ILG1,2, 11 ; PLO 1,2,3**)
4. analyze categorical data and non-parametric statistics (**Supports ILG1,2,11 ; PLO 1,2,3**)
5. perform statistical analysis using MINI TAB (**supports ILG 4 ; PLO 1, 2,3**)

Course-specific Institutional Learning Goals (ILG):

- **Institutional Learning Goal 1. Written and Oral Communication in English.** Students will communicate effectively in both speech and writing.
- **Institutional Learning Goal 2. Mathematics.** Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
- **Institutional Learning Goal 4. Technology.** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals
- **Institutional Learning Goal 11. Critical Thinking:** Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Program Learning Outcomes for
Business Administration (AS) and Global Business concentration

1. Acquire effective business communication skills, including computer literacy;
2. Formulate an analytical and quantitative approach to problem solving;
3. Acquire effective business communication skills, including computer literacy;

Units of study in detail – Unit Student Learning Outcomes:

Unit 1: Hypothesis Testing (supports Course SLO 1,5)
1. Comparing two population parameter -independent samples
2. Comparing two populations means-paired samples
3. P-value and critical region approach in solving hypothesis testing
4. Comparing two population variances –independent samples

Learning Objectives:
The student will be able to:
- Use hypothesis testing to test two means and proportion
- Use p-value approach and critical region approach in solving problems
- Use hypothesis testing for two-variances

Unit 2: Analysis of Variance (Supports SLO 1,2,5)
1. Perform one-way analysis of variance
2. Explain the randomized black design
3. Perform two-way analysis of variance

Learning Objective:
The student will be able to:
- Use one-way analysis of variance to test difference among the means of several groups
- Understand when to use a randomized block design
- Compute and interpret the result of a two-way ANOVA

Unit 3: Simple Linear Regression and Correlation: (Supports SLO 1,3,5)
1. type of regression models
2. LSM (least square method)
3. prediction in regression analysis
4. measure of variation, SST, SSR, SSE
5. correlation of determination, R^2
6. Residual analysis
7. inferences about the slope and correlation coefficient

Learning Objectives:
The student will be able to:

- compute the equation of simple regression line from a sample data and interpret the slop and the intercept of the equations the residual analysis in testing the assumptions under linear regression
- use testing hypothesis for the slope of the regression model
- compute prediction interval per an individual response, y of for a mean response, (y/x)

Unit 4: Multiple Regressions (Supports SLO 1,3,5)
1. developing the multiple regression model
2. residual analysis for the multiple regression testing for the significance of the multiple regression model using F test inference concerning the population regression coefficients
3. dummy variable

Learning Objectives:
The student will be able to:
- determine which independent variables should be included in the regression model)
- evaluate multiple regression)
- use ANOVA table to interpret the output of multiple regression

Unit 5:Chi-square and Nonparametric statistics (Support SLO 1,4,5)
1. chi-square, goodness-of fit test
2. contingency analysis independence test
3. Mann-Whitney test

Learning Objective:
The student will be able to
- understand how and when to use chi-square test for independence and goodness of fit test
- understand how and when to use Mann-Whitney test and solve business problems
- analyze data by using chi-square test of independence and goodness of fit

Evaluation of student learning:

Quizzes	30%
Research Paper	10%
Mid-Term	30%
Final	30%