

WTCS Repository

10-804-189 Introductory Statistics

Course Outcome Summary

Course Information

Description Students taking Introductory Statistics display data with graphs, describe distributions with numbers perform correlation and regression analyses, and design experiments. They use probability and distributions to make predictions, estimate parameters, and test hypotheses. They draw inferences about relationships including ANOVA.

Total Credits 3.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Organize data

Assessment Strategies

- 1.1. by submitting tables, charts or graphs using software
- 1.2. by submitting tables, charts or graphs manually
- 1.3. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 1.1. you construct frequency distributions
- 1.2. you construct histograms
- 1.3. you construct stem and leaf diagrams
- 1.4. you construct pie charts
- 1.5. you construct box plots
- 1.6. you construct line graphs
- 1.7. you construct bar graphs
- 1.8. you apply standards of spelling, English grammar, and punctuation
- 1.9. the choice of statistical description is appropriate to the nature of the data
- 1.10. graphs have the professional attributes of the class examples
- 1.11. graphs accurately represent the data
- 1.12. numerical answers are accurate

2. Summarize data numerically

Assessment Strategies

- 2.1. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 2.1. you determine measures of central tendency
- 2.2. you interpret measures of central tendency
- 2.3. you determine measures of spread
- 2.4. you interpret measures of spread
- 2.5. you determine measures of relative position (quartiles, percentiles)
- 2.6. you interpret measures of relative position
- 2.7. the choice of statistical description is appropriate to the nature of the data
- 2.8. numerical answers are accurate

3. Use probability distributions

Assessment Strategies

- 3.1. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 3.1. you distinguish between theoretical and empirical probabilities
- 3.2. you create a probability distribution from observational data
- 3.3. you calculate theoretical probabilities of events
- 3.4. you evaluate the parameters of a probability distribution
- 3.5. you apply the Normal distribution to solve problems
- 3.6. you apply Central Limit Theorem
- 3.7. the choice of statistical description is appropriate to the nature of the data
- 3.8. numerical answers are accurate
- 3.9. you apply standards of spelling, English grammar, and punctuation in stating conclusions

4. Investigate study design

Criteria

Performance will be successful when:

- 4.1. you distinguish between experimental and observational studies
- 4.2. you locate sources of data
- 4.3. you identify sampling techniques
- 4.4. you critique the validity of the analysis
- 4.5. you identify sources of bias
- 4.6. numerical answers are accurate
- 4.7. you apply standards of spelling, English grammar, and punctuation in stating conclusions

5. Draw inference about population parameters from sample data from one population

Assessment Strategies

- 5.1. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 5.1. you chose appropriate procedure to construct a confidence interval for the population mean
- 5.2. you chose appropriate procedure to construct a confidence interval for the population standard deviation
- 5.3. you chose appropriate procedure to construct a confidence interval for the population proportion
- 5.4. you interpret confidence intervals
- 5.5. you analyze the role of sample size
- 5.6. you distinguish between random and non-random samples
- 5.7. you perform hypothesis test on a single population parameter
- 5.8. the choice of procedure is appropriate to the nature of the data (z distribution, t distribution)
- 5.9. numerical answers are accurate
- 5.10. you apply standards of spelling, English grammar, and punctuation in stating conclusions

6. Draw inference about population parameters from sample data from two or more populations

Assessment Strategies

6.1. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 6.1. you chose appropriate procedure to construct a confidence interval for the difference of population means
- 6.2. you chose appropriate procedure to construct a confidence interval for the difference of population proportions
- 6.3. you distinguish between independent random samples and matched pairs
- 6.4. you interpret confidence intervals
- 6.5. you analyze the role of sample size
- 6.6. you perform hypothesis test on a parameter from two populations
- 6.7. you perform hypothesis test on a parameter from more than two populations (F distribution, ANOVA)
- 6.8. you perform a chi square test on a contingency table for categorical variables
- 6.9. you perform a chi square test for "goodness of fit"
- 6.10. the choice of procedure is appropriate to the nature of the data
- 6.11. numerical answers are accurate
- 6.12. you apply standards of spelling, English grammar, and punctuation in stating conclusions

7. Evaluate correlation and linear regression in bi-variate data

Assessment Strategies

7.1. by completing assignments/written tests/projects

Criteria

Performance will be successful when:

- 7.1. you create a scatter plot of bi-variate data
- 7.2. you calculate the correlation coefficient
- 7.3. you interpret the correlation coefficient
- 7.4. you construct the best fit regression line
- 7.5. you use the best fit line to make predictions
- 7.6. you use the best fit line to solve applied problems
- 7.7. you interpret relationships between variables
- 7.8. numerical answers are accurate
- 7.9. you apply standards of spelling, English grammar, and punctuation in stating conclusions