
## WTCS Repository

10-804-189 Introductory Statistics

# Course Outcome Summary

### Course Information

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|  | 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

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| 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

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| 1 | Organize data  |
|  | Assessment Strategies |
|  | by submitting tables, charts or graphs using softwareby submitting tables, charts or graphs manuallyby completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you construct frequency distributionsyou construct histogramsyou construct stem and leaf diagramsyou construct pie chartsyou construct box plotsyou construct line graphsyou construct bar graphsyou apply standards of spelling, English grammar, and punctuationthe choice of statistical description is appropriate to the nature of the datagraphs have the professional attributes of the class examplesgraphs accurately represent the datanumerical answers are accurate |
| 2 | Summarize data numerically |
|  | Assessment Strategies |
|  | by completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you determine measures of central tendencyyou interpret measures of central tendencyyou determine measures of spreadyou interpret measures of spreadyou determine measures of relative position (quartiles, percentiles)you interpret measures of relative positionthe choice of statistical description is appropriate to the nature of the datanumerical answers are accurate |
| 3 | Use probability distributions |
|  | Assessment Strategies |
|  | by completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you distinguish between theoretical and empirical probabilitiesyou create a probability distribution from observational datayou calculate theoretical probabilities of eventsyou evaluate the parameters of a probability distributionyou apply the Normal distribution to solve problemsyou apply Central Limit Theoremthe choice of statistical description is appropriate to the nature of the datanumerical answers are accurateyou apply standards of spelling, English grammar, and punctuation in stating conclusions |
| 4 | Investigate study design |
|  | Criteria |
|  | Performance will be successful when: |
|  | you distinguish between experimental and observational studiesyou locate sources of datayou identify sampling techniquesyou critique the validity of the analysisyou identify sources of biasnumerical answers are accurateyou 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 |
|  | by completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you chose appropriate procedure to construct a confidence interval for the population meanyou chose appropriate procedure to construct a confidence interval for the population standard deviationyou chose appropriate procedure to construct a confidence interval for the population proportionyou interpret confidence intervalsyou analyze the role of sample size you distinguish between random and non-random samplesyou perform hypothesis test on a single population parameterthe choice of procedure is appropriate to the nature of the data (z distribution, t distribution)numerical answers are accurateyou 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 |
|  | by completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you chose appropriate procedure to construct a confidence interval for the difference of population meansyou chose appropriate procedure to construct a confidence interval for the difference of population proportionsyou distinguish between independent random samples and matched pairsyou interpret confidence intervalsyou analyze the role of sample size you perform hypothesis test on a parameter from two populations you perform hypothesis test on a parameter from more than two populations (F distribution, ANOVA)you perform a chi square test on a contingency table for categorical variablesyou perform a chi square test for "goodness of fit"the choice of procedure is appropriate to the nature of the datanumerical answers are accurateyou apply standards of spelling, English grammar, and punctuation in stating conclusions |
| 7 | Evaluate correlation and linear regression in bi-variate data |
|  | Assessment Strategies |
|  | by completing assignments/written tests/projects |
|  | Criteria |
|  | Performance will be successful when: |
|  | you create a scatter plot of bi-variate datayou calculate the correlation coefficientyou interpret the correlation coefficientyou construct the best fit regression lineyou use the best fit line to make predictionsyou use the best fit line to solve applied problemsyou interpret relationships between variablesnumerical answers are accurateyou apply standards of spelling, English grammar, and punctuation in stating conclusions |