# Dakota County Technical College

## MATS 1251: Statistics

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 1

OJT Hours/Week: *.*

Prerequisites:
This course requires either of these prerequisites
MATS 0600 - Intermediate Algebra
A score of 76 on test Accuplacer Elementary Algebra

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

Fundamental principles of inferential statistics are presented in lecture and supplemented with computer labs using Minitab software. Specific topics include descriptive and graphical statistics, fundamentals of counting and probability, probability distributions, sampling distributions, confidence intervals, hypothesis testing, linear regression, chi-square tests, ANOVA, and nonparametrics.
Meets MnTC Goal 4

### B. COURSE EFFECTIVE DATES: 08/21/2006 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

**D. LEARNING OUTCOMES (General)**

1. consider the nature of data and the uses and abuses of statistics C
2. summarize data with frequency tables
3. represent data in various pictorial forms
4. calculate and interpret various measures of center (mean, media, mode, midrange)
5. calculate and interpret various measures of variation (range, interquartile range, standard deviation)
6. calculate and interpret various measures of position (quartiles, percentiles, z-scores)
7. distinguish among the classical, experimental, and subjective methods of calculating probability
8. apply the classical definition of probability
9. use the addition rule in calculating probability
10. use the multiplication rule in calculating probability C

11. apply complements in calculating probability
12. apply complements in calculating probability
13. calculate and interpret conditional probabilities
14. define random variable
15. apply binomial probability distribution to practical problems
16. apply Poisson distribution to practical problems
17. apply the normal distribution to practical problems
18. explain the significance of the Central Limit Theorem
19. estimate a population proportion
20. estimate a population mean using small samples: Student-
21. estimate a population mean using small samples: Student-T
22. estimate a population standard deviation: chi square
23. test claims about proportions
24. test claims about means
25. test claims about standard deviation or variance
26. make inferences about two proportions
27. make inferences about two means: independent samples
28. make inferences from matched pairs
29. compare variations in two samples
30. compare variations in two samples
31. explain the concept of correlation
32. find linear and other regressions
33. perform one-way ANOVA analysis
34. perform two-way ANOVA analysis
35. apply the sign test
36. apply the Wilcoxon signed-ranks test for matched pairs
37. apply the Wilcoxon rand-sum-test for two independent samples
38. apply the Kruskal-Wallis test
39. apply rank correlation analysis
40. apply runs test for randomness

## E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 04 - Mathematical/Logical Reasoning

1. Clearly express mathematical/logical ideas in writing.
2. Explain what constitutes a valid mathematical/logical argument(proof).
3. Apply higher-order problem-solving and/or modeling strategies.

## F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

## G. SPECIAL INFORMATION

None noted